LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

CHRONOLOGICAL INDEX

Volume 9 of 25

2007

Bate Stamp Numbers
00048895 - 00049541

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2007

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 9 of 25

2007

A. Title: Report – Pilot Study Implementation Plan, Groundwater Treatment Plant and Well Fields
Author(s): Shaw
Recipient: All Stakeholders
Date: September 13, 2007
Bate Stamp: 00048895 - 00048969

B. Title: Letter – Draft Final Five-Year Review Report
Author(s): Stephen L. Tzhone RPM, AR/TX, Remedial Branch, Superfund Division
Recipient: Dr. Rose Zeiler, Site Manager LHAAP
Date: September 14, 2007
Bate Stamp: 00048970 - 00048973

C. Title: Letter – Final Operating Properly and Successfully Demonstration Report for Landfill 12 (LHAAP-12)
Author(s): Samuel Coleman PE, Director Superfund Division, EPA
Recipient: Thomas E. Lederle, Assistant Chief of Staff for Installation Management
Date: September 20, 2007
Bate Stamp: 00048974 - 00048975

D. Title: Memo – Correspondence with the Texas Commission on Environmental Quality (TCEQ) On the Uses of Method Quantitation Limits (MQLs) and Other Values Used to Describe Analytical Detection Limits
Author(s): Frank Eidson, Shaw
Recipient: Praveen Srivastav and John Elliott, Shaw
Date: September 24, 2007
Bate Stamp: 00048976 - 00049029

E. Title: Report – Final Engineering Evaluation/Cost Analysis LHAAP
Author(s): CAPE
Recipient: U. S. Army Corps of Engineers, Fort Worth District
Date: October 4, 2007
Bate Stamp: 00049030 - 00049521

F. Title: Minutes – Monthly Managers Meeting
Author(s): Shaw
Recipient: All Stakeholders
Date: October 16, 2007
Bate Stamp: 00049522 - 00049531

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 9 of 25

2007

G. Title: Letter – Final Installation-Wide Baseline Ecological Risk Assessment
Author(s): Stephen L. Tzhone RPM, AR/TX, Remedial Branch Superfund Division, EPA
Recipient: Dr. Rose Zeiler, Site Manager LHAAP
Date: October 29, 2007
Bate Stamp: 00049532

H. Title: Minutes – Monthly Managers Meeting
Author(s): Shaw
Recipient: All Stakeholders
Date: November 14, 2007
Bate Stamp: 00049533 - 00049541

00048895

Shaw® Shaw Environmental, Inc.

Date: ***September 13, 2007***

Project No.:117591

TRANSMITTAL LETTER:

To: Mr. Cliff Murray

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: Pilot Study Implementation Plan
Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal ____ Other X

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	September 2007	**Pilot Study Implementation Plan, Groundwater Treatment Plant and Well Fields,** Longhorn Army Ammunition Plant , Karnack, Texas

Cliff – Enclosed are two copies of the above-named document.

Copies have been sent to people on the distribution list below.

Please call if any questions or comments.

Sincerely:

David P. Cobb

CC: Mr. J. Lambert – USACE, Tulsa (sent to C. Murray for distribution)
Ms. Rose Zeiler – BRAC-LHAAP
Mr. S. Tzhone – EPA Region 6
Ms. Fay Duke – TCEQ, Austin
Mr. D. Vodak – TCEQ, Tyler
Mr. P. Bruckwicki– U.S. Fish and Wildlife Service

100 Technology Center Drive Stoughton, MA 02072 Phone: (617) 589-8000/Fax: (617) 589-2160

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

September 13, 2007

DAIM-BD-LO

Mr. Steve Tzhone
US Environmental Protection Agency
Superfund Division (6SF-RA)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Pilot Study Implementation Plan, Groundwater Treatment Plant and Well Fields, Longhorn Army Ammunition Plant, Karnack, Texas, September 2007

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your information, and no reply is required. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility. The document has also been posted on Shaw's LHAAP Project Portal.

The point of contact for this action is the undersigned. I ask that David Cobb, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
Fay Duke, TCEQ, Austin, TX
Paul Bruckwicki, Caddo Lake NWR, TX
Cliff Murray, COE – Tulsa District, OK
John R. Lambert, COE – Tulsa District, OK
David Cobb, Shaw – Stoughton, MA
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

September 13, 2007

DAIM-BD-LO

Ms. Fay Duke
Texas Commission on Environmental Quality
TCEQ Environmental Cleanup Section II MC-221
12100 Park 35 Circle
Austin, TX 78753

Re: Pilot Study Implementation Plan, Groundwater Treatment Plant and Well Fields, Longhorn Army Ammunition Plant, Karnack, Texas, September 2007

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your information, and no reply is required. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility. The document has also been posted on Shaw's LHAAP Project Portal.

The point of contact for this action is the undersigned. I ask that David Cobb, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
Stephen Tzhone, USEPA Region 6, Dallas, TX
Paul Bruckwicki, Caddo Lake NWR, TX
Cliff Murray, COE – Tulsa District, OK
John Lambert, COE – Tulsa District, OK
David P. Cobb, Shaw – Stoughton, MA
P. Srivastav, Shaw – Houston, TX (for project files)

PILOT STUDY IMPLEMENTATION PLAN
GROUNDWATER TREATMENT PLANT AND WELL FIELDS
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

Prepared by

Shaw Environmental, Inc.
3010 Briarpark Suite 400
Houston, Texas 77042

Contract Number W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591

September 2007

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Acronyms and Abbreviations

GWTP	groundwater treatment plant
HDPE	high-density polyethylene
ICT	interceptor collection trench
LHAAP	Longhorn Army Ammunition Plant
MARC	Multiple Award Remediation Contract
PLC	programmable logic controls
PPE	personal protective equipment
Shaw	Shaw Environmental, Inc.
TCEQ	Texas Commission on Environmental Quality
TO	Task Order
USACE	U.S. Army Corps of Engineers

1.0 Purpose

Shaw Environmental, Inc. (Shaw) was contracted by the U.S. Army Corps of Engineers (USACE) to perform remediation activities associated with Site Closure of Multiple Sites at the former Longhorn Army Ammunition Plant (LHAAP) under the Multiple Award Remediation Contract (MARC) No. W912QR-04-D-0027 issued by the Louisville District. Management of work performed under this contract is performed by the Tulsa District of USACE. Work by Shaw at the Longhorn facility is performed under Task Order (TO) No. DS02 of the above-referenced contract. As part of the remediation activities, Shaw has been tasked with continued extraction of contaminated groundwater from the well fields at LHAAP-18/24 and processing the water through the Groundwater Treatment Plant (GWTP).

The purpose of this document is to provide an implementation plan for a pilot study to evaluate the optimization of contaminant capture at the LHAAP-18/24 well field with the ultimate goal of shortening the remediation life cycle.

1.1 Site Description and Background

LHAAP is located in the northeast corner of Harrison County, Texas, approximately 3.6 miles from the Louisiana border. LHAAP is bordered by Caddo Lake, Caddo Lake State Park, and the small town of Karnack. The plant is located approximately 30 miles west of Shreveport, Louisiana, with the nearest major city being Marshall, Texas, 15 miles to the southwest. The former installation has a total area of approximately 8,493 acres. State Highways 43 and 134 access the installation. LHAAP-18 (Burning Ground No. 3) and LHAAP-24 (Unlined Evaporation Pond/Rocket Motor Washout Facility) are located within a secure area of 34.5 acres in the southeastern portion of LHAAP. Past usage of the area included the treatment, storage, and disposal of solid and liquid explosive, pyrotechnic, and combustible solvent waste by open burning/open detonation, incineration, evaporation, and burial.

1.2 Current Conditions

The remedial system at LHAAP-18/24 consists of 14 interceptor collection trenches (ICTs), 28 collection sumps associated with ICTs and extraction piping between the sumps and the GWTP. **Figure 1-1** presents the location of the ICTS, sumps and extraction piping. The ICTs were installed at LHAAP-18/24 to collect groundwater contaminated with perchlorate, metals, and volatile organic compounds. The contaminated groundwater collected from the 28 sumps is treated at the GWTP and discharged to Harrison Bayou. Per the Record of Decision (U.S. Army, 1995), the rate at which the treated water from the GWTP can be discharged to Harrison Bayou is tied to the flow in the bayou itself. When there is no flow in the bayou, the treated water is diverted to the Intermediate-Range Nuclear Forces (INF) pond for temporary storage until the

flow in the Bayou increases. Historically there have been extended periods when lack of flow in Harrison Bayou precluded discharge of treated water to the bayou. In these extended drought periods, the INF pond became close to being full. Because of this, an irrigation system consisting of sprinklers was installed on the east side of LHAAP-18/24. When the INF pond gets close to maximum capacity during extended dry periods, treated water is discharged to LHAAP-18/24 via the sprinkler system. The irrigation system is operated during normal work hours so operations personnel can monitor conditions in the irrigation area and ensure that there is no ponding. **Figure 1-1** presents the location of the piping for the irrigation system.

1.3 Goal of Optimization

The goal of the pilot study described in this plan is to improve the capture and treatment of contaminants within the shallow groundwater zone at LHAAP-18/24. The shallow groundwater is being targeted because of high concentrations of methylene chloride, trichloroethene, and perchlorate. These three contaminants are likely to be strongly influenced by the presence of additional water flushing through the shallow aquifer. Improved removal of other contaminants (e.g., metals) may also occur, but is not a goal of this effort. Ultimately, improved recovery of contaminants will lead to earlier shut down of the GWTP.

Figure 1-1
Layout of Existing ICTs and Extraction/Irrigation Piping

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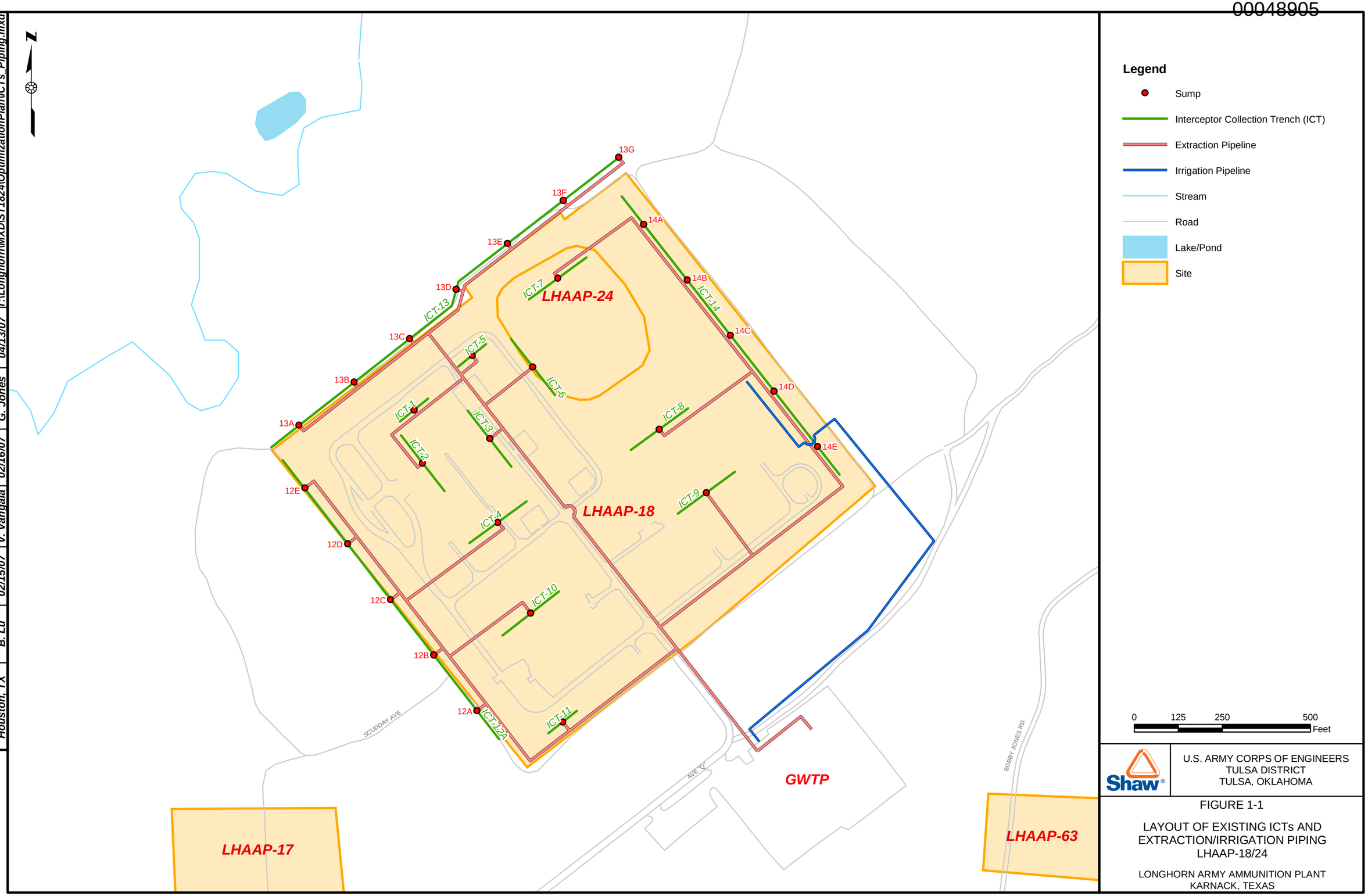

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

LAYOUT OF EXISTING ICTs AND EXTRACTION/IRRIGATION PIPING LHAAP-18/24

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 Remedial System Optimization

The existing GWTP and ICTs have been in operation since 1998 and have captured a portion of the groundwater contamination at the site. That contamination consists primarily of dissolved phase volatile organic compounds and perchlorate. **Figure 1-1** presents the current system configuration of the GWTP, ICTs and piping network. Shaw has evaluated the current system and identified the following factors that suggest possible system improvements:

- Several of the ICTs do not consistently extract significant volumes of water.
- The GWTP can process flows 60 to 80% higher than it currently treats.
- Increased movement of water (i.e., flushing) through the shallow aquifer could increase the removal of the soluble contaminants at the site.
- Injection of GWTP effluent would offer another discharge option when there are low flow conditions in Harrison Bayou as described in **Section 1.2**.

Thus the current system offers opportunities to recycle the effluent from the GWTP through the shallow aquifer in order to optimize contaminant capture and treatment. To evaluate optimization, Shaw will conduct a pilot study comprising the following activities:

- Convert two ICTs (ICT 6 and ICT 9) to infiltration trenches;
- Convert shallow monitoring well 18WW17 to an extraction well; and/or
- Deactivate five existing ICTs (ICTs 1, 3, 5, 10 and 12A).

The locations of the proposed system modifications are shown on **Figure 2-1**.

2.1 Conversion of ICTs to Infiltration Trenches

By converting ICTs 6 and 9 into infiltration trenches, Shaw will recirculate treated groundwater across the central portion of LHAAP-18/24 and into the subsurface source area to flush out highly contaminated water that remains in the shallow groundwater zone. It is estimated that recirculation of the treated groundwater will approximately double the flow of extracted groundwater, thus increasing the contaminant mass removed by the current system. Conversion of the trenches will involve the following steps:

- The extraction pumps and associated piping will be removed from the two sumps prior to injecting treated water from the GWTP.
- The existing irrigation piping on the east side of Site 18/24 will be extended to ICTs 6 and 9.

- Drop tubes will be installed from the irrigation piping into the sumps approximately 15 feet from the surface. This will allow water to be injected without aeration, thus reducing the oxygenation and fouling.
- At each infiltration trench, control valves and flow meters will be installed to regulate and monitor the flow being injected.
- Low and high water level sensors will be installed in each of the ICTs to control the flow into the sumps. Injection water on/off devices, consisting of solenoid valves activated by water level in the ICT sumps will be installed as a measure to prevent overflowing.
- The existing programmable logical controls (PLC) will be re-programmed to shut off the treated water discharge pump at the GWTP in the event of high levels at both the sumps.
- Initially 4 to 6 gallons per minute (gpm) will be injected at each location. Flow rates and water levels at the infiltration trenches will be monitored on a regular basis to ensure there is no overflow and to identify opportunities to increase injection rates.

2.2 Conversion of Monitoring Well 18WW17 to Extraction Well

The groundwater potentiometric surface at LHAAP-18/24 is relatively flat, and the flow direction can vary depending on seasonal conditions and rain events. However, groundwater in the shallow zone at the site generally flows toward the northeast. Existing monitoring well couple 18WW17 and 18WW18 are situated approximately 550 feet northeast of the LHAAP-18/24 site boundary. Monitoring well 18WW17 is screened in the shallow groundwater zone and will be converted into an extraction well to more effectively control the migration of the contaminant plume as identified in **Figures 2-2, 2-3,** and **2-4**.

Additional piping consisting of 3-inch by 1-inch dual-wall high-density polyethylene (HDPE) will be installed from 18WW17 to the extraction piping located next to ICT-14. The extraction well will be equipped with a submersible pump controlled by the water level in the well. The pump operation will be incorporated into the existing PLC system to shutoff in the event of GWTP shut down and other situations consistent with the logic of pumps at the existing ICT sumps. The proposed piping layout is shown on **Figure 2-1**.

2.3 Deactivation of Selected ICTs

Five ICT well sumps (ICT sumps 1, 3, 5, 10 and 12A) will be deactivated. Four of these ICTs (1, 5, 10, and 12a) typically have no flow or very limited flow, and can be deactivated with little or no impact on the current capture of contaminants of concern. ICT-3 will be deactivated to ensure maximum flow across the region of high perchlorate and methylene chloride contamination between ICT-6 and ICT-14, rather than from ICT-6 to ICT-3 (when injection is initiated at ICT-6).

The five extraction sumps selected for deactivation will be isolated by closing the valves located on the discharge line of the extraction piping.

2.4 Groundwater Treatment Plant Operations

The GWTP operations will be carried out without any changes. The plant was designed to handle higher flow and concentrations of contaminants than it currently receives. The additional flow associated with the pilot study is not anticipated to adversely impact GWTP performance.

2.5 Future Optimization Activities

The activities described above are the primary pilot study activities proposed at LHAAP-18/24. Shaw may implement other activities to further optimize the system:

- Install one large diameter (8-inch) injection well in the shallow groundwater zone beneath the former unlined evaporation pond. The location of this well is shown as IW-01 on **Figure 2-1**. If this step is implemented, the well will be installed to the top of the shallow clay layer at a depth of approximately 30 feet below ground surface (bgs). The injection well would have 10 feet of screen (20 slot). The treated water would be introduced into the sumps through a drop tube at approximately 15 feet bgs. The injection piping at the well would be equipped with a control valve, flow meter, and an overflow shutoff mechanism. The overflow shutoff mechanism would consist of a float switch activated by the water level in the well.
- Restart one or more of the decommissioned ICT sumps.
- Convert additional extraction trenches to injection trenches.

These additional activities will be considered after Shaw has evaluated the effects of the changes described in **Sections 2.1** through **2.3**.

Figure 2-1
Proposed Layout of Optimized System

Figure 2-2
Groundwater Concentration Map – Methylene Chloride (May 2006) LHAAP-18/24

Figure 2-3
Groundwater Concentration Map – Perchlorate (May 2006) LHAAP-18/24

Figure 2-4
Groundwater Concentration Map – TCE (May 2006) LHAAP-18/24

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Houston, TX	B. Lu	V. Vangala
	02/21/07	03/16/07

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14D
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ICT-1
ICT-2
ICT-3
ICT-4
ICT-5
ICT-6
ICT-7
ICT-8
ICT-9
ICT-10
ICT-11
ICT-12A
ICT-13
ICT-14
IW-01
18WW17
LHAAP-24
LHAAP-18
LHAAP-17
LHAAP-63
GWTP
SCUDDAY AVE
AVE "Q"
BOBBY JONES RD.

Legend

- Sump
- Shallow Monitoring Well
- Proposed Injection Well
- Extraction Line Tie In Point
- Injection Line Tie In Point
- Sump to Be Deactivated
- Interceptor Collection Trench (ICT)
- ICTs for Which Sumps Will be Deactivated
- ICTs to Be Converted to Infiltration Trenches
- Extraction Pipeline
- Existing Irrigation Pipeline
- Proposed Injection Line
- Proposed Extraction Piping
- Stream
- Road
- Lake/Pond
- Site

0 125 250 500 Feet

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FIGURE 2-1

PROPOSED LAYOUT OF OPTIMIZED SYSTEM
LHAAP-18/24

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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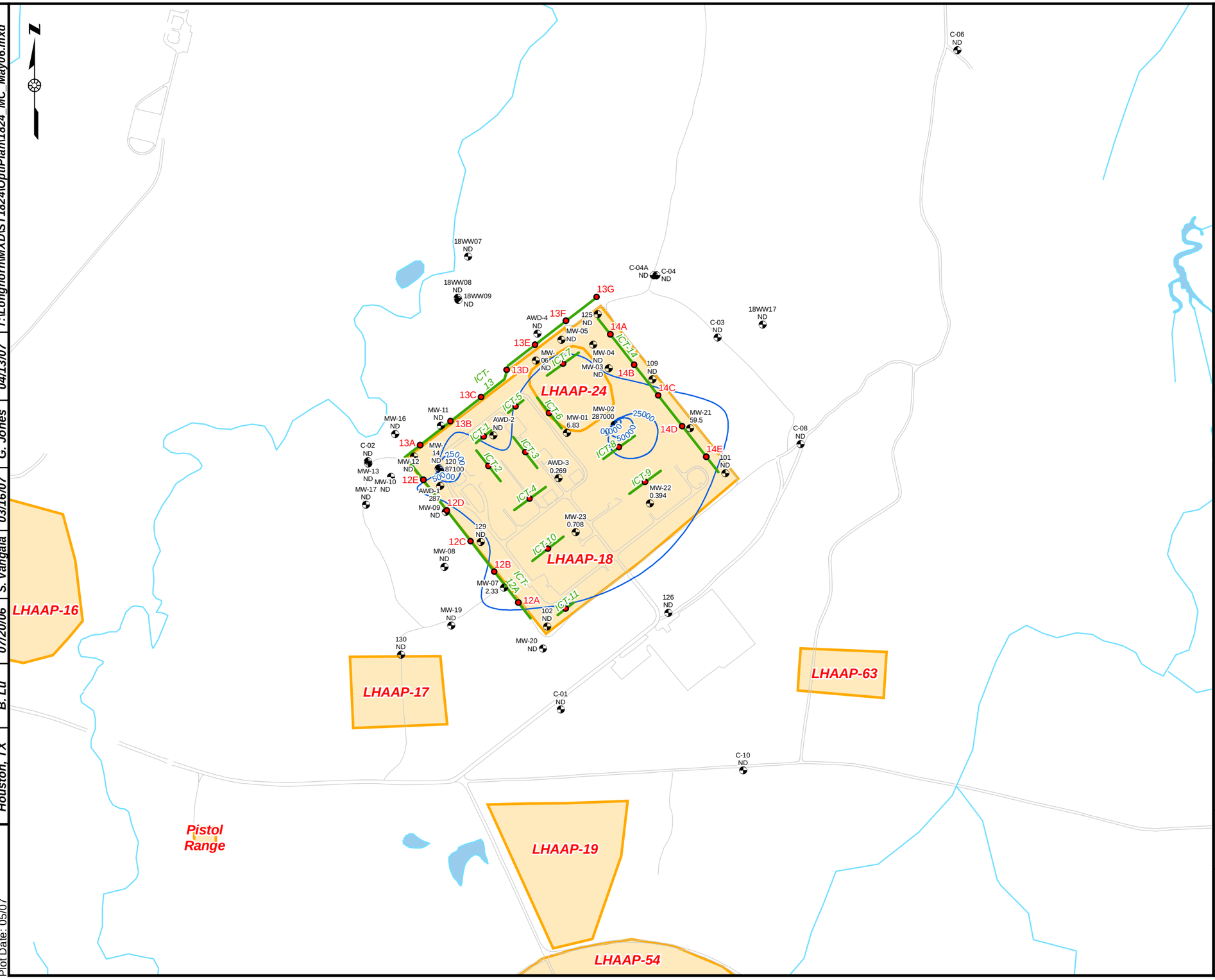
CHECKED BY	S. Vangala 03/16/07
DRAWN BY	B. Lu 07/20/06
OFFICE	Houston, TX

Plot Date: 05/07



Legend

- Sump
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Interceptor Collection Trench (ICT)
- Methylene Chloride Concentration Contour
- Stream
- Road
- Lake/Pond
- Site

Note:

COC concentrations are reported in micrograms per liter (µg/L).

0 250 500 1,000 Feet

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FIGURE 2-2

GROUNDWATER CONCENTRATION MAP
- METHYLENE CHLORIDE (MAY 2006)
LHAAP-18/24

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00048912

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OFFICE	Houston, TX

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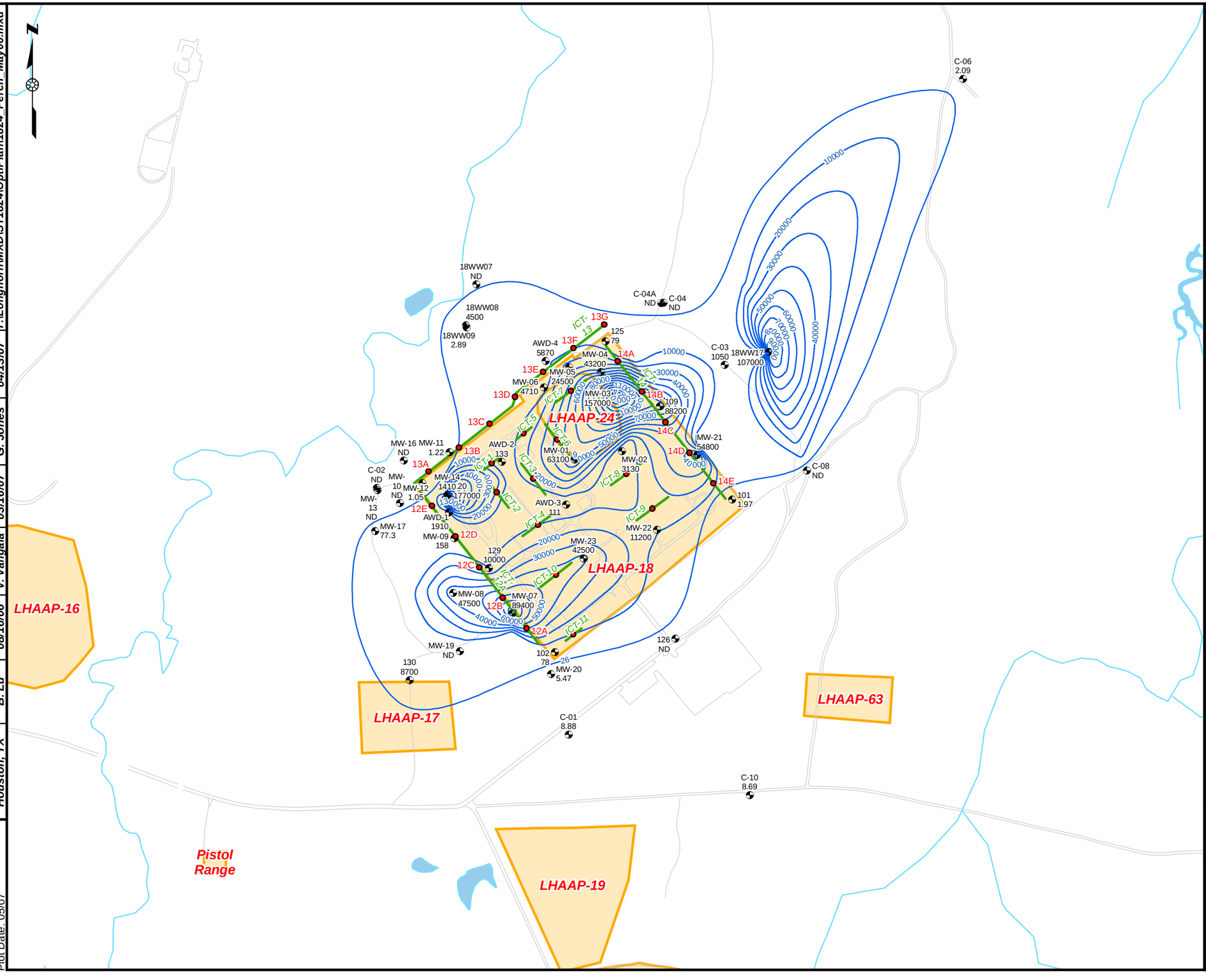

Legend

- Sump
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Interceptor Collection Trench (ICT)
- Perchlorate Concentration Contour
- Stream
- Road
- Lake/Pond
- Site

Note:

COC concentrations are reported in micrograms per liter (µg/L).

0 250 500 1,000 Feet

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FIGURE 2-3

GROUNDWATER CONCENTRATION MAP
- PERCHLORATE (MAY 2006)
LHAAP-18/24

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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CHECKED BY: G. Jones 03/16/07
DRAWN BY: B. Lu 08/16/06
OFFICE: Houston, TX

Plot Date: 05/07

N

LHAAP-16
LHAAP-17
LHAAP-18
LHAAP-19
LHAAP-24
LHAAP-54
LHAAP-63
Pistol Range

18WW07 ND
18WW08 0.914
18WW09 ND
18WW17 72.4
C-04A ND
C-04 ND
C-06 0.512
C-03 2.33
C-08 1.45
C-10 3.45
C-01 1.68
C-02 ND
MW-13 ND
MW-16 ND
MW-17 61.4
MW-10 2.12
MW-11 12.8
MW-12 101
MW-14 301120
MW-09 6080
MW-08 6570
MW-07 15400
MW-19 16.8
MW-20 6.09
MW-23 1890
MW-22 3180
MW-21 3090
MW-01 6640
MW-02 47000
MW-03 268
MW-04 419
MW-05 47.7
MW-06 41.2
AWD-1 29000
AWD-2 21700
AWD-3 1070
AWD-4 9.33
13A 39600
13B
13C
13D
13E
13F
13G
12A 11500
12B
12C 129
12D
12E
14A 125 ND
14B 109 315
14C
14D 101 14.1
14E
130 21.1
126 ND
102 ND

ICT-1 20000
ICT-2 -15000
ICT-3 -10000
ICT-4 -20000
ICT-5
ICT-6
ICT-7
ICT-8 49000
ICT-9 5000
ICT-10 -10000
ICT-11 -5000
ICT-12
ICT-13
ICT-14

Legend

- Sump
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Interceptor Collection Trench (ICT)
- Trichloroethene (TCE) Concentration Contour
- Stream
- Road
- Lake/Pond
- Site

Note:

COC concentrations are reported in micrograms per iter (µg/L).

0 250 500 1,000 Feet

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FIGURE 2-4

GROUNDWATER CONCENTRATION MAP
- TCE (MAY 2006)
LHAAP-18/24

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 Site Safety and Health

Activities to implement this pilot study will be performed in accordance with Appendix A (Site Safety and Health Plan) contained in the *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas* (Shaw, 2006). The job specific Activity Hazard Analyses (AHAs) are included in **Appendix C**.

4.0 Quality Control

Activities to implement this pilot study will be performed in accordance with Appendix B (Contractor Quality Control Plan) contained in the *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas* (Shaw, 2006). The contractor quality control plan identifies personnel, procedures, controls, instructions, tests, verifications, documents, forms to be used and types of records to be maintained. The USACE Three-Phase Quality Control process will be used to enforce quality control requirements. The three-phase process includes preparatory inspections, initial inspections, and follow-up inspections. The three phases of inspections will target each definable feature of work during execution of project activities. The definable features of work equate to the activities described in **Sections 2.1** through **2.4** of this optimization plan.

To ensure that the pilot study activities are compatible with the existing installation, certain specifications and drawings developed by Dow 1995 will be followed during the construction phase. The applicable specifications and drawings are listed below and are included in **Appendix A** and **Appendix B** of this work plan.

Section Number	**Description**
02222	Excavation, Trenching, and Backfilling for Utilities
02660	Waterlines
02680	HDPE pipe
02730a	Vertical Extraction Well Drilling and Installation

Drawing Number	**Title**
C-1	Miscellaneous Civil Details

5.0 Schedule

On July 5, 2007, Shaw obtained authorization from the Texas Commission on Environmental Quality to recirculate treated groundwater to ICTs 6 and 9 at LHAAP-18/24. Shaw then conducted infiltration trials in the trenches the week of July 16, 2007. Those trials were successful, and actual conversion of the ICTs to infiltration trenches began the week of September 3, 2002. Other pilot study activities (i.e., deactivation of selected ICTs; conversion of 18WW17 to an extraction well) will be implemented in a phased approach after collection and evaluation of data following each system modification.

6.0 References

Dow Environmental, 1995, *Final General Work Plan, Interim Remedial Action Burning Ground No. 3, Longhorn Army Ammunition Plant, Karnack, Texas*, Rockville, Maryland, December.

Shaw Environmental, Inc. (Shaw), 2006a, *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*, Houston, Texas, January.

Shaw, 2006b, *Memorandum: Sampling Modifications and Remedial System Optimization for LHAAP-18/24, Longhorn Army Ammunition Plant, Karnack, Texas,* Houston, Texas, August.

TCEQ, 2007, Letter from B. Smith to R. Zeiler, Re: Authorization and Registration of Class V Remediation Injection Wells, July 5.

U.S. Army, 1995, *Record of Decision for Early Interim Remedial Action at Burning Ground No. 3, Longhorn Army Ammunition Plant, Karnack, Texas*, May.

Appendix A

Construction Specifications

SECTION 02222

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES - The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 422	(1963; R 1990) Particle Size Analysis of Soils
ASTM D 1556	(1990) Density of Soil in Place by the Sand Cone Method
ASTM D 698	(1978; R 1990) Moisture Density Relations of Soils and Soil Aggregate Mixtures Using a 5.5 lb (2.49 kg) Rammer and 12 in. (305 mm) Drop (Standard Compaction Test)
ASTM D 2167	(1984; R 1990) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2487	(1990) Classification of Soils for Engineering Purposes
ASTM D 2922	(1981; R 1990) Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

1.3 DEFINITIONS

1.3.1 Degree of Compaction - Degree of compaction shall be expressed as a percentage of the maximum density obtained by standard compaction test procedures.

1.3.2 Excavation - Excavation is all material excavated, whether earth or rock, in performance of work.

1.3.3 Fill Material - Fill material is job excavated material or material obtained from an approved off-site source used to backfill trenches, as specified herein.

1.3.4 Waste Material - Waste material is the portion of the materials excavated in performance of the work, whether from permanent construction sites, foundation excavation, or temporary access roads that can not be made or processed to meet the specification requirements for fill material, this material shall be disposed of off-site at an approved licensed disposal

facility.

1.4 QUALITY CONTROL

1.4.1 General - All work covered here under "Quality Control" will be provided by the Subcontractor as a subsidiary obligation of the Subcontract. SECTION 01440 - QUALITY CONTROL, provides requirements for establishing and implementing the Subcontractor's Quality Control Program.

1.4.2 Testing Laboratory - All tests to ensure that fill and backfill materials and their placement comply with specified requirements shall be made by an independent testing laboratory.

1.4.3 Test Procedures - The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest version/revision of each publication shall be apply.

ASTM C 33	Quality and Soundness
ASTM D 422	Particle-Size Analysis of Soils
ASTM D 423	Test for Liquid Limit of Soils
ASTM D 424	Test for Plastic Limit and Plasticity Index of Soils
ASTM D 1556	Density of Soil In-Place by the Sand-Cone Method
ASTM D 698	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using a 5.5 lb (2.49 kg) Rammer and 12 in. (305 mm) Drop
ASTM D 2049	Relative Density of Cohesionless Soil
ASTM D 2167	Density and Unit Weight of Soil In-Place by the Rubber Balloon Method
ASTM D 2216	Laboratory Determination of Moisture Content of Soil
ASTM D 2487	Classification of Soils for Engineering Purposes
ASTM D 2922	Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)

ASTM D 3017 Moisture Content of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)

1.5 SUBMITTALS - Submittals shall be in accordance with SECTION 01300 - SUBMITTALS.

1. Submit certified laboratory test results on all aggregates, borrow materials, and topsoil obtained from off-site sources to be incorporated into the work, as specified herein, before production or delivery materials.

2. Submit quality control field and laboratory data in accordance with SECTION 01440 - QUALITY CONTROL.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Satisfactory Materials - Satisfactory materials shall consist of any material classified by ASTM D 2487 as GW, GP, SW, SP, SM, CL, and ML, or as approved by the Contractor.

2.1.2 Unsatisfactory Materials - Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than 2 inches, and materials classified in ASTM D 2487, as PT, OH, and OL. Unsatisfactory materials also include manmade fills, refuse, or backfills from previous construction.

2.1.3 Cohesionless and Cohesive Materials - Cohesionless materials shall include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

2.1.4 Unyielding Material - Unyielding material shall consist of rock and gravelly soils with stones greater than 4 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.

2.1.5 Unstable Material - Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

2.1.6 Select Granular Material - Select granular material shall consist of wellgraded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the 1 inch sieve. The maximum allowable aggregate size shall be 1 inch, or the maximum size recommended by the pipe manufacturer, whichever is smaller.

2.1.7 Initial Backfill Material - Initial backfill shall consist of select granular material or satisfactory materials free from rocks 1 inch or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than ½ inch in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

2.1.8 Plastic Marking Tape - Plastic marking tape shall be acid and alkali-resistant polyethylene film, six inches wide with minimum thickness of 0.004 inch. Tape shall have a minimum strength of 1750 psi lengthwise and 1500 psi crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities and shall identify the utility being protected. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Should marking tape from existing utilities be damaged during excavation the contractor shall repair or replace to ensure continuity of the marking tape. Tape color shall be as specified in TABLE 1 and shall bear a continuous printed inscription describing the specific utility.

Table 1 - Tape Color

Red:	Electric
Yellow:	Gas, Oil, Dangerous Materials
Orange:	Telephone, Telegraph, Television, Police, and Fire Communications
Blue:	Water Systems
Green:	Sewer Systems

PART 3 - EXECUTION

3.1 EXCAVATION - After topsoil removal has been completed, excavation of every description, regardless of material encountered, within the grading limits of the project shall be performed to the lines and grades indicated. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to 1/2 the depth of the excavation, but in no instance closer than 2 feet. Excavated material not required or not satisfactory for backfill shall be removed from the site shall be disposed of by the Subcontractor. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation. Unauthorized overexcavation shall be backfilled in accordance with paragraph BACKFILLING AND COMPACTION at no additional cost to the Contractor.

3.1.1 Trench Excavation - The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such minimum width as recommended in the manufacturer's installation manual. Where no manufacturer's installation manual is available, trench walls shall be made vertical. Trench walls more than 5 feet high shall be shored, cut back to a stable slope, or

provided with equivalent means of protection for employees who may be exposed to moving ground or cave in. Vertical trench walls more than 5 feet high shall be shored or suitable shielding installed. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width below the top of pipe shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Subcontractor. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Subcontractor without any additional cost to the Contractor.

3.1.1.1 Bottom Preparation - The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing. Stones of 2 inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

3.1.1.2 Removal of Unyielding Material - Where overdepth is not indicated and unyielding material is encountered in the bottom of the trench, such material shall be removed 4 inches below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING AND COMPACTION.

3.1.1.3 Removal of Unstable Material - Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph BACKFILLING AND COMPACTION. When removal of unstable material is required due to the fault or neglect of the Subcontractor in the performance of the work, the resulting material shall be excavated and replaced by the Subcontractor without additional cost to the Contractor.

3.1.1.4 Excavation for Appurtenances - Excavation for manholes, catchbasins, inlets, or similar structures shall be sufficient to leave at least 12 inches clear between the outer structure surfaces and the face of the excavation or support members of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated. Loose disintegrated rock and thin strata shall be removed. Removal of unstable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.1.1.5 Jacking, Boring, and Tunneling - Unless otherwise indicated, excavation shall be by open cut except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contractor's On-site Representative, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections. The Subcontractor shall jack under the roadways, and railways as indicated on the drawings. These borings shall be sleeved for a minimum of five feet on either side of the roadway or railway. Railway sleeves shall have a minimum of 4 feet of cover and roadway sleeves shall have a minimum of 3 feet

of cover.

3.1.1.6 Stockpiles - Stockpiles of satisfactory and unsatisfactory and wasted materials shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Subcontractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Contractor. Locations of stockpiles of satisfactory materials shall be as shown subject to prior approval of the Contractor's On-site Representative.

3.2 BACKFILLING AND COMPACTION - Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified. Each layer shall be compacted to at least 95 percent maximum density for cohesionless soils and 90 percent maximum density for cohesive soils, unless otherwise specified.

3.2.1 Trench Backfill - Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 12 inches above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left uncovered during the pressure test. The trench shall not be backfilled until all specified tests are performed.

3.2.1.1 Replacement of Unyielding Material - Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.

3.2.1.2 Replacement of Unstable Material - Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material placed in layers not exceeding 6 inches loose thickness.

3.2.1.3 Bedding and Initial Backfill - Bedding shall be of the type and thickness recommended by the pipe manufacturer. Initial backfill material shall be placed and compacted with approved tampers to a height of at least one foot above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.2.1.4 Final Backfill - The remainder of the trench, except for special materials for roadways, railroads and airfields, shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:

a. Roadways and Railroads: Pipe under roadways and railways shall be jacked under the roads and shall be blocked in the sleeves and shall have sand floated into the sleeve up to the springline of the pipe.

b. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 12 inch loose thickness, and compacted to 85 percent maximum density for cohesive soils and 90 percent maximum density for cohesionless soils. Water flooding or jetting methods of compaction will be permitted for granular noncohesive backfill material. Water jetting shall not be allowed to penetrate the initial backfill. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

3.2.2 Backfill for Appurtenances - After the manhole, catch-basin, inlet, thrust block, or similar structure has been constructed and the concrete has been allowed to cure for 3 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified for final backfill, and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.3 SPECIAL REQUIREMENTS - Special requirements for both excavation and backfill relating to the specific utilities are as follows:

3.3.1 Water Lines - Trenches shall be of a depth to provide a minimum cover of 24 inches from the existing ground surface, or from the indicated finished grade, whichever is lower, to the top of the pipe. For railroad crossings an additional 24 inches of cover is required and for a road crossing and additional 12 inches of cover is required.

3.3.5 Plastic Marking Tape - Warning tapes shall be installed directly above the pipe, at a depth of 12 inches below finished grade unless otherwise shown. Warning tapes shall be terminated above grade and shall be tightly adhered to the piping a minimum of 6 inches above grade.

3.4 TESTING - Testing shall be the responsibility of the Subcontractor and shall be performed at no additional cost to the Contractor.

3.4.1 Testing Facilities - Tests shall be performed by an approved commercial testing laboratory or may be tested by facilities furnished by the Subcontractor. No work requiring testing will be permitted until the facilities have been inspected and approved by the Contractor's On-site Representative. The first inspection shall be at the expense of the Contractor. Cost incurred for any subsequent inspection required because of failure of the first inspection will be charged to the Subcontractor.

3.4.2 Testing of Backfill Materials - Characteristics of backfill materials shall be determined in accordance with particle size analysis of soils ASTM D 422 and moisture density relations of soils ASTM D 698. A minimum of one particle size analysis and one moisture

density relation test shall be performed on each different type of material used for bedding and backfill.

3.4.3 Field Density Tests - Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. A minimum of one field density test per lift of backfill for every 1000 feet of installation shall be performed. One moisture density relationship shall be determined for every 1500 cubic yards of material used and a minimum of 1 for each type of backfill material used. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using the sand cone method as described in paragraph Calibration of the ASTM publication. ASTM D 2922 results in a wet unit weight of soil and when using this method, ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 3017. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job, on each different type of material encountered, at intervals as directed by the Contractor's On-site Representative. Copies of calibration curves, results of calibration tests, and field and laboratory density tests shall be furnished to the Contractor. Trenches improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified at no additional cost to the Contractor.

END OF SECTION

SECTION 02660

WATERLINES

PART 1 - GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES - The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

ANSI B1.20.1	(1983) Pipe Threads, General Purpose (Inch)
ANSI B16.1	(1975) Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250 and 800
ANSI B16.3	(1985) Malleable-Iron Threaded Fittings, Classes 150 and 300

AMERICAN RAILWAY ENGINEERING ASSOCIATION (AREA)

AREA-03	(1988) Manual for Railway Engineering (Fixed Properties): Chapter 1, Roadway and Ballast

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1988 Rev. a) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM D 1599	(1988) Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing, and Fittings
ASTM D 1784	(1981) Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D 1785	(1988) Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

ASTM D 2241	(1988) Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
ASTM D 2464	(1988) Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D 2466	(1988) Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
ASTM D 2467	(1988) Pocket-Type Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D 2564	(1988) Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings
ASTM D 2855	(1983) Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D 2774	(1972; R 1983) Underground Installation of Thermoplastic Pressure Piping
ASTM F 477	(1976; R 1985) Elastomeric Seals (Gaskets) for Joining Plastic Pipe

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA B300	(1987) Hypochlorites
AWWA B301	(1987) Liquid Chlorine
AWWA C104	(1985) Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
AWWA C105	(1982) Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
AWWA C110	(1987) Ductile-Iron and Gray-Iron Fittings, 3 In. through 48 In., for Water and Other Liquids
AWWA C111	(1985) Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings

AWWA C115	(1983) Flanged Ductile-Iron and Gray-Iron Pipe with Threaded Flanges
AWWA C151	(1986) Ductile-Iron Pipe, Centrifugally Cast and in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
AWWA C153	(1988) Ductile-Iron Compact Fitting, 3 In. through 6 In. for Water and Other Liquids
AWWA C203	(1986) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines--Enamel and Tape-Hot-Applied
AWWA C205	(1985) Cement-Mortar Protective Lining and Coating for Steel Water Pipe--4 In. and Larger--Shop Applied
AWWA C207	(1986) Steel Pipe Flanges for Waterworks Service - Sizes 4 In. through 144 In.
AWWA C208	(1983) Dimensions for Fabricated Steel Water Pipe Fittings
AWWA C500	(1986) Gate Valves for Water and Sewage Systems
AWWA C502	(1985) Dry-Barrel Fire Hydrants
AWWA C503	(1982) Wet-Barrel Fire Hydrants
AWWA C509	(1987) Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewage Systems
AWWA C600	(1987) Installation of Ductile-Iron Water Mains and Their Appurtenances
AWWA C606	(1987) Grooved and Shouldered Joints
AWWA C651	(1986) Disinfecting Water Mains
AWWA C700	(1977) Cold Water Meters--Displacement Type

AWWA C701	(1978) Cold Water Meters--Turbine Type for Customer Service
AWWA C800	(1984) Underground Service Line Valves and Fittings
AWWA C900	(1981; Errata) Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. through 12 In. for Water
AWWA M23	(1980) PVC Pipe -- Design and Installation

DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA)

DIPRA-01	(1986, 2nd Ed.) Thrust Restraint Design for Ductile Iron Pipe

MANUFACTURERS STANDARDIZATION SOCIETY
OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-80	(1987) Bronze Gate, Globe, Angle and Check Valves

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 49	(1975) Hazardous Chemicals Data
NFPA 325M	(1984) Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids
NFPA 704	(1985) Identification of the Fire Hazards of Materials

NATIONAL SANITATION FOUNDATION (NSF)

NSF Std 14	(Oct. 1965, Rev. thru Oct. 1987) Plastic Piping System Components and Related Materials

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC-Paint 21	(1982) White or Colored Silicone Alkyd Paint

SSPC-Paint 25	(1982) Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (without Lead and Chromate Pigments)

1.3 GENERAL - This section covers water supply distribution service lines, and connections to building service at a point approximately 5 feet outside buildings and structures to which service is required.

1.3.1 Piping for Water Service Lines - Piping for water service lines less than three inches in diameter shall be galvanized steel, Polyvinyl Chloride (PVC) plastic, polyethylene, polybutylene, or copper tubing, unless otherwise shown or specified. Piping for water service lines for sizes 3 inches and larger shall be ductile iron, Polyvinyl Chloride (PVC) plastic through 12-inch nominal diameter, filament-wound reinforced or centrifugally cast reinforced, thermosetting resin, thermosetting reinforced plastic mortar pressure pipe, or steel, unless otherwise shown or specified.

1.3.2 Piping for Water Distribution Lines Three Inches or Larger - Piping for water distribution lines three inches or larger shall be ductile iron, Polyvinyl Chloride (PVC) plastic through 12-inch nominal diameter, filament-wound reinforced or centrifugally cast reinforced, thermosetting resin, thermosetting reinforced plastic mortar pressure pipe, or reinforced concrete, unless otherwise shown or specified.

1.3.3 Piping for Water Supply Lines Three Inches or Larger - Piping for water supply lines 3 inches or larger shall be ductile iron, Polyvinyl Chloride (PVC) plastic through 12-inch nominal diameter, filament-wound reinforced or centrifugally cast reinforced, thermosetting resin, thermosetting reinforced plastic mortar pressure pipe, steel, or reinforced concrete, unless otherwise shown or specified.

1.3.4 Plastic Pipe - All thermoplastic piping system components (PVC, polyethylene and polybutylene) intended for transportation of potable water shall comply with NSF Std 14 and shall be legibly marked with their symbol.

1.3.5 Excavation, Trenching, and Backfilling for Water Lines - Excavation, trenching, and backfilling shall be in accordance with the applicable provisions of Section 02222, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS, except as modified herein.

1.4 SUBMITTALS

1.4.1 Installation Instructions - Submit the manufacturer's recommendations for each material or procedure to be utilized. The Subcontractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless

otherwise directed by the Contractor. Submittals shall be in accordance with SECTION 01300 - SUBMITTALS.

1.4.2 Materials and Equipment - Submit manufacturer's descriptive data and technical literature for pipe, fittings, valves, valve boxes, gaskets, prefabricated concrete vaults, backflow preventer, jointing materials and other appurtenances. Submittals shall be in accordance with SECTION 01300 - SUBMITTALS.

1.4.3 Records - Deficiency Items - The Subcontractor will maintain a chronological record throughout the course of the subcontract of all uncorrected deficiency items.

1.4.4 Road and Railroad Jacking Procedures - The Subcontractor shall provide a written description of the procedures that will be used to jack and sleeve the pipe runs under roads and railroads. Specify the type of equipment that will be used.

1.4.5 Hangers and Bridge Crossing Procedures - The Subcontractor shall provide a written description of the procedures that will be used to jack and sleeve the pipe runs under roads and railroads. Specify the type of equipment that will be used.

1.4.6 Hydrostatic Testing and Flushing and Testing - The Subcontractor shall submit descriptions and results of all test procedures and the flushing and decontamination procedures used with all results.

1.5 HANDLING - Pipe and accessories shall be handled so as to insure delivery to the trench in sound, undamaged condition. Use of pinch bars and tongs for aligning or turning pipe will be permitted only on the bare ends of the pipe. The interior of pipe and accessories shall be thoroughly cleaned of foreign matter before being lowered into the trench and shall be kept clean during laying operations by plugging or other approved method. Before installation, the pipe shall be inspected for defects. Material found to be defective before or after laying shall be replaced with sound material without additional expense to the Contractor.

Rubber gaskets that are not to be installed immediately shall be stored in a cool and dark place. Polyvinyl Chloride, pipe and fittings shall be handled and stored in accordance with the manufacturer's recommendations. Storage facilities shall be classified and marked in accordance with NFPA 704, with classification as indicated in NFPA 49- and NFPA 325M.

1.5.1 Coated and Wrapped Steel Pipe - Coated and wrapped steel pipe shall be handled in conformance with AWWA C203.

PART 2 - MATERIALS

2.1 Materials - All pipe and related products shall conform to ANSI/NSF Standard 61. Materials shall conform to the respective specifications and other requirements specified below.

2.1.1 Pipe

2.1.1.1 Ductile-Iron Pipe - Ductile-iron pipe shall conform to AWWA C151, working pressure not less than 150 psi, unless otherwise shown or specified. Pipe shall be cement-mortar lined in accordance with AWWA C104. Linings shall be standard. When installed underground, pipe shall be encased with 6 mil thick polyethylene in accordance with AWWA C105. Flanged ductile iron pipe with threaded flanges shall be in accordance with AWWA C115.

2.1.1.2 Polyvinyl Chloride (PVC) Plastic Pipe - All pipe, couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B.

a. Pipe Less Than 4-Inch Diameter:

(1) Screw-Joint - Pipe to dimensional requirements of ASTM D 1785 Schedule 80, with joints and appurtenance meeting requirements of 150 psi working pressure, 200 psi hydrostatic test pressure, unless otherwise shown or specified. Pipe couplings when used, must be tested as required by ASTM D 2464.

(2) Elastomeric-Gasket Joint - Pipe shall be to dimensional requirements of ASTM D 1785, Schedule 40 with joints meeting the requirements of 150 psi working pressure, 200 psi hydrostatic test pressure, unless otherwise shown or specified, or it may be pipe conforming to requirements of ASTM D 2241, elastomeric joint, with the following applications:

SDR	Maximum Working Pressure	Minimum Hydrostatic Pressure
26	100	133
21	120	160
17	150	200
13.5	200	266

In addition to the above requirements, the pipe, couplings and fittings must be hydrostatically tested as required by AWWA C900, and must be to iron pipe (I.P.S.) or cast iron outside diameter (CIOD) size dimensions.

(3) Solvent Cement Joint - Pipe to dimensional requirements of ASTM D 1785 or ASTM D 2241 with joints meeting the requirements of 150 psi working pressure and 200 psi hydrostatic test pressure.

b. Pipe 4-Inch through 12-Inch Diameter - Pipe, couplings and fittings 4-inch through 12-inch diameter shall conform to the requirements of AWWA C900, Class 150, SDR 26, CIOD pipe dimensions only, elastomeric-gasket joint only, unless otherwise shown or specified.

2.1.1.3 Galvanized-Steel Pipe, Less Than Three Inches - ASTM A 53, standard weight.

2.1.1.4 Protective Materials for Steel Pipe - Protective materials for steel pipe, except as otherwise specified, shall be mechanically applied in a factory or plant especially equipped for the purpose. The materials shall, unless otherwise indicated on the drawings, consist of one of the following the following for the indicated pipe material and size:

a. Steel pipe and fittings less than three inches in diameter shall be thoroughly cleaned of foreign material by wire brushing and solvent cleaning, and then given one coat of coal-tar primer and two coats of coal-tar enamel conforming to AWWA C203; threaded ends of pipe and fittings shall be adequately protected prior to coating.

b. Steel Pipe Three Inches or Larger, Not Galvanized:

(1) Cement-mortar coating and lining shall conform to and shall be applied in conformity with AWWA C205. Cement-mortar coating and lining shall not be used for pipe less than 4 inches in diameter.

(2) Coal-tar enamel lining, coating and wrapping shall conform to AWWA C203 for materials, method of application, tests and handling. Pipe shall be coated with coal-tar primer followed by a hot coat of coal-tar enamel, and a wrapper of kraft paper or a coat of water-resistant whitewash.

(3) Cement-mortar lining, in lieu of coal-tar enamel lining, may be used with coal-tar enamel coating and wrapping. Cement-mortar lining shall conform to and shall be applied in conformity with AWWA C205.

2.1.2 Joints

2.1.2.1 Ductile-Iron Pipe

a. Mechanical joints shall be of the stuffing box type and shall conform to AWWA C111.

b. Push-on joints shall conform to AWWA C111.

c. Rubber gaskets and lubricant shall conform to the applicable requirements of AWWA C111.

2.1.2.2 Polyvinyl Chloride Pipe - Joints, fittings, and couplings shall be as specified for PVC pipe and comply with AWWA M23, AWWA C900. Joints connecting pipe of differing materials shall be made in accordance with the manufacturer's recommendation as approved by the Contractor.

2.1.2.3 Insulating Joints - Insulating joints shall be installed between non-threaded ferrous and nonferrous metallic pipe, fittings and valves. Insulating joints shall consist of a sandwich-type flange insulating gasket of the dielectric type, insulating washers, and insulating sleeves for flange bolts. Insulating gaskets shall be full faced with outside diameter equal to the flange outside diameter. Bolt insulating sleeves shall be full length. Units shall be of a shape to prevent metal-to-metal contact of dissimilar metallic piping elements.

2.1.2.4 Connections - Connections between fittings, valves or hydrants shall be made with jointing materials conforming to AWWA C603.

2.1.3 Fittings and Specials

2.1.3.1 Ductile-Iron Pipe - Fittings and specials shall be suitable for 150 psi pressure rating, unless otherwise specified. Fittings and specials for mechanical joint pipe shall conform to AWWA C110. Fittings and specials for use with push-on joint pipe shall conform to AWWA C110 and AWWA C111. Fittings and specials for grooved and shouldered end pipe shall conform to AWWA C606. Fittings and specials shall be cement-mortar lined in accordance with AWWA C104. Linings shall be standard thickness. Ductile-iron compact fittings shall be accordance with AWWA C153.

2.1.3.2 Polyvinyl Chloride (PVC) Pipe

a. For pipe less than 4-inch diameter, fittings for threaded pipe shall conform to the requirements of ASTM D 2464, threaded to conform to the requirements of ANSI B1.20.1 for use with Schedule 80 pipe and fittings for solvent cement jointing shall conform to ASTM D 2466 or ASTM D 2467 fittings for elastomeric-gasket joint pipe shall be ductile iron conforming to AWWA C110 or AWWA C111.

b. For pipe 4-inch through 12-inch diameter, fittings and specials shall be cast iron, bell end in accordance with AWWA C110, 150 psi pressure rating unless otherwise shown or specified, except that profile of bell may have special dimensions as required by the pipe manufacturer; or may be fittings and specials of the same material as the pipe with elastomeric gaskets, all in conformance with the requirements of AWWA C900. Cast-iron fittings and specials shall be cement-mortar lined (standard thickness) in accordance with AWWA C104. Fittings shall be for bell and spigot pipe or plain end pipe, or as applicable.

2.1.3.3 Dielectric Fittings - Dielectric fittings shall be installed between threaded ferrous and nonferrous metallic pipe, fittings and valves, except where corporation stops join mains. Dielectric fittings shall prevent metal-to-metal contact of dissimilar metallic piping elements and shall be suitable for the required working pressure.

2.1.4 Couplings

2.1.4.1 Mechanical Couplings - Mechanical couplings for steel pipe shall be the sleeve type, or when approved, the split-sleeve type and shall provide a tight flexible joint under all reasonable conditions, such as pipe movements caused by expansion, contraction, slight settling or shifting in the ground, minor variations in trench gradients, and traffic vibrations. Couplings shall be of strength not less than the adjoining pipeline.

a. Sleeve-type couplings shall be used for joining plain end pipe sections. The couplings shall consist of one steel middle ring, two steel followers, two gaskets, and the necessary steel bolts and nuts to compress the gaskets.

b. Split-sleeve type couplings may be used in aboveground installations when approved in special situations and shall consist of gaskets and a housing in two or more sections with the necessary bolts and nuts.

2.1.5 Valves

2.1.5.1 Check Valves - Check valves shall be designed for a minimum working pressure of 150 psi or as indicated. Valves shall have a clear waterway equal to the full nominal diameter of the valve. Valves shall open to permit flow when inlet pressure is greater than the discharge pressure, and shall close tightly to prevent return flow when discharge pressure exceeds inlet pressure. The size of the valve, working pressure, manufacturer's name, initials, or trademark shall be cast on the body of each valve.

a. Valves 2 inches and smaller shall be all bronze designed for screwed fittings, and shall conform to -MSS SP-80-, Class 150, Types 3 and 4 as suitable for the application.

b. Valves larger than 2 inches shall be iron body, bronze mounted, shall have flanged ends, and shall be the non-slam type. Flanges shall be the 125-pound type conforming to ANSI B16.1.

2.1.5.2 Gate Valves - Gate valves shall be designed for a working pressure of not less than 150 psi. Valve connections shall be as required for the piping in which they are installed. Valves shall have a clear waterway equal to the full nominal diameter of the valve, and shall be opened by turning counterclockwise. The operating nut or wheel shall have an arrow, cast in the metal, indicating the direction of opening.

a. Valves smaller than three inches shall be all bronze and shall conform to MSS SP-80, Type 1, Class 150.

b. Valves three inches and larger shall be iron body, bronze mounted, and shall conform to AWWA C500. Flanges shall not be buried. An approved pit shall be provided for all flanged connections.

c. Resilient Seated Gate Valves - For valves 3 to 12 inches in size, resilient-seated gate valves shall conform to AWWA C509.

2.1.5.3 Pressure Reducing Valves - Pressure reducing valves shall maintain a constant downstream pressure regardless of fluctuations in demand. Valves shall be suitable for 150 psi operating pressure on the inlet side, with outlet pressure set for 70 psi. The valves shall be of the hydraulically-operated, pilot controlled, globe or angle type, and may be actuated either by diaphragm or piston. The pilot control shall be the diaphragm-operated, adjustable, spring-loaded type, designed to permit flow when controlling pressure exceeds the spring setting. Ends shall be threaded flanged. Valve bodies shall be bronze, cast iron or cast steel with bronze trim. Valve stem shall be stainless steel. Valve discs and diaphragms shall be synthetic rubber. Valve seats shall be bronze. Pilot controls shall be bronze with stainless steel working parts.

2.1.5.4 Vacuum and Air Relief Valves - Vacuum and air relief valves shall be of the size shown and shall be of a type that will release air and prevent the formation of a vacuum. The valves shall automatically release air when the lines are being filled with water and shall admit air into the line when water is being withdrawn in excess of the inflow. Valves shall be iron body with bronze trim and stainless steel float. Vacuum and Relief valves shall be installed at high and low spots in the line as recommended by the valve manufacturer.

2.1.5.5 Shut-off Valves - Shut-off valves shall be designed for a working pressure of not less than 150 psi. Valve connections shall be as required for the piping in which they are installed. Valves shall have a clear waterway equal to the full nominal diameter of the valve,

and shall be opened by turning counterclockwise. The operating nut or wheel shall have an arrow, cast in the metal, indicating the direction of opening.

a. Valves smaller than three inches shall be all bronze and shall conform to MSS SP-80, Type 1, Class 150.

b. Valves three inches and larger shall be iron body, bronze mounted, and shall conform to AWWA C500. Flanges shall not be buried. An approved pit shall be provided for all flanged connections.

2.1.5.6 Indicator Post for Valves - Each valve shown on the drawings with the designation "P.I.V." shall be equipped with indicator post conforming to the requirements of NFPA 24. Operation shall be by wrench. One wrench shall be provided for valve operation.

2.1.6 Valve Boxes - Valve boxes shall be cast iron or concrete, except that concrete boxes may be installed only in locations not subjected to vehicular traffic. Cast-iron boxes shall be extension type with slide-type adjustment and with flared base. The minimum thickness of metal shall be 3/16 inch. Concrete boxes shall be the standard product of a manufacturer of precast concrete equipment. The word "WATER" shall be cast in the cover. The boxes shall be of such length as will be adapted, without full extension, to the depth of cover required over the pipe at the valve location.

2.1.7 Valve Pits - Valve pits shall be constructed at locations indicated or as required above and in accordance with the details shown. Concrete shall have compressive strength of 3000 psi in accordance with the requirements of the American Concrete Institute.

2.1.8 Back Flow Preventers - Back flow preventers shall be installed at locations as shown on the plans. Preventer assembly shall be of brass containing two check valves, ball valves, full-port, and test cocks. It shall provide cross connection control subject to back pressure and shall be capable of operating under maximum pressure of 175 psi and maximum temperature of 140°F. Back flow preventer type valves shall conform to the performance requirements of AWWA C504.

2.1.9 Miscellaneous Items

2.1.9.1 Service Clamps - Service clamps shall have a pressure rating not less than that of the pipe to be connected and shall be either the single or double flattened strap type. Clamps shall have a galvanized malleable-iron body with cadmium plated straps and nuts. Clamps shall have a rubber gasket cemented to the body.

2.1.9.2 Corporation Stops - Corporation stops shall have standard corporation stop thread conforming to AWWA C800 on the inlet end, with flanged joints, compression pattern flared tube couplings, or wiped joints for connections to goosenecks.

2.1.9.3 Goosenecks - Copper tubing for gooseneck connections shall conform to the applicable requirements of ASTM B 88, Type K, annealed. Length of cable requirement connections be in accordance with standard practice.

2.1.9.4 Service Stops - Service stops shall be water-works inverted-ground-key type, oval or round flow way, tee handle, without drain. Pipe connections shall be suitable for the type of service pipe used. All parts shall be of bronze with female iron-pipe-size connections or compression-pattern flared tube couplings, and shall be designed for a hydrostatic test pressure not less than 200 psi.

2.1.9.5 Tapping Sleeves - Tapping sleeves of the sizes indicated for connection to existing main shall be the cast gray, ductile, or malleable-iron, split-sleeve type with flanged or grooved outlet, and with bolts, follower rings and gaskets on each end of the sleeve. Construction shall be suitable for a maximum working pressure of 150 psi. Bolts shall have square heads and hexagonal nuts. Longitudinal gaskets and mechanical joints with gaskets shall be as recommended by the manufacturer of the sleeve. When using grooved mechanical tee, it shall consist of an upper housing with full locating collar for rigid positioning which engages a machine-cut hole in pipe, encasing an elastomeric gasket which conforms to the pipe outside diameter around the hole and a lower housing with positioning lugs, secured together during assembly by nuts and bolts as specified, pretorqued to 50 foot-pound. Tapping sleeves shall of a type capable of performing a wet tap in the size and type of pipe indicated on the drawings.

2.1.9.6 Service Boxes - Service boxes shall be cast iron or concrete. Extension service boxes of the required length and having either screw or slide-type adjustment shall be installed at all service box locations. The boxes shall have housings of sufficient size to completely cover the service stop and shall be complete with identifying covers.

2.1.9.7 Disinfection - Chlorinating materials shall conform to the following:

Chlorine, Liquid: AWWA B301

Hypochlorite, Calcium and Sodium: AWWA B300

2.1.9.8 Meters - Meters shall be of the displacement type conforming to AWWA C700 or turbine type conforming to AWWA C701. Registers may be round or straight reading type. Connection to the water line shall be as required for the particular installation. All meters used for the same system shall be of one type and manufacturer.

2.1.9.9Meter Boxes - Meter boxes shall be of cast iron or concrete of sufficient size to completely enclose the meter and shut-off valve or service stop. Box height shall extend from invert of the meter to final grade at the meter location. Cover shall be cast iron with the word "WATER" cast in it.

2.1.9.10 Pipe Insulation and Cover - The section of pipe suspended from the bridge to make river and bayou crossing shall be insulated against freezing with 1 inch heavy density pre-formed fiberglass insulation with an aluminum jacket approved for exterior service. The jacket shall be a heavy weight jacket with minimum thickness of 0.016 inch with 3/16 inch corrugations and shall equipped with a moisture barrier.

2.1.9.11 Freeze-proof Yard Hydrant - Freeze-proof yard hydrants shall be installed at locations shown on the plans, with adequate concrete support. The hydrant shall be designed to extend two feet above grade and will be fitted with appropriate hose assemblies. Signs shall be placed adjacent to the hydrants advising that the water is dispensed by the hydrant is "Non-potable Water". Sign lettering shall be a minimum of 3 inches high. Hydrants shall be installed on water line with 3/4" FPT and 1" MPT inlets. Hydrants will have a lever for flow control, shut-off valve, 3/4" brass garden hose thread outlets, and pipe column. The hydrant shall be installed so that the partial pipe column and the shut-off are below the frost line for maintaining water flow during the winter. Freeze-proof yard hydrant shall be McMaster-Carr Model Number 4728K22 or approved equal.

2.1.9.12 Expansion Control Joints- The aboveground lengths of ductile iron pipe traversing bridges and other structures shall be equipped with flexible expansion/contraction joints. One expansion joints shall be installed on each straight run of pipe to minimize the potential for pipe damage due to expansion and contraction. Expansion joint shall be a minimum of 150 lb. and shall have ASA companion flanged connectors, or an approved equivalent. Slip on expansion joints shall not be allowed, without prior approval. The expansion joints shall be supported with pipe hangers on both sides of the joint.

PART 3 - EXECUTION

3.1 INSTALLATION

3.1.1 Cutting of Pipe - Cutting of pipe shall be done in a neat and workmanlike manner without damage to the pipe. Unless otherwise recommended by the manufacturer and authorized by the Contractor, cutting shall be done with an approved type mechanical cutter. Wheel cutter shall be used when practicable and all pipe shall be cut square, reamed to full diameter and all burrs shall be removed. Squeeze type mechanical cutters shall not be used for ductile iron.

3.1.2 Adjacent Facilities

3.1.2.1 Sewer Lines - Where the location of the water pipe is not clearly defined in dimensions on the drawings, the water pipe shall not be laid closer horizontally than 9 feet in all directions from a sewer line except where the bottom of the water pipe will be at least 24 inches above the top of the sewer pipe, in which case the water pipe shall not be laid closer horizontally than 4 feet from the sewer. Where water lines cross under gravity-flow sewer lines, the sewer pipe for a distance of at least 9 feet each side of the crossing shall be fully encased in concrete or shall be made of pressure pipe with no joint located within 4 feet horizontally of the crossing. Water lines shall in all cases cross above sewage force mains or inverted siphons and shall be not less than two feet above the sewer main. Joints in the sewer main, closer horizontally than 4 feet to the crossing, shall be encased in concrete.

3.1.2.2Water Lines - Water lines shall not be laid in the same trench with sewer lines, gas lines, fuel lines, or electric wiring.

3.1.2.3Nonferrous Metallic Pipe - Where nonferrous metallic pipe, e.g., copper tubing, crosses any ferrous piping material, a minimum vertical separation of 12 inches must be maintained between pipes.

3.1.2.4Roads & Railroads - Water pipe shall be encased in a sleeve of rigid conduit extending a minimum of 5 feet on either side of the road or railroad. Sleeves under railroads shall be in accordance with the railroad company requirements the criteria contained in AREA-03, Part 5 and shall have a minimum cover of 4 feet. Where sleeves are required, in all other cases, the pipe sleeve shall be of rigid construction and shall have a minimum of 3 feet of cover. The sleeves under A minimum clearance of at least two inches between the inner wall of the sleeve and the maximum outside diameter of the sleeved pipe and joints shall be provided. Sand bedding shall be provided for the water pipe through the sleeve. Sleeves of ferrous material shall be provided with corrosion protection as required for the conditions encountered at the site of installation.

3.1.2.5Bridges - Pipe runs traversing bridges shall be suspended from the structure using non-binding roller (Harvard) type support system or an approved equivalent. Above grade piping shall be ductile iron or an approved equivalent. Should different piping material be used for below grade work the transitions shall be made a minimum of one full pipe length before rising above grade and one full pipe length after returning to subsurface elevation. The aboveground section shall be insulated and jacketed with aluminum and shall be protected at the hanger by a minimum of 12 inches of formed steel hanger protector. Hanger spacing shall as a minimum will comply with the requirements of the BOCA Plumbing Code and the pipe manufacturers recommendations.

3.1.2.6Structures - Where water pipe is required to be installed within 3 feet of existing structures, the water pipe shall be sleeved as required for roads, railroads, and airfields. Care shall be exercised and proper precautions taken during installation of the water pipe and sleeve to

assure that there will be no damage to the structures and no settlement or movement of foundations or footings. Any damage occurring as a result of the Subcontractor's operation shall be corrected and all costs connected therewith shall be borne by the Subcontractor.

3.1.3 Joint Deflection

3.1.3.1 Ductile-Iron Pipe - The maximum allowable deflection will be as given in AWWA C600. If the alignment requires deflection in excess of the above limitations, special bends or a sufficient number of shorter lengths of pipe shall be furnished to provide angular deflections within the limit set forth.

3.1.3.2 Flexible Plastic Pipe. Maximum offset in alignment between adjacent pipe joints shall be as recommended by the manufacturer and approved by the Contractor, but in no case shall it exceed 5°.

3.1.3.3 Steel Pipe - For pipe with bell-and-spigot rubber-gasket joints, maximum allowable deflections from a straight line or grade, as required by vertical curves, horizontal curves, or offsets will be 5° unless a lesser amount is recommended by the manufacturer. Short-radius curves and closures shall be formed by short lengths of pipe or fabricated specials specified hereinbefore.

3.1.4 Placing and Laying - Pipe and accessories shall be carefully lowered into the trench by means of derrick, ropes, belt slings, or other authorized equipment. Under no circumstances shall any of the water-line materials be dropped or dumped into the trench. Care shall be taken to avoid abrasion of the pipe coating. Except where necessary in making connections with other lines or as authorized by the Contractor, pipe shall be laid with the bells facing in the direction of laying. The full length of each section of pipe shall rest solidly upon the pipe bed, with recesses excavated to accommodate bells, couplings, and joints. Pipe that has the grade or joint disturbed after laying shall be taken up and relaid. Pipe shall not be laid in water or when trench conditions are unsuitable for the work. Water shall be kept out of the trench until joining is completed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no trench water, earth, or other substance will enter the pipes or fittings. Where any part of the coating or lining is damaged, the repair shall be made by the Subcontractor at his expense in a satisfactory manner. Pipe ends left for future connections shall be valved, plugged, or capped, and anchored, as shown.

3.1.4.1 Connections - Connections between new work and existing mains shall be made by using fittings and procedures suitable to the actual conditions and material of construction identified in the field. Standard methods shall be used for making connections to various types of pipe, either under pressure (wet tap) or in dewatered condition (dry tap). Where made under pressure, these connections shall be installed as approved by the Contractor. Where possible connections shall be made without discontinuing service in existing lines.

3.1.4.2 Penetrations - Pipe passing through walls of valve pits and structures shall be provided with ductile-iron or Schedule 40 steel wall sleeves. Annular space between walls and sleeves shall be filled with rich cement mortar. Annular space between pipe and sleeves shall be filled with mastic or caulk and shall be watertight.

3.1.4.3 Flanged Pipe - Flanged pipe shall only be installed above ground or with the flanges in valve pits.

3.1.5 Jointing

3.1.5.1 Ductile-Iron Pipe - Mechanical and push-on type joints shall be installed in accordance with AWWA C600 for buried lines or AWWA C606 for grooved and shouldered pipe above ground or in pits. Aboveground ductile iron pipe shall be equipped with restrained joints.

3.1.5.2 Polyvinyl Chloride (PVC) Plastic Pipe

a. Pipe Less Than 4-Inch Diameter - Threaded joints shall be made by wrapping the male threads with approved thread tape or applying an approved lubricant, then threading the joining members together. The joint shall be tightened using strap wrenches to prevent damage to the pipe and/or fitting. To avoid excessive torque, joints shall be tightened no more than one thread past hand-tight. Preformed rubber-ring gaskets for elastomeric-gasket joints shall be made in accordance with requirements of ASTM F 477 and as required herein. All pipe ends for push-on joints shall be beveled to facilitate assembly and marked to indicate when the pipe is fully seated. The gasket shall be prelubricated to prevent displacement. Care shall be exercised to assure the gasket and ring groove in the bell or coupling match. The manufacturer of the pipe or fitting must also supply the elastomeric gasket. Couplings shall be provided with stops or centering rings to assure that the coupling is centered on the joint. Solvent cement joints shall utilize sockets conforming to the requirements of ASTM D 2467. The solvent cement used shall meet the requirements of ASTM D 2564; the joint assembly shall be made in accordance with ASTM D 2855 and the manufacturer's specific recommendations.

b. Pipe 4-Inch through 12-Inch Diameter - Joints shall be elastomeric-gasket as specified in AWWA C900. Jointing procedure shall be as specified for pipe less than 4-inch diameter with configuration utilizing elastomeric ring gasket.

3.1.5.3 Steel Pipe, Not Galvanized

a. Mechanical Couplings - Mechanical couplings shall be installed in accordance with the recommendations of the couplings manufacturer.

b. Rubber Gaskets - Rubber gaskets shall be handled, lubricated where necessary, and installed in accordance with the recommendations of the pipe manufacturer.

3.1.5.4 Galvanized-Steel Pipe - Screw joints shall be made tight with a stiff mixture of graphite and oil, inert filler and oil, or with an approved graphite compound, applied with a brush to the male threads only. Compounds shall not contain lead.

3.1.5.6 Bonded Joints - Bonded joints shall be installed in accordance with details specified for joints under paragraph "MATERIALS."

3.1.5.7 Insulating Joints Dielectric Fittings - Insulating joints Dielectric fittings shall be installed in accordance with details specified for joints under paragraph "MATERIALS." Dielectric unions shall be encapsulated in a field-poured coal-tar covering, with at least 1/8-inch thickness of coal tar over all fitting surfaces.

3.1.5.7 Connections - Connections between different types of pipe and accessories shall be made with transition fittings approved by the Contractor.

3.1.6 Service Lines - Service lines shall include the pipeline connecting building piping to water distribution lines to the connections with the building service at a point approximately five feet outside the building where such building service exists. Where building services are not installed, the Subcontractor shall terminate the service lines approximately five feet from the site of the proposed building at a point designated by the Contractor. Such service lines shall be closed with plugs or caps. All service stops and valves shall be provided with extension service boxes of the lengths required. Service lines shall be constructed in accordance with the following requirements:

3.1.6.1 Service Lines 2 Inches and Smaller - Service lines two inches and smaller shall be connected to the main by a directly-tapped corporation stop or by a service clamp. A corporation stop and a copper gooseneck shall be provided with either type of connection. Maximum sizes for directly-tapped corporation stops and for outlets with service clamps shall be as in Table I. Where two or more gooseneck connections to the main are required for an individual service, such connections shall be made with standard branch connections. The total clear area of the branches shall be at least equal to the clear area of the service which they are to supply.

a. Connections to Mains - Heavy couplings may be utilized for connecting service lines smaller than two inches to new water mains. Couplings shall have factory threaded outlets. Threads may be either iron-pipe thread or AWWA type. A corporation stop and a gooseneck shall be provided with the connection. Maximum sizes for outlets shall be as follows:

Pipe Size Inches	Outlet Sizes Inches
3 and 4	3/4, 1, 1-1/4
6 and larger	3/4, 1, 1-1/4, 1-1/2

(1) Service lines 1-1/2 inches and smaller shall have a service stop.

(2) Service lines 2 inches in size shall have a gate valve.

(3) Service lines larger than 2 inches shall be connected to the main by a tapped saddle, tapping sleeve and valve, service clamp or reducing tee, depending on the main diameter and the service line diameter, and shall have a gate valve. Three-inch and larger lines may use rubber-seated butterfly valves as specified above, or gate valves.

3.1.7 Field Coating and Lining of Pipe

3.1.7.1 Steel Pipe 3 Inches and Larger, Not Galvanized

a. Cement-Mortar Coating and Lining - Field jointing shall conform to Appendix, AWWA C205. Any defective area found in the coating and/or lining of pipe and joints shall be removed to the pipe wall, and the area shall be repaired in a manner such that the repaired areas will be at least equal in thickness to the minimum coating and/or lining required for the pipe. Steel reinforcement in the coating shall be repaired or replaced as necessary to assure a complete and soundly reinforced coating.

b. Coal-Tar Enamel Coating, Lining and Wrapping - Field jointing shall conform to AWWA C203. The applied materials shall be tested by means of a spark-type electrical inspection device in accordance with the requirements of AWWA C203. Any flaws or holidays found in the coating and/or lining of pipe and joints shall be repaired by patching or other approved means such that the repaired areas will be at least equal in thickness to the minimum coating and/or lining required for the pipe.

3.1.7.2 Galvanized-Steel Pipe - Field joints shall be given one coat of coal-tar primer and two coats of coal-tar enamel conforming to AWWA C203. The tests of the coating shall conform to -AWWA C203-, and any flaws or holidays found in the coating of pipe and joints shall be repaired by patching or other approved means such that the repaired areas will be at least equal in thickness to the minimum coating required for the pipe.

3.1.8 Setting of Valves and Valve Boxes

3.1.8.1 Valves and Valve Boxes - Valves and valve boxes shall be installed where shown or specified, and shall be set plumb. Valve boxes shall be centered on the valves. Boxes shall be installed over each outside gate valve unless otherwise shown. Where feasible, valves shall be located outside the area of roads and streets. Earth fill shall be carefully tamped around each valve box to a distance of 4 feet on all sides of the box, or the undisturbed trench face if less than 4 feet.

3.1.8.3 Valves - Valves after delivery shall be drained to prevent freezing and shall have the interiors cleaned of all foreign matter before installation. Stuffing boxes shall be tightened and the hydrant or valve shall be fully opened and fully closed to insure that all parts are in working condition.

3.1.8.4 Service Boxes - Where water lines are located below paved streets having curbs, the boxes shall be installed directly back of the curbs. Where no curbing exists, service boxes shall be installed in accessible locations, beyond the limits of street surfacing, walks and driveways.

3.1.8.5 Valves - Check valves, Pressure reducing valves, Vacuum and air relief valves shall be installed in valve pits as shown.

3.1.9 Tapped Tees and Crosses - Tapped tees and crosses for future connections shall be installed where shown.

3.1.10 Thrust Restraint plugs, caps, tees and bends deflecting 11-1/4 degrees or more, either vertically or horizontally, on waterlines 4 inches in diameter or larger, shall be provided with thrust blocking, or metal tie rods and clamps or lugs, as directed. Valves shall be securely anchored or shall be provided with thrust blocking to prevent movement. Thrust restraints shall be either thrust blocks or, for ductile-iron pipes, restrained joints.

3.1.10.1 Thrust Blocks - Thrust blocking shall be concrete of a mix not leaner than: 1 cement, 2-1/2 sand, 5 gravel; and having a compressive strength of not less than 2,000 psi after 28 days. Blocking shall be placed between solid undisturbed earth and the fitting to be anchored. Unless otherwise indicated or directed, the base and thrust bearing sides of thrust

blocks shall be poured directly against undisturbed earth. The sides of thrust blocks not subject to thrust may be poured against forms. The area of bearing shall be as shown or as directed. Blocking shall be placed so that the fitting joints will be accessible for repair. Steel rods and clamps shall be protected by galvanizing or by coating with bituminous paint.

3.1.10.2 Restrained Joints - For ductile-iron pipe, restrained joints shall be designed by the Subcontractor or the pipe manufacturer in accordance with DIPRA-01.

3.2 HYDROSTATIC TESTS - Where any section of a water line is provided with concrete thrust blocking for fitting or hydrants, the hydrostatic tests shall not be made until at least five days after installation of the concrete thrust blocking, unless otherwise approved.

3.2.1 Pressure Test - After the pipe is laid, the joints completed, hydrants permanently installed, and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valved section of piping shall, unless otherwise specified, be subjected for 1 hour to a hydrostatic pressure test of 200 psi. Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants, and valves shall be carefully examined during the partially open trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves, discovered in consequence of this pressure test shall be removed and replaced with sound material, and the test shall be repeated until the test results are satisfactory. The requirement for the joints to remain exposed for the hydrostatic tests may be waived by the Contractor when one or more of the following conditions is encountered:

a. Wet or unstable soil conditions in the trench.

b. Compliance would require maintaining barricades and walkways around and across an open trench in a heavily used area that would require continuous surveillance to assure safe conditions.

c. Maintaining the trench in an open condition would delay completion of the contract.

d. An unforeseeable cause which would result in excess cost.

The Subcontractor may request the waiver, setting forth in writing the reasons for the request and stating the alternative procedure proposed to comply with the required hydrostatic tests. Backfill placed prior to the tests shall be placed in accordance with the requirements of Section 02222 - EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS.

3.2.2 Leakage Test - Leakage test shall be conducted after the pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours, and during the test the water line shall be subjected to 200 psi pressure. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula:

L = 0.0001351ND(P raised to 1/2 power) for pipe materials

In which L equals the allowable leakage in gallons per hour; N is the number of joints in the length of pipeline tested; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in psi gauge. Should any test of pipe disclose leakage greater than that specified in the foregoing table, the defective joints shall be located and repaired until the leakage is within the specified allowance, without additional cost to the Contractor.

3.2.3 Time for Making Test - Except for joint material setting or where concrete reaction backing necessitates a 3-day delay, pipelines jointed with rubber gaskets, mechanical or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected, and tested for leakage at any time after partial completion of backfill.

3.2.4 Concurrent Hydrostatic Tests - The Subcontractor may elect to conduct the hydrostatic tests using either or both of the following procedures. Regardless of the sequence of tests employed, the results of pressure tests, leakage tests, and disinfection shall be satisfactory as specified. All replacement, repair or retesting required shall be accomplished by the Subcontractor at no additional cost to the Contractor.

a. Pressure test and leakage test may be conducted concurrently.

b. Hydrostatic tests and disinfection may be conducted concurrently, using the water treated for disinfection to accomplish the hydrostatic tests. If water is lost when treated for disinfection and air is admitted to the unit being tested, or if any repair procedure results in contamination of the unit, disinfection shall be re-accomplished.

3.3 DISINFECTION - Before acceptance of potable water operation, each unit of completed water-line shall be disinfected as prescribed by AWWA C651 as specified herein. After pressure tests have been made, the unit to be disinfected shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. The chlorinating material shall be either liquid chlorine, calcium hypochlorite, or sodium hypochlorite, conforming to paragraph "MATERIALS." The chlorinating material shall

provide a dosage of not less than 50 ppm and shall be introduced into the water lines in an approved manner.

Polyvinyl Chloride (PVC) pipe lines shall be chlorinated using only the above specified chlorinating material in solution. In no case will the agent be introduced into the line in a dry solid state. The treated water shall be retained in the pipe long enough to destroy all non-spore-forming bacteria. Except where a shorter period is approved, the retention time shall be at least 24 hours and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. All valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each valve on the line shall be opened and closed several times. From several points in the unit, the Subcontractor shall take the indicated number of samples of water in proper sterilized containers for bacterial examination. Water samples will be collected and submitted to a laboratory approved by the State of Texas Department of Health. A minimum of 1 sample per 1,000 linear feet of installed pipe shall be collected and submitted for bacteriological analysis. The system will not be placed into service until the samples indicate that the facility is free from microbial contamination. The disinfection shall be repeated until tests indicate the absence of pollution for at least two full days. The facility will not be accepted until satisfactory bacteriological results have been obtained.

3.4 CLEANUP - Upon completion of the installation of water lines, and appurtenances, all debris and surplus materials resulting from the work shall be removed.

END OF SECTION

SECTION 02680
HDPE PIPE

High Density Polyethylene (HDPE)/High Density Polyethylene (HDPE) Double Containment Piping System

PART 1: GENERAL

1.01 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required to install HDPE, PE 3408 (Primary/HDPE, PE 3408 (Secondary Containment) double containment piping, valves and appurtenances for complete systems as shown on the drawings and as specified herein, SDR rating as specified.

1.02 SUBMITTALS

Shop drawings shall be submitted to the engineer, and shall include details of pipe fabrications (Including supporting devices, method of attachment, spacing, etc), pre-fabricated double containment fitting dimensions, starting and terminating connections, high point vent and low point drain details for the secondary containment, valves and accessories. Submit joint details, methods and location of supports, and all other pertinent technical data for all piping to be furnished.

1.03 QUALIFICATIONS

The double containment piping system shall be a pre-fabricated system as manufactured by Guardian Systems, Div. of NIBCO Inc or approved equal. The system shall be designed, fabricated, installed and tested in accordance with manufacturer's recommendations and as specified herein and shall be suitable for the intended service. Manufacturer shall have a minimum of five (5) years experience. Contractor shall not design and or fabricate the piping system.

PART 2: PRODUCTS

2.01 GENERAL

Each contained piping system shall consist of HDPE primary piping system supported within a HDPE secondary containment housing. Each system shall be provided with suitable drains and vents and be designed to provide complete drainage of both the primary and secondary containment piping. Interstitial supporting devices shall be made from Polypropylene and shall be provided within the secondary containment pipe, they shall be designed to allow continuous drainage in the annular space to the low point drains. Drain fittings shall be designed to allow a valve attachment to be made so that the secondary containment compartment may be readily drained and manually checked for leaks.

2.02 MATERIALS

2.02.1 The primary pipe and fittings shall be manufactured from HDPE materials as listed by PE 3408.

2.02. The secondary containment pipe and fittings shall be manufactured from HDPE materials, as listed by PE 3408.

2.02.3 All listed primary and containment pipe shall be HDPE materials, and shall have SDR series wall thickness as specified. All listed pressure fittings shall be SDR rated as specified and manufactured according to ANSI. All other unlisted components that are intended for use as pressure retaining components shall have sufficient thickness and reinforcement so as to be able to maintain the same pressure ratings as specified.

2.02.4 Interstitial supporting devices, used to center and support the primary piping within the secondary containment piping, shall be manufactured from Polypropylene according to ASTM and ANSI.

2.02.5 All listed secondary containment pipe and components shall be PE 3408 HDPE materials, and shall have SDR series wall thickness as specified. All other unlisted components that are intended for use as pressure retaining components shall have sufficient thickness and reinforcement so as to be able to maintain the same pressure ratings as specified.

2.02.6 All fittings shall be pre-assembled and pre-tested by the manufacturer.

PART 3: EXECUTION

3.01 INSTALLATION

3.01.1 All installation procedures shall be according to the manufacturer's specific recommendations. [The manufacturer shall furnish the services of a competent representative to supervise the contractor's personnel during the start of installation.]

3.01.2 All primary and secondary piping welds shall be made using simultaneous thermal butt fusion techniques according to ASME B 31.3 standard. All fusion welding shall be performed in accordance to manufacturers recommendations and shall be subject to 100% visual inspection prior to testing.

3.01.3 The splitting and re-welding of fitting shall not be permitted. The use of hot gas welding for pressure retaining joints shall be kept to those locations where it is deemed necessary by manufacturer, and in any event shall not be permitted on pressure retaining joints of the primary piping system. Flanges, unions, couplings or other methods of disassembly shall be provided at connections to equipment, dissimilar piping, and at other locations suitable for inspection or dismantling of a system.

3.01.4 All contractor personnel that will prepare butt fusion field welds shall be qualified to do so according to the requirements of the ASME B 31.1, by sufficient experience, or by some other agreed to method, as determined suitable by manufacturer.

3.02 CLEANING AND TESTING

3.02.1 Upon completion of installation, the primary piping system shall be pressure tested at 150% of the system design pressure for a period of one hour. Additionally, the system may be tested during the installation at intervals to be determined by the manufacturer. Both the preliminary and final tests shall be done in strict accordance with the recommendations of the manufacturer, including the sequence and duration of such tests.

3.02.2 Upon completion of the installation, the secondary containment piping system shall be pneumatically tested at a minimum duration of 2-1/2 hours. The external joints should be soaped and visually inspected for leaks. It is imperative that a working pressure regulator be used during the pneumatic test to insure that overpressurization of the system, beyond 10 PSI cannot occur. Also, all precautions should be taken to protect against the hazards of a possible brittle fracture of pipe under compressed gas. Both the preliminary and final tests shall be done in strict accordance with the recommendations of the manufacturer, including the sequence and duration of such test.

3.02.3 Following installation of the systems, the primary piping system shall be flushed clean. The contractor shall check the operation of all valves, leak detection devices and appurtenances.

3.02.4 The annular space shall be purged of moisture containing air by replacing the volume of air with clean, dry nitrogen.

INTERIM REMEDIAL ACTION
BURNING GROUND No. 3, LHAAP 18&24
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

PHASE III

Section 02730a

VERTICAL EXTRACTION WELL DRILLING AND INSTALLATION SPECIFICATIONS

1. GENERAL:

1.1 Definitions:

1.1.1 Government: U.S. Army Corps of Engineers, Fort Worth District

1.1.2 Administrative Contracting Officer: Government authorized representative

1.1.3 Quality Assurance Representative (QAR): Authorized representative of Administrative Contracting Officer.

1.1.4 Contractor: Dow Environmental Inc. (DEI)

1.1.5 Subcontractor: Drilling subcontractor who is licensed to drill wells in the state of Texas, to be selected by Contractor.

1.2 Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1.2.1 American Society for Testing Materials (ASTM) Publications:

ASTM A-490	Stainless Steel Casing
ASTM C-150	Portland Cement
ASTM D-422	Grain Size Tests

1.2.2 American Water Works Association (AWWA) Standards:

AWWA A100-84	Water Wells

1.2.3 Texas Natural Resource Conservation Commission (TNRCC):

30 TAC 338	Water Well Driller Rules

1.3 General Requirements: This section covers the drilling and installation of extraction wells. These wells shall be constructed as shown on Figure VEWD-1.

1.4 Submittals:

1.4.1 Drilling Plan: Before beginning work, the Subcontractor shall submit for approval their proposed plan for drilling and constructing the extraction wells. The plan shall include, but not be limited to, the proposed method of drilling and equipment to be used, standard operating procedures for drilling, well screen specifications, grouting materials, sand pack material, decontamination procedures, and methods for placing sand pack and grout. No work shall be performed until the drilling plan has been approved by the contractor and no deviation from the approved drilling plan will be permitted without approval of the Contractor.

1.4.2 Permits and Well Registration: The Subcontractor shall be responsible for obtaining all state permits, licenses, or other requirements necessary for execution of the work. The Subcontractor shall also be responsible for preparing and submitting the required well completion reports to the Texas Natural Resources Conservation Commission (TNRCC). A copy of all such documents shall be furnished to the Contractor.

1.4.3 Logs of Wells: During the drilling of each well, a Contractor assigned supervising geologist/environmental scientist shall maintain an accurate log. At a minimum, the log shall include depths, elevations, and descriptions of all formations encountered, identification of each stratum, and depths at which groundwater is encountered. Copies of all well logs shall be provided to the Administrative Contracting Officer as applicable.

1.5 Environmental Protection: The Subcontractor shall take all precautions as may be required to prevent contaminated water or water having undesirable physical or chemical characteristics from entering the water supply stratum through the well bore or by seepage from the ground surface. The Subcontractor also shall take all precautions necessary to prevent contamination of the ground surface or of surface waters resulting from drilling of the wells. The Subcontractor shall submit, as part of the drilling plan required by Paragraph 1.4.1: Drilling Plan, details of specific methods to be employed to control potential contamination or pollution arising from well installation activities.

2. PRODUCTS:

2.1 Riser Pipes: The well riser pipe, which shall be threaded into the top of the well screen, shall be six inches in diameter and constructed of Type 304 stainless steel. All riser pipe sections shall be connected by threaded couplings.

2.2 Well Screens: The well screen shall be Type 304 stainless steel wire - wound screen, minimum six inch nominal diameter, and shall be directly threaded to the riser pipe. The screen and all accessories required for satisfactory operation shall be essentially standard products of reliable manufacturers regularly engaged in the production of such equipment. Field

constructed screen is not acceptable.

Each well screen shall be provided with continuous slot openings which shall have smooth, sharp-edged openings free of burrs, clipped edges, or broken pieces on the interior and exterior surfaces of the pipe. The openings shall be uniformly spaced spiral around the periphery of the well screen. Slot size of screen shall be 0.01 inch. However, prior to installation, subcontractor must consider grain size of formation in relation to screen size. Any modification, must be approved by contractor.

A two-foot long stainless steel blank pipe with a diameter equivalent to that of the wells screen shall be threaded into the bottom of the screen of each extraction well. The bottom of each well shall be sealed using a stainless steel Type 304 bottom plate which shall be welded to the bottom of the pipe or a Type 304 stainless steel threaded cap securely sealed to the blank pipe.

2.3 Sand pack shall be a product of a commercial sand and gravel manufacturer, shall be silica sand. This sand shall be composed of round, hard, waterworn sand, free of flat or elongated pieces, organic matter, or other foreign matter, properly sized and graded. The sand pack shall have an effective grain size of 0.015 inch and a uniformity coefficient of 2.5. The sand gradation shall be such that no more than ten percent of the sand grains are finer than the screen slot size. However, prior to installation, subcontractor must consider grain size of formation in relation to sand packing material. Any modification, must be approved by contractor.

2.4 Concrete grout shall consist of ready mix concrete mixed with potable water. The cement used in the mix shall consist of portland cement conforming to ASTM C 150 Type I or II. The concrete compressive strength shall be minimum 3,000 pounds per square inch at 28 days.

2.5 Bentonite Seal: Bentonite used for well bore seals shall be either pelletized or chip form as supplied for use in water well construction.

2.6 Cement-Bentonite grout shall consist of portland cement conforming to ASTM C 150 Type I or II, sand and water. Cement grout shall be proportioned with approximately seven pounds of powdered bentonite per 94 pound sack of cement and not more than six gallons of clean water per 94 pound sack of cement.

2.7 A six foot-square, six inches thick, concrete pad shall be poured around the protective casing of each well at the ground surface as shown on Figure VEWD-1. A steel guard post, 2-inch in diameter, that is filled with concrete shall be placed at each corner of the concrete slab. Each post shall extend to at least three feet below ground surface and four feet above the ground surface. The above ground portion of the well casing and the guard posts shall be painted yellow. A brass survey cap shall be installed in the concrete pad for each VEW.

2.8 Water: Water used in drilling and decontamination, including cleaning grouting or other activities, shall be obtained from a potable supply source.

3. EXECUTION

3.1 Groundwater Extraction Well Construction:

3.1.1 General Requirements: The method of drilling shall be by hollow stem auger (HSA). The drilling method must prevent the collapse of formation material against the well screen or casing during installation. Drilling shall conform to all state and local standards. The execution of the work shall be by competent workpersons and performed under the direct supervision of an experienced well driller. The well shall be drilled straight, plumb, and circular from top to bottom. The well shall be drilled from the ground surface to the depth of interest as directed by the supervising geologist/environmental scientist. The depth of the completed borehole shall be measured with a fiberglass tape having a stainless-steel weight on the end.

Representative soil samples shall be collected for every stratum encountered and for every five feet, whichever occurs first, using a three inch O.D. split spoon.

3.1.2 Construction of Well Riser and Screen: The entire well shall be drilled to the diameter of the sand pack, as shown on Figure VEWD-1. The well screen and riser pipes shall be lowered into the hole, through the augers, by a method which will allow for control of the rate of fall of the well screen and riser pipe at all times. Well screen and riser pipe shall not be dropped or allowed to fall uncontrolled into the hole.

Prior to the lowering of the well assembly, the auger casing shall be slowly withdrawn about one foot and the borehole depth remeasured.

3.1.3 Construction of Sand Pack: After the screen and riser pipe have been centered, the approved sand pack shall be constructed around the screen by filling the entire space between the screen and the wall of the hole with filter sand. Sand conductor pipe having an inside nominal diameter of not less than one and one-half inches shall be lowered to the bottom of the well between the soil and screen. The sand conductor shall be raised at a rate that will keep the bottom of the conductor between one and three feet below the sand level in the borehole at all times. The sand pack shall be installed continuously and without interruption until the sand has been placed to the depth shown on Figure VEWD-1. The augers shall be withdrawn at a slow rate during the construction of the sand pack.

3.1.4 Placing Bentonite Seal, Cement-Bentonite Grout, and Concrete Grout: After the riser pipe well screen and sand pack have been installed, the annular space between the well casing and the borehole shall be sealed by use of bentonite seal, cement-bentonite grout, and concrete grout, as shown on Figure VEWD-1.

The Bentonite Seal shall be installed by slowly adding the pellets or granules to avoid bridging. The pellets or granules shall be tamped with a stainless-steel weight suspended on a fiberglass measuring tape. The completed Bentonite Seal shall be allowed to hydrate for approximately four hours before proceeding with the installation.

The Cement-Bentonite grout shall be placed using a segmented PVC grout pipe lowered to the top of the bentonite seal. Pumping of grout shall continue until a return is observed from the top of the auger casing. The grout level shall not be allowed to fall below the bottom of the auger casing during casing withdrawal.

The Concrete Grout shall be poured in the top 3 feet open annulus following the removal of the last auger section. The steel protective cover shall be centered on the well casing and inserted into the concrete prior to the setting of this grout.

3.1.5 A six-foot-square concrete pad, minimum six inches thick, shall be poured around the protective casing at the ground surface. The pad shall be sloped away from the well in order to promote drainage as shown on Figure VEWD-1. A steel guard post, 2-inch in diameter, that is filled with concrete shall be placed at each corner of the concrete slab. Each post shall extend to at least three feet below ground surface and four feet above the ground surface. The above ground portion of the well casing and the guard posts shall be painted yellow.

3.2 Acceptance, Abandonment, and Surveying: Wells which cannot be properly installed due to breakage of well components, plugging of screens with grout, or collapse of the borehole shall be replaced by the Subcontractor. The Subcontractor may salvage whatever materials may be removed from the boring. The Contractor shall provide to the Government a survey of the as-installed locations of the extraction wells. Well abandonment shall be performed in accordance with the following TNRCC procedures which supersede the Water Well Drillers Rules as specified in 31 TAC, Chapter 338, Subchapter C, 338.49 and 338.50. All other Water Well Drillers Rules apply:

a. All surface casing and well casing shall be removed from the well borehole. This may be achieved either through pulling the casing or over-drilling the casing. Exceptions may be for steel surface casing. In the event the entire length of steel surface casing cannot be pulled free the steel casing should be cut at a depth of at least three feet below surface and this section is to be pulled free.

b. The borehole shall be redrilled with a bit diameter at least equal to diameter of the borehole at the time of inception in order to remove the sand pack, bentonite plug, and grout seal. In the event the steel surface casing cannot be removed the bit diameter for redrilling of the borehole shall be at least equal to the internal steel casing diameter minus one inch.

c. The borehole shall be pressure filled through the use of a tremie pipe from termination depth to surface using a bentonite cement slurry (i.e., 94lb. Sack of Portland type II cement, 7.5 to 8 gallons of water, and 3 to 5 percent bentonite powder).

d. The well pad, protective steel casing for the well, guard posts, and any other ancillary well features/materials shall be removed. In addition, the ground level at the well bore will be restored to original grade.

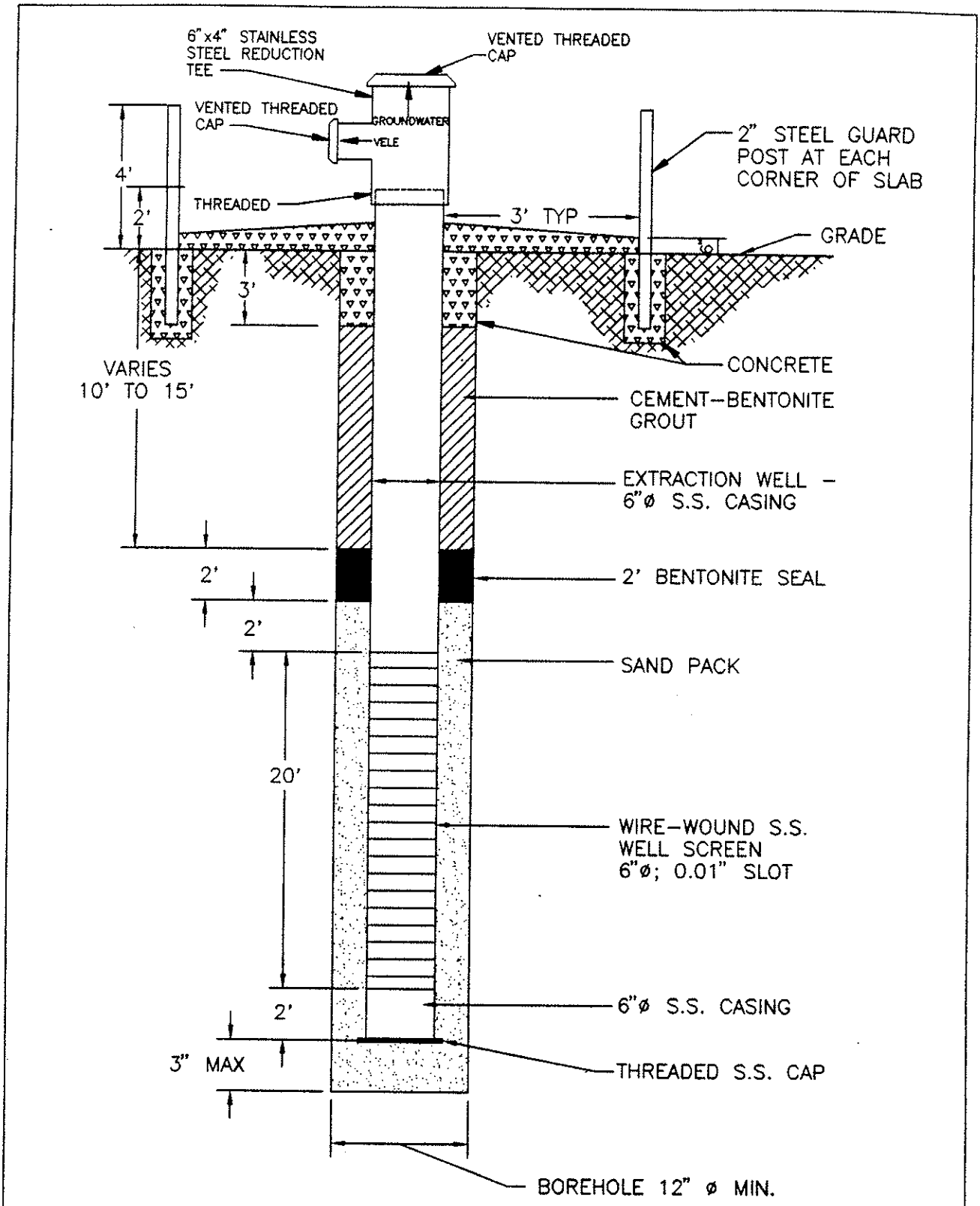
3.3 Well Development: Groundwater extraction wells shall be developed by the Subcontractor to a sand-free condition after being completed. Development of any well shall only start after a minimum of 24 hours from the placement of the cement-bentonite grout. Development shall be accomplished by bailing, surging using a surge block, pumping, and a combination of these three methods until the discharge color, turbidity, temperature, pH and conductance have stabilized. Stability is defined as three consecutive sets of temperature and conductance values within $\pm$ 0.5 units for pH, $\pm$ 10 percent for conductivity, and $\pm$ 1°C for temperature. These measurements should be taken after the removal of each well volume.. In all cases, a minimum of five and a maximum of ten well volumes shall be removed. A well volume is defined as the volume of water in the casing and the filter pack at the static water level. If the return water does not meet the above criteria after removal of ten well volumes, development will continue unless otherwise directed by the USACE onsite representative.

Air shall not be used to develop any of the wells. It is preferable not to introduce water into the well during development. The volume of any fluids introduced into the well during construction must first be removed during development. Development water shall be stored in an above ground tank for subsequent treatment at the onsite groundwater treatment plant by Contractor.

3.4 Decontamination: Drill rig and associated equipment shall be decontaminated prior to conducting any drilling at the site, following completion of each borehole and prior to demobilization. Additional decontamination requirements for the project are provided in the Waste Management Plan. These requirements shall be followed during the implementation of work.

3.5 Clean-up: Upon completion of the well construction and other incidentals, all debris and surplus materials resulting from the work shall be removed from the jobsite. Drill cuttings shall be considered to be contaminated material and shall be properly drummed and sealed by the Subcontractor for treatment by the Contractor.

00048959



2379-382-LHAAPOLD-FIG_3

Dow Environmental

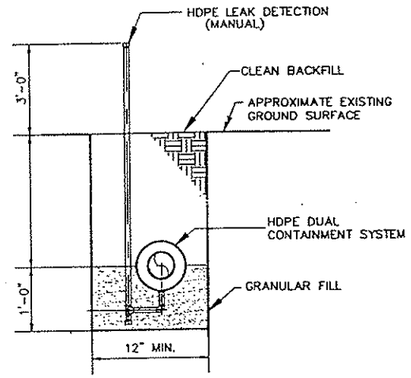
GROUNDWATER EXTRACTION WELL DETAIL
BURNING GROUND NO. 3
LHAAP KARNACK, TEXAS

US ARMY CORP. OF ENGINEERS, FORT WORTH DISTRICT

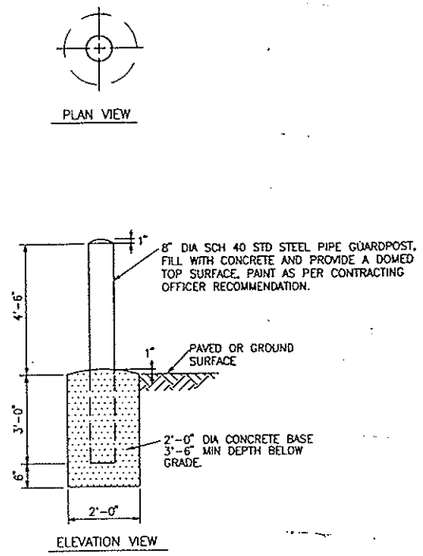
DATE: MAY 11, 1995	JOB NUMBER: 2379	
SCALE: NOT TO SCALE	FIGURE NUMBER VEWD-1	REV 0

Appendix B

Construction Drawing



LEAK DETECTION INSTALLATION DETAIL (A / C1 | C1)
NOT TO SCALE



TYPICAL GUARD POST DETAIL (B / C1 | C1)
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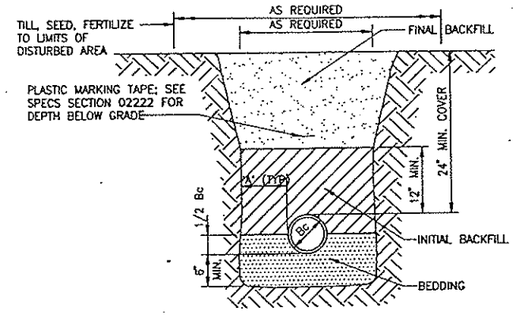
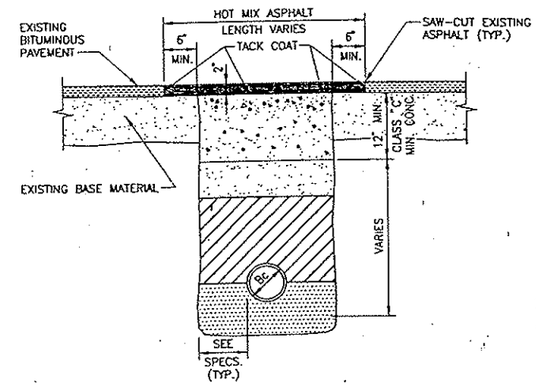
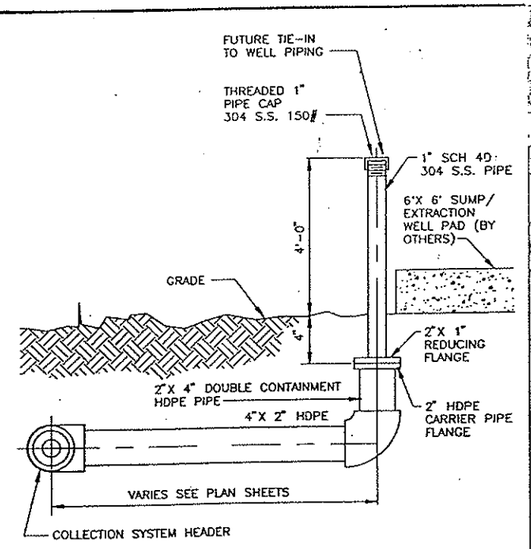


NOTES:
1. SEE SPECIFICATIONS FOR COMPACTION AND MATERIAL REQUIREMENTS.
2. Bc = OUTSIDE PIPE DIAMETER OF CARRIER PIPE.
3. FOR HDPE: A = 6"; ALL OTHER PIPES: A=12".

TRENCH BACKFILL AND BEDDING DETAILS (C / C1 | C1)
(CLASS B)
NOT TO SCALE



FLEXIBLE PAVEMENT REPAIR DETAIL (D / C1 | C1)
NOT TO SCALE



BRANCH HEADER TO EXTRACTION WELL ELEVATION (H / C1 | C1)
TYPICAL
NOT TO SCALE

US Army Corps of Engineers Tulsa District

FILE.dwg: B11603.DWG
PLOTTED: 4/10/97 4:00p.m. FARNEY

DRAWING NUMBER	DRAWING TITLE
	REFERENCE DRAWINGS

DESIGN	CHK'D	APP'D	APP'D	APP'D	REV	ISSUE DESCRIPTION	ISSUE DATE
	CHM				A	ISSUED FOR REVIEW	4/10/97

RADIAN INTERNATIONAL LLC

MISCELLANEOUS CIVIL DETAILS GROUNDWATER EXTRACTION SYSTEM

BURNING GROUND No. 3
LONGHORN army AMMUNITION PLANT
KARNACK, TEXAS

PROJECT	PROJECT NO.
USACE	2379-3110

SCALE	DRAWING NUMBER	REV
NONE	C-1	A

Appendix C

Activity Hazard Analyses

ACTIVITY HAZARD ANALYSIS FOR MOBILIZATION/SITE PREPARATION				
Principle Steps	Potential Safety/Health Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
Mobilization/site setup and survey/ layout	Slips, trips, falls	• Clear walkways, work areas of equipment, tools, vegetation, excavated material and debris • Mark, identify, or barricade other obstructions • Ensure footing. Look before you step	—	—
	Electrical shock	• De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Use qualified electricians to hook up electrical circuits • Inspect extension cords daily for structural integrity, ground continuity, and damaged insulation • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect electrical power circuits prior to commencing work • Follow lockout-tagout procedures in accordance with Shaw Health & Safety Program, Volumes I & II, HS 315	—	—
	Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	—	—

ACTIVITY HAZARD ANALYSIS FOR MOBILIZATION/SITE PREPARATION				
Principle Steps	Potential Safety/Health Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
Mobilization/site setup and survey/ layout (*cont*.)	Sharp objects	• Wear cut-resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain hand and power tools in a safe condition • Keep guards in place during use	Leather gloves with reinforced palm	—
	High noise levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 decibels, A-scale (dBA) over an 8-hour work period)	Ear plugs	—
	High/low ambient temperature	• Monitor for heat/cold stress in accordance with Shaw Health & Safety Program, Volumes I & II, HS 400 / HS 401 • Provide fluids to prevent worker dehydration	Insulated clothing (subject to ambient temperature)	Meteorological equipment

Equipment To Be Used	Inspection Requirements	Training Requirements
	• Daily heavy equipment inspections • Small equipment as specified by operations manual	• Review Site Safety and Health Plan (SSHP) • Review site-specific Activity Hazard Analysis (AHA) with all task personnel. • Review equipment safety operations manual • Safe driver's training (HS 800)

ACTIVITY HAZARD ANALYSIS FOR GROUNDWATER CONVEYANCE PIPING INSTALLATION

Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Air Monitoring Devices
Groundwater conveyance and supply piping installation	Struck by/against heavy equipment, flying material, splashes, protruding objects	• Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Wear hard hats, safety eye protection, (splash shields/goggles) and steel-toe safety boots when transferring slurries into excavations	Warning vests, hard hat, safety glasses, and steel-toe work boots	—
	Inhalation and contact with hazardous substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Cover stockpiled soil with plastic sheeting to prevent fugitive dust emissions	Tyvek® coveralls, latex gloves, neoprene or latex boots	—
	Pinch points, sharp edges and hot plates	• HDPE welding machine to be used by trained personnel only • Use leather gloves during welding operations	—	—
	Slips, trips, falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions • Look before you step, ensure safe and secure footing	—	—
	High/low ambient temperature	• Monitor for Heat/Cold stress in accordance with the Shaw E & I Health & Safety Program, Volumes I & II, HS400/HS401 • Provide fluids to prevent worker dehydration	Insulated clothing (subject to ambient temperature)	—
	High noise levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	—

ACTIVITY HAZARD ANALYSIS FOR GROUNDWATER CONVEYANCE PIPING INSTALLATION

Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Air Monitoring Devices
Groundwater conveyance and supply piping installation	Struck by/against heavy equipment, flying material, splashes, protruding objects	• Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Wear hard hats, safety eye protection, (splash shields/goggles) and steel-toe safety boots when transferring slurries into excavations	Warning vests, hard hat, safety glasses, and steel-toe work boots	—
	Inhalation and contact with hazardous substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Cover stockpiled soil with plastic sheeting to prevent fugitive dust emissions	Tyvek® coveralls, latex gloves, neoprene or latex boots	—
	Slips, trips, falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions • Look before you step, ensure safe and secure footing	—	—
	High/low ambient temperature	• Monitor for Heat/Cold stress in accordance with the Shaw E & I Health & Safety Program, Volumes I & II, HS400/HS401 • Provide fluids to prevent worker dehydration	Insulated clothing (subject to ambient temperature)	—

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Chain trencher, loader, HDPE welding machine and other heavy equipment	• Daily heavy equipment inspections • Small equipment as specified by operations manual	• 40-hour Hazardous Waste Training • Review SSHP • Review site-specific AHA with all task personnel. • Review equipment safety operations manual • Review the Shaw E & I Health & Safety Program, Volumes I & II, HS 307, Excavation and Trenching

ACTIVITY HAZARD ANALYSIS FOR SITE RESTORATION				
Principal Steps	**Potential Safety/Health Hazards**	**Hazard Control Measures**	**Personal Protective Equipment**	**Monitoring Devices**
Site restoration and demobilization	Struck by/against heavy equipment, protruding objects	• Use reflective warning vests when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Wear hard hats, safety glasses with side shields, or splash/face shields and goggles, and steel-toe safety boots at all times • Understand and review hand signals	Warning vests, hard hat, safety glasses	—
	Slips, trips, falls	• Clear, walkways of equipment, tools, debris, other materials • Mark, identify, or barricade other obstructions • Look before you step, ensure safe and secure footing	—	—
	High noise levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	—
	Handling heavy objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb per person for manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	—	—
	Contact dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers	Tyvek® coveralls, duct tape bottom of coveralls to boots or latex boot covers	—
	High/low ambient temperature	• Monitor for Heat/Cold stress in accordance with Shaw Health & Safety Program, Volumes I & II, HS 400 / HS 401 • Provide fluids to prevent worker dehydration	Insulated clothing (subject to ambient temperature)	—

Equipment To Be Used	Inspection Requirements	Training Requirements
	• Daily equipment documented inspections	• Review Site Safety and Health Plan • Review AHA with task personnel • Review equipment safe operating manual • Safe driver's training (HS 800)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

September 14, 2007

Ms. Rose Zeiler
Army / BRAC Site Manager
Longhorn Army Ammunition Plant
Post Office Box 220
Ratcliff, AR 72951

RE: Draft Final Five-Year Review Report
Second Five-Year Review Report
LHAAP-12, LHAAP-16, and LHAAP 18/24
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Ms. Zeiler:

The U.S. Environmental Protection Agency (EPA) has completed review of the *Draft Final Five-Year Review Report, Second Five-Year Review Report, LHAAP-12, LHAAP-16, and LHAAP 18/24* (dated August 30, 2007) for the Longhorn Army Ammunition Plant.

Please find the enclosed review comments and address each one with additional information, clarification, or inclusion in the final report. Please feel free to contact me at (214) 665-8409 for any questions or additional information.

Sincerely,

Stephen L. Tzhone, RPM
AR/TX Team, Remedial Branch
Superfund Division

Enclosure

cc: Ms. Fay Duke, TCEQ
Mr. Cliff Murray, USACE
Mr. Paul Bruckwicki, FWS

USEPA Region 6 Review Comments
Draft Final Five-Year Review Report
Second Five-Year Review Report
LHAAP-12, LHAAP-16, and LHAAP 18/24
Longhorn Army Ammunition Plant, Karnack, Texas

1. Executive Summary:
Under LHAAP-12, land use controls information should be presented (or referenced if in another document) and include: what the land use controls are, who is responsible for implementation, who is responsible for inspection and monitoring of the restrictions, and how long the restrictions will remain in place.

Under LHAAP-16 and LHAAP-18/24, language that specifies institutional controls will also be evaluated as a component of the final remedy should be included for LHAAP-16, and LHAAP-18/24.

2. Five-Year Review Summary Form:
Combine the two summary forms into one summary form. An anticipated date is not needed for the Construction Complete Date as none of the sites in this Five-Year Review are construction completed. In addition, language that specifies institutional controls will also be evaluated as a component of the final remedy should be included in the Other Comments section of this form for LHAAP-16, and LHAAP-18/24. For LHAAP-12, land use controls information should be presented (or referenced if in another document) and include: what the land use controls are, who is responsible for implementation, who is responsible for inspection and monitoring of the restrictions, and how long the restrictions will remain in place.

3. Table 2-1 and Table 2-2:
Insert "Interim" in front of "Remedial Action" where appropriate (e.g., interim remedial action construction start date, etc.).

4. Section 4.1.5 (Final Remedy at LHAAP-12):
Based on the remedy components discussion in the *Final Record of Decision, Landfill 12* (Army, 2006) and the letter from the Army to EPA regarding *Addition of Monitored Natural Attenuation to the Recommended Alternative 2 at LHAAP-12* (Army, July 26, 2006), it appears that the intent for restoration of the ground water to Maximum Contaminant Levels (MCLs) was present but not explicitly stated so within the Final Record of Decision (ROD) for LHAAP-12.

To align the intention of restoration of ground water to MCLs in the appropriate CERCLA decision documents and clarify the Remedial Action Objectives (RAOs) for future protectiveness determinations for LHAAP-12, the Army should proceed to include an RAO for restoration of ground water to MCLs by following appropriate EPA Guidance concerning documenting post-ROD changes (e.g., Explanation of Significant Differences (ESD) or ROD Amendment).

5. Section 4.1.5 (Final Remedy at LHAAP-12):
Under the bullets Remedy Description and Remedy Implementation, land use controls information should be presented (or referenced if in another document) and include: what the land use controls are, who is responsible for implementation, who is responsible for inspection and monitoring of the restrictions, and how long the restrictions will remain in place.

6. Section 4.2 (LHAAP-18/24):
It appears that the 8 vertical extraction wells as specified in the Interim Remedial Action (IRA) ROD was not implemented and that this non-implementation was tantamount to selecting a remedy modification without the review and approval by EPA and the State of Texas as required by Sections VIII and XIX of the FFA, CERCLA Section 120(e)(4), 40 CFR § 300.430(f)(4)(iii). This same vertical extraction technology may have been successful as it was utilized for LHAAP-16.

In addition, remedy selection requirements under CERCLA Section 113(k), 117(c), 121(a), and 40 CFR § 430.435(c) may have not been followed here. This modification should have been analyzed in terms of scope, performance and costs to determine if an ESD or IRA ROD Amendment was appropriate. Without an appropriate CERCLA decision document and approval by EPA and the State of Texas, the Army's modification of the IRA ROD is inconsistent with CERCLA and the NCP.

Since there is no CERCLA authorized remedy that includes an interceptor collection trench system without the vertical extraction system, the approval of the five-year review is conditional upon that the Army proceeds to submit a remedy modification by following appropriate EPA Guidance concerning documenting post-ROD changes (e.g., ESD or IRA ROD Amendment).

7. Section 4.2.1 (Regulatory Basis for Action):
Since this is an Army lead project, EPA recommends the statement "the USEPA signed the ROD on May 12, 1995" be changed to "The Army issued the ROD on (date), 1995, and USEPA approved the ROD on May 12, 1995".

8. Section 4.2.4 (Remedy Implementation):
Typo: extra "c" in the third bullet

9. Section 5.2.1 (LHAAP-12):
Land use controls information should be presented (or referenced if in another document) and include: what the land use controls are, who is responsible for implementation, who is responsible for inspection and monitoring of the restrictions, and how long the restrictions will remain in place.

10. Section 6.5 (Site Inspection) and Appendix A (Five-Year Review Site Inspection Checklist):
In addition to the noted corrosion problems at the ground water treatment plant (i.e., acid tank high level indicator, corrosion at the bottom of the magnesium hydroxide tank, etc.),

the corroded insulation cover on the piping from the catalytic oxidation unit to the scrubber needs repair.

11. Section 7.0 (Technical Assessment) and Section 10.0 (Protectiveness Statements): Clarification is needed in these sections as to why the remedy is still protective since perchlorate is shown to have occasional effluent results that exceed the discharge limit and thereby, currently affects protectiveness.

12. Section 7.1.1 and Section 7.2.1 (Question A: Is the remedy functioning as intended by the decision documents?):
Under the bullet for Implementation of Institutional Controls and Other Measures, language that specifies institutional controls will also be evaluated as a component of the final remedy should be included for LHAAP-16, and LHAAP-18/24. For LHAAP-12, land use controls information should be presented (or referenced if in another document) and include: what the land use controls are, who is responsible for implementation, who is responsible for inspection and monitoring of the restrictions, and how long the restrictions will remain in place.

13. Section 9.0 and Table 9-1 (Recommendations and Follow-Up Actions):
This section/table should include follow-up actions to address:
    - LHAAP-12: The inclusion of restoration of ground water to MCLs as an RAO for LHAAP-12.
    - LHAAP-18/24: The remedy modification to the CERCLA authorized remedy as specified in the LHAAP-18/24 IRA ROD.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

SEP 20 2007

Mr. Thomas E. Lederle
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BD (Tom Lederle)
600 Pentagon
Washington, DC 20310-0600

Dear Mr. Lederle:

The U.S. Environmental Protection Agency (EPA) has reviewed the September 2007 Final Operating Properly and Successfully (OPS) Demonstration Report (Report) for Landfill 12 (LHAAP-12) at the Longhorn Army Ammunition Plant (LHAAP). The EPA's focus in reviewing the OPS Report was to ensure that sufficient information was presented to support a demonstration that remedial actions are operating properly and successfully in accordance with the LHAAP-12 remedial design objectives. A successful demonstration of OPS to the EPA will allow for the continuance of the transfer process for LHAAP-12.

In regards to LHAAP-12:

- The LHAAP-12 landfill cap and groundwater monitored natural attenuation (MNA) are operating properly because both remedial action components have been constructed as designed, and are operating in accordance with the approved design.
- The cap is also functioning successfully, in that exposure to the buried waste is controlled and reduction of the leaching and migration of landfill hazardous substances into the groundwater is evident.
- The MNA is also functioning successfully, in that natural attenuation has stabilized the plume and has achieved the remedial action objective of preventing migration of the plume to surface water.
- Additionally, land use controls (LUCs) will remain in place to provide future protection of human health and the environment and a monitoring program for the cap and groundwater MNA is being performed and will continue in perpetuity unless otherwise agreed upon between the Army, U.S. Fish and Wildlife Service (FWS), EPA, and the State of Texas.

Based on EPA's review of the OPS Report, the EPA herein concurs with the Army's determination that the final remedy for LHAAP-12 is operating properly and successfully, and that LUCs will be successful in preserving the final remedy. To ensure that LUCs remain in

place and continue to provide their intended objectives, ongoing monitoring, reporting and enforcement of the LUCs will be performed by FWS, upon transfer of LHAAP-12 from the Army. The EPA herein provides further assurance that, as between the Army and the FWS, the EPA will consider the Army responsible for any contamination caused by the Army's activities at LHAAP, or that of its operator-contractor, as required under the Comprehensive Environmental Response, Compensation, and Liability Act and the LHAAP Federal Facility Agreement.

If you have any questions regarding this matter, please feel free to contact Mr. Stephen Tzhone of my staff at 214-665-8409.

Sincerely yours,

Pamela Phillips, Acting

Samuel Coleman, P.E.
Director
Superfund Division

cc: Christopher T. Jones, Deputy Regional Director,
U.S. Fish and Wildlife Service, Region 2

Shaw Environmental & Infrastructure, Inc.

Shaw The Shaw Group Inc.™

3010 Briarpark Drive
Houston, Texas 77042
713-996-4400
Fax: 281-368-4401

Memorandum

Date: **September 24, 2007**

To: **File**

CC: **Praveen Srivastav**
John Elliott

From: **Frank Eidson** FAE

RE: **Correspondence with the Texas Commission on Environmental Quality (TCEQ) On the Uses of Method Quantitation Limits (MQLs) and Other Values Used to Describe Analytical Detection Limits**

Comments on the document titled, *Draft Final Site Investigation Report, LHAAP-59, Longhorn Army Ammunition Plant, Karnack, Texas*, were received from the Texas Commission on Environmental Quality (TCEQ) and Region 6 of the Environmental Protection Agency (EPA) in November 2006.

TCEQ Comment #2 stated:

> *We noted that there are two quantitation limits reported by the laboratory in their test report: PQL and SQL. The PQL values appear to be used in the table to represent detection limit. Shouldn't the SQL be used instead? Because there are many definitions of PQL, please clarify what each of these reporting limits represent.*

Shaw's initial response was, in part:

> *The full value of the SQL is used in the data screening process, as described in the Consistency Memorandum (Section III.4) and as provided for assessments according to Risk Reduction Standard 3.*
>
> *The footnote b to tables in section 3 was revised to read:*
> b = Value is the lowest non-zero calibration standard in the laboratory's initial calibration curve adjusted for the laboratory matrix and the amount of standard used.
>
> U = Compound validated as not detected above the SQL reported. The SQL corresponds to the SQL as defined in TCEQ guidance (TCEQ 1998 Consistency Memorandum).
>
> *For some chemicals, the unmodified MQL serves as the Standards 2 and 3 MSC cleanup level as described in the Consistency Memorandum (Section VI.2). When SQL values for soil are developed from analytical data, a correction for moisture content is required and other corrections for sample-specific actions by the laboratory are made (Consistency Memorandum Section*

B.1.1.6). In such cases, the Consistency Memorandum leads to an inconsistency in which the MSC cleanup standard can not be achieved in practice.

Note that an SQL value for a soil sample that is based on an MQL corrected for soil moisture content (which involves dividing the MQL by the dry weight fraction) can never be less than the uncorrected MQL value, and can only equal the MQL if the soil sample is anhydrous, which is extremely unlikely in practice. Thus, when the MQL becomes the MSC cleanup value for a chemical, soil having concentrations at or below the SQL values still will exceed the cleanup standard. Further, any subsequent samples taken to confirm a cleanup action can never meet the cleanup standard for the same reasons.

This inconsistency would not exist if the sample-specific value were based on a modified MDL as provided in other TCEQ guidance documents, the Texas Risk Reduction Program (30TAC§350 and the Quality Assurance Project Plan for the Superfund Program (Document Control Number 200919.4, April 2006.)

I raised the question of moisture corrections to the MQL with Fay Duke at the Monthly Manager's Meeting in Houston on April 4, 2007. The TCEQ confirmed that the laboratory MQL value is not corrected for moisture content in an email dated April 9. The importance of this question was discussed with Ann Strahl at the TCEQ by telephone on April 12 and in a telephone conference on May 17.

The inconsistency in MQL applications in the TCEQ Consistency Memorandum was discussed further with Ann Strahl at the TCEQ in an exchange of emails that developed language incorporated into the final response to TCEQ and EPA comments. Approval of the final response to comments was received in an email dated July 19, 2007 from Fay Duke of the TCEQ.

The following language will be incorporated into subsequent documents developed for Longhorn Army Ammunition Plant (LHAAP) sites:

Terms used in this report to describe concentrations at or near the detection limit are defined as follows:

***Practical quantitation limit (PQL)** is the concentration of the lowest non-zero standard in the laboratory's calibration curve adjusted for laboratory reagent matrix type and sample size. The PQL is analogous to the method quantitation limit (MQL) reported by the laboratory and described in Section 7 of SW846-Method 8000B. The PQL is used under the 30 TAC 335 rule to evaluate the capability of the analytical method used by the laboratory to quantitate the chemicals at concentrations below the regulatory level, e.g., the medium specific concentrations (MSCs).*

When the PQL of the most sensitive standard available method is greater than the regulatory level, the PQL from that method is used as the regulatory limit in lieu of the MSC as allowed in 30 TAC 335. Upon TCEQ concurrence, that PQL remains the MSC for the life of the work related to the site being investigated if no extenuating circumstance arises and warrants investigating the chemical to lower levels. An example of an extenuating circumstance warranting a change to the PQL used as the MSC and relative to LHAAP would be a substantial change in circumstances that would result in increased risk to human health or the environment.

Sample quantitation limit (SQL) *is the PQL adjusted for sample-specific factors affecting the quantitation of the chemical measured in an environmental sample, such as dilution or moisture content, and flagged with a "U" qualifier to indicate the chemical was not detected in the in the sample..*

Method detection limit (MDL) *is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix type containing the analyte (Consistency Memo, Appendix B.1.1.2).*

The laboratory establishes the MDL for the chemical and verifies the value on at least a quarterly basis using a detectability check sample (DCS) to demonstrate that the laboratory can detect the chemical at that MDL. The DCS is a laboratory reagent grade matrix sample spiked with the chemical at or within two times the laboratory's MDL and carried through the entire sample preparation and analysis procedures.

Sample detection limit (SDL) *is the laboratory's MDL for the chemical adjusted for sample-specific factors affecting the detection of the chemical measured in an environmental sample, such as dilution or percent moisture, and flagged or qualified with a "U" or "<" to indicate the chemical was not detected in the sample. The SDL is used in this document to report nondetected results for chemicals only when the PQL is being used as the regulatory limit in lieu of the MSC for the chemical.*

This language will be incorporated in subsequent documents with appropriate modifications match the context of each document. This language will be cited in references as

TCEQ, 2007, *Personal communication from Ann Strahl of the TCEQ to Shaw,* July 19.

Emails are attached in **Attachments 1** through **5** that document the development of the above language.

Attachment 1 includes the email dated April 09, 2007 indicating that MQLs should not be adjusted for moisture content, and draft language in the initial response to the comments as edited by the TCEQ and transmitted in emails dated June 04, 2007 11:48 AM and 2:27 PM.

Attachment 2 is TCEQ edits to its initial comments and Shaw's initial draft language transmitted in an email dated June 14, 2007.

Attachment 3 is Shaw's final draft language transmitted to Shaw project managers in an email dated June 15, 2007.

Attachment 4 includes two emails dated June 27, 2007 9:18 AM and 9:20 AM from Shaw to the TCEQ offering the opportunity to make changes to text and emails before they become part of the project administrative record. Because the text associated with these emails is included in **Attachment 2**, it is not repeated here.

Attachment 5 is the final response to comments language as approved in an email from Fay Duke at the TCEQ to Rose Zeiler of the U. S. Army and dated July 19, 2007, 6:30 PM.

Attachment 1

00048980

From: Fay Duke [mailto:FDUKE@tceq.state.tx.us]
Sent: Monday, April 09, 2007 11:06 AM
To: Srivastav, Praveen; Rose Zeiler
Cc: forsythe.barry@epamail.epa.gov; Harris.Scott@epamail.epa.gov; josiam.raji@epamail.epa.gov; Tzhone.Stephen@epamail.epa.gov; 'paul_bruckwicki@fws.gov'; Cobb, Dave; Cliff Murray; John R SWT Lambert; Dale Vodak
Subject: LHAAP - 59 - MQL and NELAC requirement

Rose/Praveen

Frank and I had a brief follow up discussion regarding the TCEQ definitions of MQL after the manager meeting. Frank asked me to check with our QA/QC specialist regarding the MQL and I did. According to Ann Strahl, the solid matric MQL should not be adjusted for soil moisture content. The MQL for solid matric should have been obtained using a method blank. The moisture in the method blank sand would not make an appreciable difference.

There was one item relating to lab program which I forgot to mention at the manager meeting. In

2001 , the Texas legislature pass House Bill 2912 (amended in 2003), which requires TCEQ to accept environmental data only from laboratories that are NELAC accredited. This requirements will be effective in June 20, 2008. Any data submitted to this agency on or after July 1, 2008, the data must be generated by laboratories that are NELAC accredited. The TCEQ is the agency with the accrediting authority. So if any of the laboratory you work with wish to attain NELAC accreditation by June 30, 2008, the agency recommends that the their applicable be on file by April 2007. The NELAC accreditation and Application information is available on the agency's web site at http://www.tceq.state.tx.us/compliance/compliance_support/qa/env_lab_accreditation.html

I did not include Frank in this email distribution because I don't have his email address. Please pass this information to Frank. If you or Frank have specific QA/QC questions for Ann, you're welcome to call her at 239-2500. Please let me know if you should have any questions or concerns. Thanks,

Fay Duke, Project Manager
TCEQ Environmental Cleanup Section II
MC-221 for Superfund correspondence
MC-127 for Corrective Action correspondence
MC-221 for VCP correspondence
PO Box 13087
Austin, Texas 78711-3087

512-239-2443
512-239-1212 (Fax)

00048982

Eidson, Frank

From: Ann Strahl [ASTRAHL@tceq.state.tx.us]
Sent: Monday, June 04, 2007 11:48 AM
To: Eidson, Frank
Subject: LHAAP__1.doc

Attachments: LHAAP__1_.doc

_HAAP__1_.doc (27 KB)

Here some draft language

The report does not need to define the terms of rule or guidance documents in the report. The report needs to define all of the terms used in the report relative to rule and guidance defined terms. TCEQ recommends revising the text in Section 3.0 to clearly define the analytical terms used in the document. Those terms should be consistent with the terms applicable to the 30 TAC 335 rule, the associated guidance referenced as the "Consistency Memo," and agreed terms to use. The terms applicable to 30 TAC 335 and the Consistency memo are the practical quantitation limit (PQL) and the sample quantitation limit (SQL). The agreed term relative to this report is the sample detection limit (SDL). Example language to define those terms in Section 3.0 of the report is as follows:

> **Practical quantitation limit (PQL),** as used in the body of this report, is the concentration of the lowest non-zero standard in the laboratory's calibration curve adjusted for matrix type and sample size. The PQL is analogous to the method quantitation limit (MQL) reported by the laboratory and described in Section 7 of SW846-Method 8000B. The PQL is used under the 30 TAC 335 rule to evaluate the capability of the analytical method use by the laboratory to quantify the chemicals of concern (COCs) at concentrations below the regulatory level, e.g., the medium specific concentrations (MSC).
>
> When the PQL of the method used is greater than the regulatory value, inquiries are made to commercial laboratories to find a more sensitive standard, available method having a PQL less than the regulatory value. "Standard, available methods" are consider methods in analytical methods manuals maintained by nationally recognized entities or analytical methods fully validated by the laboratory and documented in a standard operating procedure (SOP).
>
> When the PQL of the most sensitive standard available method is greater than the regulatory level, the PQL from that most sensitive method is submitted to the TCEQ for concurrence on that PQL being the PQL to use as the regulatory limit in lieu of the MSC as allowed in 30 TAC 335. Upon concurrence, that PQL remains the MSC for the life of the work related to the site being investigated if no extenuating circumstance arises and warrants investigating the COC to lower levels. An example of an extenuating circumstance warranting a change to the PQL used as the MSC and relative to LHAAP would be the discovery of a federal- or state-identified rare species of flora or fauna potentially affected by the COC.
>
> **Sample quantitation limit (SQL),** as used in this report, is the PQL adjusted for sample-specific factors affecting the quantitation of the COC measured in an environmental sample, such as dilution or percent moisture, and flagged or qualified with a "U" or "<" to indicate the COC was not quantitated in the sample above that SQL.
>
> **Sample detection limit (SDL)** is the laboratory's method detection limit (MDL) for the COC adjusted for sample-specific factors affecting the detection of the

COC measured in an environmental sample, such as dilution or percent moisture, and flagged or qualified with a "U" or "<" to indicate the COC was not detected in the sample above that SDL. The MDL used to calculate the SDL is the MDL the laboratory has established for the COC and verifies on at least a quarterly basis using a detectability check sample (DCS) to demonstrate the laboratory can detect the COC at that MDL. The DCS is a laboratory reagent grade matrix sample spiked with the COC at or within two times the laboratory's MDL and carried through the sample preparation procedures for the analysis.

As agreed upon between the TCEQ and LHAAP during a May 17, 2007, telephone conference, the SDL is used in this document to report nondetected results for COCs only when the PQL is being used as the regulatory limit in lieu of the MSC for the COC.

Note: The analytical data test reports received from the laboratory use similar terms but define the terms differently. The following terms used by the Kemron laboratory are defined relative to the PQL, SQL, and SDL listed above:

- The Kemron laboratory's "MQL" is analogous to the PQL defined in Section 3.0 of this report.
- The Kemron laboratory's "PQL" is analogous to the SQL defined in Section 3.0 of this report.
- The Kemron laboratory's "SQL" is analogous to the SDL defined in Section 3.0 of this report.

Eidson, Frank

From: Ann Strahl [ASTRAHL@tceq.state.tx.us]
Sent: Monday, June 04, 2007 2:27 PM
To: Eidson, Frank
Subject: RE: request
Attachments: LHAAP Rsp Cmt2 rev.doc; LHAAP Rsp Cmt 1 rev.doc

See the attached draft language and let me know if it works. ann

>>> "Eidson, Frank" <Frank.Eidson@shawgrp.com> 6/4/2007 10:05:11 AM >>>
Ann -

Here is the most recent version of the Response to Comments document. This version has not been updated since the conference call with Shaw, the Army, and the TCEQ in May. Therefore, some of these responses will be changed, specifically regarding the use of averaged MQLs.

Please give me a call so we can derive an approach to address how to treat the question of SQLs that exceed cleanup levels that are actually MQLs. As we discussed on the phone this morning, this question seems to apply to approximately 17 to 19 SVOCs for this project.

Thanks for your help on this.

Arthur F. (Frank) Eidson, Ph.D
Senior Risk Assessor
Shaw Environmental & Infrastructure
3010 Briarpark Drive, Suite 4N
Houston, TX 77042
713.996.4416 direct
832.725.9529 cell
713.996.4401 fax
www.shawgrp.com
frank.eidson@shawgrp.com

-----Original Message-----
From: Ann Strahl [mailto:ASTRAHL@tceq.state.tx.us]
Sent: Monday, June 04, 2007 9:47 AM
To: Eidson, Frank
Subject: request

Frank - please send me the Word version of the comments table. Thanks.
ann

other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.
_____ The Shaw Group Inc.
http://www.shawgrp.com

Revised response to Comment 1

The referenced text in Section 3.1.1 will be corrected to read:

The practical quantitation limit (PQL), as used in this report, is defined in the Attachement B.1.1.4 of the Consistency Memorandum as the lowest non-zero standard in the laboratory's initial calibration curve and is analogous to the method quantitation limit (MQL) currently defined in Method 8000B in EPA's Test Methods for Evaluating Solid Waste (SW-846, 1996).

A Laboratory Review Checklist (LRC) is included with each data package. The LRC asks "do the MQLs correspond to the concentration of the lowest non-zero calibration standard?" The laboratory checked that they utilize this definition. The values used in the calibration curves are included in the QA/QC section of each data package. Data that form the basis of this report (and all Shaw reports for the LHAAP) have been validated according to SW846 methods 8081 and 8151 and National Functional Guidelines for organic analysis or for inorganic analysis provided by the EPA.

The Consistency Memorandum (Section B.1.1.6) provides for adjustment of MQL values, "to reflect sample-specific action(s) performed by the laboratory that are necessary but not prescribed in the method." The report text in Section 3.1.1 will be revised to read:

The sample quantitation limit (SQL), as used in this report, is defined as the method quantitation limit (MQL) adjusted for sample specific factors such as moisture content and dilution (Attachment B.1.1.6). LHAAP uses the SQLs to report the results for nondetected COCs analyzed in anenvironmental sample. When a COC is not detected in the sample, the SQL calculated for the COC is reported flagged with a "<" or "U" to advise the data user the COC is not detected in the sample as required in the Consistency Memorandum (Section II.4.2).

Section 3.1.1 of the draft report describes the dilution of several samples to quantitate chlordane concentrations, and the resulting elevation of detection limits. Because there are other reasons why detection limits might be elevated, the text will be revised to read:

Some samples required dilution to quantitate a chemical present in the sample at high concentrations. Dilution of a sample causes the SQLs for chemicals not detected to be elevated. For some chemicals the effect of dilution on the SQL will result in SQLs greater than the screening or regulatory levels. The laboratory determined dilutions were necessary when the matrix interfered with the analysis of the sample, such as when a tarry extract could not be evaporated down to the required 1 ML volume before analysis. **It would be helpful here to document the chemical causes for the dilution, e.g., what in the sample caused the extract to be "tarry." Was the presence of total petroleum hydrocarbons (TPH) noted in the sample?**

Deleted: *as it is*

Deleted: *Update III of*

Deleted: *). (Consistency Memorandum, Section B.1.1.4). The Method Quantitation Limit (MQL) is currently defined in the Consistency Memorandum (Section B.1.1.3) as, "the lowest concentration calibration standard that is analyzed during an initial calibration..." (Method 8000B, Section 7.4, SW-846, 1996).¶*

Deleted: wa

Deleted: *"Result (SQL)" values in this report represent MQL*

Deleted: *values that have been adjusted for soil*

Deleted: *and in Attachment A.1, Recommended Data Reporting Procedures*

Deleted: *, and as such represent the SQL for the chemical as defined in Section B.1.1.6*

Deleted: ¶

Deleted: *were diluted as above,*

Deleted: *initially*

Deleted: *, which resulted in an elevation of the SQLs*

Deleted: *above*

Deleted: *s*

Deleted: *for some other chemicals*

Deleted: *Other dilutions were occasionally required as a result of*

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Response to Comment 2 revised

The laboratory reports two quantitation limits and provides their definitions routinely in analytical reports. The laboratory defines the PQL as the MQL adjusted for soil moisture content and dilutions. Therefore, the laboratory's PQL is analogous to the TCEQ's SQL as defined in the Consistency Memorandum (Section B.1.1.6). The laboratory's reported PQL meets the definition recommended in the Consistency Memorandum (Section II 4.2 and in Attachment A.1) and will be used to reported the results when the COC is analyzed for, but not detected, in environmental samples. The full value of this SQL is used in the data screening process as described in the Consistency Memorandum (Section III.4) as provided for assessments according to Risk Reduction Standard 3.

The footnote b will be revised to read:

b Value is the laboratory's lowest non-zero calibration standard in the laboratory's initial calibration curve adjusted for the matrix and the amount of standard used.

U Compound validated as not detected above the SQL reported. The SQLs correspond to the SQLs as defined in TCEQ guidance (TCEQ 1998 Consistency Memorandum). These values are used in data screening process to compare with the Risk Reduction Standard 2 MSC values (SAI-Ind and GWP-Ind).

As allowed in the RRS rule, the MQL of the most sensitive standard available method can be used as the MSC or regulatory limit when that MQL is greater than the MSC for Standards 2 and 3 (Section VI.2). Note: When the MQL of the most sensitive analytical method becomes the regulatory limit in lieu of the MSC for the COC, the sample detected limit (SDL) will be reported in lieu of the SQL for COCs not detected in the samples. The SDL is calculated as a function of the method detection limit (MDL) adjusted for sample-specific factors, such as dilution and percent moisture. The MDL can be used to calculate the SDL when the laboratory has established an MDL for the COC and verifies that MDL on at least a quarterly basis. To verify the MDL, the laboratory analyzes detectability check sample (DCSs). The DCSs are laboratory-grade reagent samples spiked within two times of the laboratory's MDL and processed through the entire analytical procedure for the method. If the laboratory detects the COC in the DCS, the MDL can be used to calculate the SDL. The laboratory defines its "SQL" in laboratory reports as the MDL adjusted for sample specific actions performed. Therefore, the labroatory's "SQL" is analogous to the SDL defined here.

The revised report will specifically cite the laboratory definitions given in the data reports. Section 3.1.1 of the text will be revised to read:

Let me know haw you would revised the language to read.

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Deleted: This value is shown in Tables 3-1 and 3-2 of the draft report as the "MQL" with a footnote reference to its use.

Deleted: *"PQL" value reported by the laboratory and is the lowest calibration standard adjusted for dilutions and dry weight factors (see laboratory definitions in attached data reports).*

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¶
For some chemicals, the unmodified MQL serves as the Standards 2 and 3 MSC cleanup level as described in the Consistency Memorandum (Section VI.2). When SQL values for soil are developed from analytical data, a correction for moisture content is required and other corrections for sample-specific actions by the laboratory are made (Consistency Memorandum Section B.1.1.6). In such cases, the Consistency Memorandum leads to an inconsistency in which the MSC cleanup standard can not be achieved in practice.¶
¶
Note that an SQL value for a soil sample that s based on an MQL corrected for soil moisture content (which involves dividing the MQL by the dry weight fraction) can never be less than the uncorrected MQL value, and can only equ ... [1]

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Deleted: method detection limit (

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Deleted: It is not equivalent to the SQL as defined by the Consistency Memorandum, and it was not ... [2]

Deleted: The modified MQL value used for data screening purposes corresponds to the SQL defin ... [3]

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For some chemicals, the unmodified MQL serves as the Standards 2 and 3 MSC cleanup level as described in the Consistency Memorandum (Section VI.2). When SQL values for soil are developed from analytical data, a correction for moisture content is required and other corrections for sample-specific actions by the laboratory are made (Consistency Memorandum Section B.1.1.6). In such cases, the Consistency Memorandum leads to an inconsistency in which the MSC cleanup standard can not be achieved in practice.

Note that an SQL value for a soil sample that s based on an MQL corrected for soil moisture content (which involves dividing the MQL by the dry weight fraction) can never be less than the uncorrected MQL value, and can only equal the MQL if the soil sample is anhydrous, which is extremely unlikely in practice. Thus, when the MQL becomes the MSC cleanup value for a chemical, soil having concentrations at or below the SQL values still will exceed the cleanup standard. Further any subsequent samples taken to confirm a cleanup action can never meet the cleanup standard for the same reasons.

This inconsistency would not exist if the sample-specific value were based on a modified MDL as provided in other TCEQ guidance documents, the Texas Risk Reduction Program (30TAC§350 and the Quality Assurance Project Plan for the Superfund Program (Document Control Number 200919.4, April 2006.)

This question was discussed with Fay Duke at a meeting on April 4, 2007. It was confirmed by the TCEQ in an April 9 e-mail that the laboratory MQL value is not corrected for moisture content. The importance of this question was discussed with Ann Strahl at the TCEQ by telephone on April 12.

Based on this conversation, Shaw agreed to propose to Ann Strahl an interpretation based on estimated J-qualified values that will allow samples having concentrations below the MQL to meet the MSC when the MSC equals the MQL. The TCEQ agreed review the proposed approach.

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It is not equivalent to the SQL as defined by the Consistency Memorandum, and it was not used in the data screening process in the draft report.

Page 1: [3] Deleted AStrahl 6/4/2007 2:19:00 PM

The modified MQL value used for data screening purposes corresponds to the SQL defined in the Consistency Memorandum (Section B.1.1.6). Individual MQL values that were affected by dilutions were excluded from the average to provide conservatively low screening values. The full value of the SQL is used in the data screening process as described in the Consistency Memorandum (Section III.4) for assessments according to Risk Reduction

Attachment 2

00048991

Eidson, Frank

From: Ann Strahl [ASTRAHL@tceq.state.tx.us]
Sent: Thursday, June 14, 2007 7:25 PM
To: Eidson, Frank
Cc: Fay Duke
Subject: Re: Language for LHAAP Site 59 Report Revision
Attachments: RTC LHAAP 59-Strahl 1.doc

Frank - I was out of the office most of today. I have attached a markup of your latest draft. Please call me tomorrow between 1 and 3:30 at 512-353-8223. My next availability is Wednesday, June 20. ann

Ann Strahl MC 225
Technical Support
Remediation Division
TCEQ
PO 13087
Austin, Texas 78711-3087
v: 512-239-2500
f: 512-239-2469
e: astrahl@tceq.state.tx.us

>>> "Eidson, Frank" <Frank.Eidson@shawgrp.com> 6/13/2007 4:28 PM >>>
Ann –

Here is the revised Response to Comments form for the draft LHAAP-59 report revision we have been talking about.

I incorporated the text from your emails almost verbatim as we discussed on the phone last Monday, and have attached them for your review.

I have indicated a couple of areas (indicated by *******) that we might talk about, which are minor and specific to this report. I think they can be taken care of with a little wordsmithing we can do over the phone.

Please call at your convenience.

Thanks.

- Frank

Arthur F. (Frank) Eidson, Ph.D
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832.725.9529 cell
713.996.4401 fax
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frank.eidson@shawgrp.com

Comments on Draft Final Site Investigation Report, LHAAP-59
Longhorn Army Ammunition Plant

November 2006

Submitted to Army on April 2, 2007

Reviewer: Fay Duke,TCEQ; Scott Harris, EPA Region 6
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
TCEQ Review Comments						
1		Section 3.1.1	a. It is stated that the TCEQ Consistency Memorandum defines the PQL as the sample quantitation limit (SQL), which is the MQL for the analytical method as adjusted by the laboratory to account for the individual sample matrix characteristics, or other analytical adjustment. This is incorrect. The Consistency Memorandum defines the PQL as the lowest non-zero standard in the calibration curve for the most sensitive standard available method. This definition is analogous to the Method Quantitation Limit (MQL) as defined in SW846 Method 8000B. Please correct. b. It is stated that the average MQL used for screening represents the average of MQL values reported by the laboratory. Please verify that the MQL value used represents the lowest non-zero standard in the laboratory's initial calibration curve as defined in SW846 Method 8000B. c. It is noted that several compounds have elevated	C	a. & b. The referenced text in Section 3.1.1 will be corrected to read: *"The practical quantitation limit (PQL) as used in this report, is the lowest non-zero standard in the laboratory's initial calibration curve, as defined in the Attachment B.1.1.4 of the Consistency Memorandum, and is analogous to the method quantitation limit (MQL) currently defined in Method 8000B in EPA's Test Methods for Evaluating Solid Waste (SW-846, 1996)."* A Laboratory Review Checklist (LRC) is included with each data package. The LRC asks "do the MQLs correspond to the concentration of the lowest non-zero calibration standard?" The laboratory checked that they utilize this definition. The values used in the calibration curves are included in the QA/QC section of each data package. Data that form the basis of this report (and all Shaw reports for the LHAAP) have been validated according to SW846 methods 8081 and 8151 and National Functional Guidelines for organic analysis or for inorganic analysis provided by the EPA. The Consistency Memorandum (Section B.1.1.6) provides for adjustment of MQL values, "to reflect sample-specific action(s) performed by the laboratory that are necessary but not prescribed in the method." The report text in Section 3.1.1 will be revised to read: *The "Result" values reported by the laboratory and used in this report represent the sample quantitation limit (SQL), which is defined as the method quantitation limit (MQL) adjusted for sample specific factors such as moisture content and dilution (Attachment B.1.1.6). LHAAP uses the SQLs to report the results for nondetected chemicals analyzed in an environmental sample. When a chemical is not detected in the sample, the SQL calculated for the chemical is reported flagged with a "U" qualifier, as required in the Consistency Memorandum (Section II.4.2), to advise the data user the chemical is not detected in the sample.*	

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Longhorn Army Ammunition Plant

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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			detection limits. Explanations should be provided in the report as to why lower detection limits could not be achieved.		c. Section 3.1.1 of the draft report describes the dilution of several samples to quantitate chlordane concentrations, and the resulting elevation of detection limits. Because there are other reasons why detection limits might be elevated, the text will be revised to read: *"Some samples required dilution to quantitate a chemical present in the sample at high concentrations. Dilution of a sample causes the SQLs for chemicals not detected to be elevated. For some chemicals the effect of dilution on the SQL will result in SQLs greater than the screening or regulatory levels. The laboratory determined dilutions were necessary when the matrix interfered with the analysis of the sample."*	
2		Test Report and Analytical Tables.	We noted that there are two quantitation limits reported by the laboratory in their test report: PQL and SQL. The PQL values appear to be used in the table to represent detection limit. Shouldn't the SQL be used instead? Because there are many definitions of PQL, please clarify what each of these reporting limits represent.	C	The laboratory reports two quantitation limits and provides their definitions routinely in analytical reports. The laboratory's PQL is analogous to the TCEQ's SQL, i.e., the MQL adjusted for soil moisture content and dilutions, as defined in the Consistency Memorandum (Section B.1.1.6). Therefore, in Tables 3-1 and 3-2 of the final site investigation report, the laboratory's PQL flagged with a "U" will be presented in the "Results" column to report the results for a chemical analyzed, but not detected, in environmental samples. Additionally, the column headed "Results" in those tables will be annotated by a footnote to document the results reported for chemicals not detected in the sample are flagged with a "U" and are the PQLs reported and defined by the laboratory as the MQL adjusted for sample-specific factors, such as soil moisture and dilution. The full value of the SQL is used in the data screening process, as described in the Consistency Memorandum (Section III.4) and as provided for assessments according to Risk Reduction Standard 3. The footnote b to Tables were revised to read:	

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Deleted: . The laboratory's reported PQL meets the definition recommended in the Consistency Memorandum (Section II 4.2 and in Attachment A.1)

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Deleted: This value is shown in Tables 3-1 and 3-2 of the final report as the "Result" with a footnote reference to its use. ¶

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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
					b = Value is the lowest non-zero calibration standard in the laboratory's initial calibration curve adjusted for the laboratory matrix and the amount of standard used. *U = Compound validated as not detected above the SQL reported. The SQL corresponds to the SQL as defined in TCEQ guidance (TCEQ 1998 Consistency Memorandum).* For some chemicals, the unmodified MQL serves as the Standards 2 and 3 MSC cleanup level as described in the Consistency Memorandum (Section VI.2). When SQL values for soil are developed from analytical data, a correction for moisture content is required and other corrections for sample-specific actions by the laboratory are made (Consistency Memorandum Section B.1.1.6). In such cases, the Consistency Memorandum leads to an inconsistency in which the MSC cleanup standard can not be achieved in practice. Note that an SQL value for a soil sample that is based on an MQL corrected for soil moisture content (which involves dividing the MQL by the dry weight fraction) can never be less than the uncorrected MQL value, and can only equal the MQL if the soil sample is anhydrous, which is extremely unlikely in practice. Thus, when the MQL becomes the MSC cleanup value for a chemical, soil having concentrations at or below the SQL values still will exceed the cleanup standard. Further, any subsequent samples taken to confirm a cleanup action can never meet the cleanup standard for the same reasons. This inconsistency would not exist if the sample-specific value were based on a modified MDL as provided in other TCEQ guidance documents, the Texas Risk Reduction Program (30TAC§350 and the Quality Assurance Project Plan for the Superfund Program (Document Control Number 200919.4, April 2006.)	

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Comment #	Page	Section/ Paragraph	Comment	C, D, E or X	Response	A or D?
					This question was discussed with Fay Duke at a meeting on April 4, 2007. It was confirmed by the TCEQ in an April 9 e-mail that the laboratory MQL value is not corrected for moisture content. The importance of this question was discussed with Ann Strahl at the TCEQ by telephone on April 12 and in a telephone conference on May 17, 2007. Based on these conversations, the following text was inserted in Section 3.0 of the revised document to define terms: "Terms used in this report to describe concentrations at or near the detection limit are defined as follows: **Practical quantitation limit (PQL)** is the concentration of the lowest non-zero standard in the laboratory's calibration curve adjusted for laboratory reagent matrix type and sample size. The PQL is analogous to the method quantitation limit (MQL) reported by the laboratory and described in Section 7 of SW846-Method 8000B. The PQL is used under the 30 TAC 335 rule to evaluate the capability of the analytical method used by the laboratory to quantitate the chemicals at concentrations below the regulatory level, e.g., the medium specific concentrations (MSCs). When the PQL of the most sensitive standard available method is greater than the regulatory level, the PQL from that method is used as the regulatory limit in lieu of the MSC as allowed in 30 TAC 335. Upon TCEQ concurrence, that PQL remains the MSC for the life of the work related to the site being investigated if no extenuating circumstance arises and warrants investigating the chemical to lower levels. ******** An example of an extenuating circumstance warranting a change to the PQL used as the MSC and relative to LHAAP would be the discovery of a federal- or state-identified rare species of flora or fauna	

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Comments on Draft Final Site Investigation Report, LHAAP-59
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Comment #	Page	Section/ Paragraph	Comment	C, D, E or X	Response	A or D[2]
					potentially affected by the chemical. **Sample quantitation limit (SQL)** is the PQL adjusted for sample-specific factors affecting the quantitation of the chemical measured in an environmental sample, such as dilution or moisture content, and flagged with a "U" qualifier to indicate the chemical was not detected in the sample. **Method detection limit (MDL)** is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix type containing the analyte (Consistency Memo, Appendix B.1.1.2). The laboratory establishes the MDL for the chemical and verifies the value on at least a quarterly basis using a detectability check sample (DCS) to demonstrate the laboratory can detect the chemical at that MDL. The DCS is a laboratory reagent grade matrix sample spiked with the chemical at or within two times the laboratory's MDL and carried through the entire sample preparation and analysis procedures. **Sample detection limit (SDL)** is the laboratory's MDL for the chemical adjusted for sample-specific factors affecting the detection of the chemical measured in an environmental sample, such as dilution or percent moisture. ****** and flagged or qualified with a "U" or "<" to indicate the chemical was not detected in the sample above that SDL. As agreed upon between the TCEQ and LHAAP during a May 17, 2007 telephone conference, the SDL is used in this document to report nondetected results for chemicals only when the PQL is being used as the regulatory limit in lieu of the MSC for the chemical.	

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Comment #	Page	Section/ Paragraph	Comment	C, D, E or X	Response	A or D
					Note: The analytical data test reports received from the laboratory use similar terms but define the terms differently. The following terms used by the Kemron laboratory are defined relative to the PQL, SQL, and SDL listed above: • The Kemron laboratory's MQL is as defined in the Consistency Memorandum (Section B.1.1.3). MQL values for chemicals at LHAAP-59 are provided in Appendix C of the revised document. • The Kemron laboratory's MDL is as defined in the Consistency Memorandum (Section B.1.1.3). • The Kemron laboratory's "PQL" is analogous to the SQL defined in Section 3.0 of this report. • The Kemron laboratory's "SQL" is analogous to the SDL defined in Section 3.0 of this report."	
3		Section 3.1.2	We note that several compounds were detected at concentrations above GWP-Ind, but not above their SAI-Ind values. It is further stated in this report that because there is no intention to access groundwater at LHAAP, the SAI-Ind concentrations are the more applicable medium specific concentrations. Unless a land use control is implemented for this area the presumption that there is no intention to access groundwater should not be used as the rational for dismissing the GWP-Ind values. Please revise.	C	The report will be revised to address the GWP-Ind MSC values.	

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Comment #	Page	Section/ Paragraph	Comment	C, D, E or X	Response	A or D
			TCEQ Comment (Fay Duke, from email dated March 20, 2007): I must revise my comments relating to Section 3.1.2 (TCEQ comment No. 3). Unlike RRR Std 3, there is limited flexibility in determining cleanup levels. In other words, one cannot modify or chose not to comply with GWP-Ind MSC just because there is no intention to access groundwater. I have included the citation below: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=559			
4		Section 3.1.3	We note that in the screening process for samples collected in the previous study the data was evaluated against the ecological screening value. Please explain why this process was not conducted for the samples collected in 2006. Are the additional data collected in 2006 being incorporated into the installation-wide risk assessment?	C	The ecological screening of historic data was done for information purposes only. The 2006 data were not screened for ecological evaluations because they are included in the site-wide ecological risk assessment. Yes, they have been included in the site-wide ecological risk assessment.	

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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
5			I completed my review of the SI report for LHAAP-06, 07...68. The comment letter is currently under review by management. However, I wanted to point out another major concern that I have regarding the data evaluation being conducted under TCEQ Risk Reduction Standard 2 medium specific concentrations (MSC). In this report and likely in the SI report for LHAAP-59, a screening process was conducted to eliminate chemical with concentration that are equal or below the TCEQ risk based screening value (RSBV) from further evaluation against the Std 2 MSC. Please note that the screening chemical against the TCEQ RBSV is only to be use to be used under RRR std 3 for the purpose of eliminating chemical from the baseline risk assessment; the RBSV are not to be use compliance with RRR standard 2. Under RRR Standard 2, the sample results must be compared to the lower of the SAI-Ind and the GWP-Ind MSC unless the PQL or background is lower than the applicable MSC.	C	Longhorn AAP sites can be evaluated according to Risk Standard 3 as provided in TCEQ correspondence dated April 2, 2000. However, at this time, the Army intends to screen the data under Standard 2. The screen against RBSV will be deleted from the document.	

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Comment #	Page	Section/ Paragraph	Comment	C, D, E or X	Response	A or D[2]
EPA Review Comments						
1		Section 3.1.2	Section 3.1.2 indicates that under the TCEQ RRS, the future use of LHAAP as wildlife refuge corresponds to commercial/industrial land use regulations, rather than residential regulations. Thus the use of commercial/industrial criteria. Please verify and document that this is an accurate interpretation. I found an apparently conflicting interpretation at: http://www.tceq.state.tx.us/assets/public/remediation/trrp/update033104.pdf This document seems to indicate that such a land use would be considered residential.	C	Shaw concurs with the following TCEQ comment from Fay Duke: *TCEQ Comment (Fay Duke, from email dated March 20, 2007): I went back to look at the rule and my comments regarding Scott's comment and wanted to clarify the issue regarding land use scenarios.* *First of all, the land use concept really only applies to RRR Std 3 in developing site specific baseline risk assessment. Under RRR Std 2, all facility are subject to residential soil requirements unless one of the three conditions are satisfied. The situation at Longhorn appears to satisfy the conditions under 335.557(3), which states that for government owned property which have nonresidential activities, as long as access are restricted such that exposure assumptions remain valid for the duration of government control and therefore, can be subject to nonresidential requirements. The citation for 30 TAC 335.557 is included below:* *http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=557*	
2		Section 3.1.2	Section 3.1.2 indicates that GWP-Ind standards will not be considered since there is no intent to access GW. Verify whether this is a sufficient rationale to disregard those standards, absent any type of land use restrictions.	C	The report will be revised to address the GWP-Ind MSC values.	

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Attachment 3

00049004

Eidson, Frank

From: Eidson, Frank
Sent: Friday, June 15, 2007 4:45 PM
To: Srivastav, Praveen; Elliott, John
Subject: Final LHAAP-59 RTCs
Attachments: RTC LHAAP 59-Strahl-final.doc

I have attached the final LHAAP-59 RTCs that include the results of my conversation with Ann Strahl about 2:30 today. We covered the areas I indicated by ****** in the last version I emailed to you, and we decided on the final version shown here.

The important thing now is that language in this RTC can be used in other reports, such as the NFA screening report and the LHAAP-35/36 report, and all subsequent reports as needed.

I'm incorporating this language into the RTCs for the NFA sites report.

Have a good weekend.

- Frank

Arthur F. (Frank) Eidson, Ph.D
Senior Risk Assessor
Shaw Environmental & Infrastructure
3010 Briarpark Drive, Suite 4N
Houston, TX 77042
713.996.4416 direct
832.725.9529 cell
713.996.4401 fax
www.shawgrp.com
frank.eidson@shawgrp.com

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TCEQ Review Comments						
1		Section 3.1.1	a. It is stated that the TCEQ Consistency Memorandum defines the PQL as the sample quantitation limit (SQL), which is the MQL for the analytical method as adjusted by the laboratory to account for the individual sample matrix characteristics, or other analytical adjustment. This is incorrect. The Consistency Memorandum defines the PQL as the lowest non-zero standard in the calibration curve for the most sensitive standard available method. This definition is analogous to the Method Quantitation Limit (MQL) as defined in SW846 Method 8000B. Please correct. b. It is stated that the average MQL used for screening represents the average of MQL values reported by the laboratory. Please verify that the MQL value used represents the lowest non-zero standard in the laboratory's initial calibration curve as defined in SW846 Method 8000B. c. It is noted that several compounds have elevated	C	a. & b. The referenced text in Section 3.1.1 will be corrected to read: *"The practical quantitation limit (PQL), as used in this report, is the lowest non-zero standard in the laboratory's initial calibration curve, as defined in the Attachment B.1.1.4 of the Consistency Memorandum, and is analogous to the method quantitation limit (MQL) currently defined in Method 8000B in EPA's Test Methods for Evaluating Solid Waste (SW-846, 1996)."* A Laboratory Review Checklist (LRC) is included with each data package. The LRC asks "do the MQLs correspond to the concentration of the lowest non-zero calibration standard?" The laboratory checked that they utilize this definition. The values used in the calibration curves are included in the QA/QC section of each data package. Data that form the basis of this report (and all Shaw reports for the LHAAP) have been validated according to SW846 methods 8081 and 8151 and National Functional Guidelines for organic analysis or for inorganic analysis provided by the EPA. The Consistency Memorandum (Section B.1.1.6) provides for adjustment of MQL values, "to reflect sample-specific action(s) performed by the laboratory that are necessary but not prescribed in the method." The report text in Section 3.1.1 will be revised to read: *The "Result" values reported by the laboratory and used in this report represent the sample quantitation limit (SQL), which is defined as the method quantitation limit (MQL) adjusted for sample specific factors such as moisture content and dilution (Attachment B.1.1.6). LHAAP uses the SQLs to report the results for nondetected chemicals analyzed in an environmental sample. When a chemical is not detected in the sample, the SQL calculated for the chemical is reported flagged with a "U" qualifier, as required in the Consistency Memorandum (Section II.4.2), to advise the data user the chemical is not detected in the sample..*	

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Comments on Draft Final Site Investigation Report, LHAAP-59
Longhorn Army Ammunition Plant

November 2006

Submitted to Army on April 2, 2007

Reviewer: Fay Duke,TCEQ; Scott Harris, EPA Region 6
Respondents: Shaw Environmental, Inc.

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			detection limits. Explanations should be provided in the report as to why lower detection limits could not be achieved.		c. Section 3.1.1 of the draft report describes the dilution of several samples to quantitate chlordane concentrations, and the resulting elevation of detection limits. Because there are other reasons why detection limits might be elevated, the text will be revised to read: *"Some samples required dilution to quantitate a chemical present in the sample at high concentrations. Dilution of a sample causes the SQLs for chemicals not detected to be elevated. For some chemicals the effect of dilution on the SQL will result in SQLs greater than the screening or regulatory levels. The laboratory determined dilutions were necessary when the matrix interfered with the analysis of the sample."*	
2		Test Report and Analytical Tables.	We noted that there are two quantitation limits reported by the laboratory in their test report: PQL and SQL. The PQL values appear to be used in the table to represent detection limit. Shouldn't the SQL be used instead? Because there are many definitions of PQL, please clarify what each of these reporting limits represent.	C	The laboratory reports two quantitation limits and provides their definitions routinely in analytical reports. The laboratory's PQL is analogous to the TCEQ's SQL, i.e., the MQL adjusted for soil moisture content and dilutions, as defined in the Consistency Memorandum (Section B.1.1.6),. Therefore, in Tables 3-1 and 3-2 of the final site investigation report, the laboratory's PQL flagged with a "U" and is used in the "Results" column to report the results for a chemical analyzed, but not detected, in environmental samples. Additionally, the column headed "Results" in those tables will be annotated by a footnote to document the results reported for chemicals not detected in the sample are flagged with a "U" and are the PQLs reported and defined by the laboratory as the MQL adjusted for sample-specific factors, such as soil moisture and dilution. The full value of the SQL is used in the data screening process, as described in the Consistency Memorandum (Section III.4) and as provided for assessments according to Risk Reduction Standard 3. The footnote b to tables in section 3 was revised to read: *b = Value is the lowest non-zero calibration standard in the laboratory's*	

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					initial calibration curve adjusted for the laboratory matrix and the amount of standard used. *U = Compound validated as not detected above the SQL reported. The SQL corresponds to the SQL as defined in TCEQ guidance (TCEQ 1998 Consistency Memorandum).* For some chemicals, the unmodified MQL serves as the Standards 2 and 3 MSC cleanup level as described in the Consistency Memorandum (Section VI.2). When SQL values for soil are developed from analytical data, a correction for moisture content is required and other corrections for sample-specific actions by the laboratory are made (Consistency Memorandum Section B.1.1.6). In such cases, the Consistency Memorandum leads to an inconsistency in which the MSC cleanup standard can not be achieved in practice. Note that an SQL value for a soil sample that is based on an MQL corrected for soil moisture content (which involves dividing the MQL by the dry weight fraction) can never be less than the uncorrected MQL value, and can only equal the MQL if the soil sample is anhydrous, which is extremely unlikely in practice. Thus, when the MQL becomes the MSC cleanup value for a chemical, soil having concentrations at or below the SQL values still will exceed the cleanup standard. Further, any subsequent samples taken to confirm a cleanup action can never meet the cleanup standard for the same reasons. This inconsistency would not exist if the sample-specific value were based on a modified MDL as provided in other TCEQ guidance documents, the Texas Risk Reduction Program (30TAC§350 and the Quality Assurance Project Plan for the Superfund Program (Document Control Number 200919.4, April 2006.)	

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					This question was discussed with Fay Duke at a meeting on April 4, 2007. It was confirmed by the TCEQ in an April 9 e-mail that the laboratory MQL value is not corrected for moisture content. The importance of this question was discussed with Ann Strahl at the TCEQ by telephone on April 12 and in a telephone conference on May 17, 2007. Based on these conversations, the following text was inserted in Section 3.0 of the revised document to define terms: "Terms used in this report to describe concentrations at or near the detection limit are defined as follows: **Practical quantitation limit (PQL)** is the concentration of the lowest non-zero standard in the laboratory's calibration curve adjusted for laboratory reagent matrix type and sample size. The PQL is analogous to the method quantitation limit (MQL) reported by the laboratory and described in Section 7 of SW846-Method 8000B. The PQL is used under the 30 TAC 335 rule to evaluate the capability of the analytical method used by the laboratory to quantitate the chemicals at concentrations below the regulatory level, e.g., the medium specific concentrations (MSCs). When the PQL of the most sensitive standard available method is greater than the regulatory level, the PQL from that method is used as the regulatory limit in lieu of the MSC as allowed in 30 TAC 335. Upon TCEQ concurrence, that PQL remains the MSC for the life of the work related to the site being investigated if no extenuating circumstance arises and warrants investigating the chemical to lower levels. An example of an extenuating circumstance warranting a change to the PQL used as the MSC and relative to LHAAP would be a substantial change in circumstances that would result in increased risk to human health or the environment.	

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					Sample quantitation limit (SQL) is the PQL adjusted for sample-specific factors affecting the quantitation of the chemical measured in an environmental sample, such as dilution or moisture content, and flagged with a "U" qualifier to indicate the chemical was not detected in the in the sample.. **Method detection limit (MDL)** is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix type containing the analyte (Consistency Memo, Appendix B.1.1.2). The laboratory establishes the MDL for the chemical and verifies the value on at least a quarterly basis using a detectability check sample (DCS) to demonstrate that the laboratory can detect the chemical at that MDL. The DCS is a laboratory reagent grade matrix sample spiked with the chemical at or within two times the laboratory's MDL and carried through the entire sample preparation and analysis procedures. **Sample detection limit (SDL)** is the laboratory's MDL for the chemical adjusted for sample-specific factors affecting the detection of the chemical measured in an environmental sample, such as dilution or percent moisture, and flagged or qualified with a "U" or "<" to indicate the chemical was not detected in the sample. As agreed upon between the TCEQ and LHAAP during a May 17, 2007 telephone conference, the SDL is used in this document to report nondetected results for chemicals only when the PQL is being used as the regulatory limit in lieu of the MSC for the chemical. **Note:** The analytical data test reports received from the	

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					laboratory use similar terms but define the terms differently. The following terms used by the Kemron laboratory are defined relative to the PQL, SQL, and SDL listed above: • The Kemron laboratory's MQL is as defined in the Consistency Memorandum (Section B.1.1.3). MQL values for chemicals at LHAAP-59 are provided in Appendix C of the revised document. • The Kemron laboratory's MDL is as defined in the Consistency Memorandum (Section B.1.1.3). • The Kemron laboratory's "PQL" is analogous to the SQL defined in Section 3.0 of this report. • The Kemron laboratory's "SQL" is analogous to the SDL defined in Section 3.0 of this report."	
3		Section 3.1.2	We note that several compounds were detected at concentrations above GWP-Ind, but not above their SAI-Ind values. It is further stated in this report that because there is no intention to access groundwater at LHAAP, the SAI-Ind concentrations are the more applicable medium specific concentrations. Unless a land use control is implemented for this area the presumption that there is no intention to access groundwater should not be used as the rational for dismissing the GWP-Ind values. Please revise.	C	The report will be revised to address the GWP-Ind MSC values.	

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			TCEQ Comment (Fay Duke, from email dated March 20, 2007): I must revise my comments relating to Section 3.1.2 (TCEQ comment No. 3). Unlike RRR Std 3, there is limited flexibility in determining cleanup levels. In other words, one cannot modify or chose not to comply with GWP-Ind MSC just because there is no intention to access groundwater. I have included the citation below: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=559			
4		Section 3.1.3	We note that in the screening process for samples collected in the previous study the data was evaluated against the ecological screening value. Please explain why this process was not conducted for the samples collected in 2006. Are the additional data collected in 2006 being incorporated into the installation-wide risk assessment?	C	The ecological screening of historic data was done for information purposes only. The 2006 data were not screened for ecological evaluations because they are included in the site-wide ecological risk assessment. Yes, they have been included in the site-wide ecological risk assessment.	

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5			I completed my review of the SI report for LHAAP-06, 07...68. The comment letter is currently under review by management. However, I wanted to point out another major concern that I have regarding the data evaluation being conducted under TCEQ Risk Reduction Standard 2 medium specific concentrations (MSC). In this report and likely in the SI report for LHAAP-59, a screening process was conducted to eliminate chemical with concentration that are equal or below the TCEQ risk based screening value (RSBV) from further evaluation against the Std 2 MSC. Please note that the screening chemical against the TCEQ RBSV is only to be use to be used under RRR std 3 for the purpose of eliminating chemical from the baseline risk assessment; the RBSV are not to be use compliance with RRR standard 2. Under RRR Standard 2, the sample results must be compared to the lower of the SAI-Ind and the GWP-Ind MSC unless the PQL or background is lower than the applicable MSC.	C	Longhorn AAP sites can be evaluated according to Risk Standard 3 as provided in TCEQ correspondence dated April 2, 2000. However, at this time, the Army intends to screen the data under Standard 2. The screen against RBSV will be deleted from the document.	

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EPA Review Comments						
1		Section 3.1.2	Section 3.1.2 indicates that under the TCEQ RRS, the future use of LHAAP as wildlife refuge corresponds to commercial/industrial land use regulations, rather than residential regulations. Thus the use of commercial/industrial criteria. Please verify and document that this is an accurate interpretation. I found an apparently conflicting interpretation at: http://www.tceq.state.tx.us/assets/public/remediation/trrp/update033104.pdf This document seems to indicate that such a land use would be considered residential.	C	Shaw concurs with the following TCEQ comment from Fay Duke: *TCEQ Comment (Fay Duke, from email dated March 20, 2007): I went back to look at the rule and my comments regarding Scott's comment and wanted to clarify the issue regarding land use scenarios.* *First of all, the land use concept really only applies to RRR Std 3 in developing site specific baseline risk assessment. Under RRR Std 2, all facility are subject to residential soil requirements unless one of the three conditions are satisfied. The situation at Longhorn appears to satisfy the conditions under 335.557(3), which states that for government owned property which have nonresidential activities, as long as access are restricted such that exposure assumptions remain valid for the duration of government control and therefore, can be subject to nonresidential requirements. The citation for 30 TAC 335.557 is included below:* *http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=557*	
2		Section 3.1.2	Section 3.1.2 indicates that GWP-Ind standards will not be considered since there is no intent to access GW. Verify whether this is a sufficient rationale to disregard those standards, absent any type of land use restrictions.	C	The report will be revised to address the GWP-Ind MSC values.	

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Attachment 4

Eidson, Frank

From: Eidson, Frank
Sent: Wednesday, June 27, 2007 9:18 AM
To: 'Ann Strahl'
Subject: RE: request
Attachments: TCEQ-AStrahl-LHAAP Rsp Cmt 1 rev.doc; TCEQ-AStrahl-LHAAP Rsp Cmt2 rev.doc

Hi Ann –

Here is the first of two e-mails from early June. I have re-attached the text files.

The second follows shortly.

- Frank

Arthur F. (Frank) Eidson, Ph.D

Senior Risk Assessor

Shaw Environmental & Infrastructure

3010 Briarpark Drive, Suite 4N

Houston, TX 77042

713.996.4416 direct

832.725.9529 cell

713.996.4401 fax

www.shawgrp.com

frank.eidson@shawgrp.com

Eidson, Frank

From: Eidson, Frank
Sent: Wednesday, June 27, 2007 9:20 AM
To: 'Ann Strahl'
Subject: RE: LHAAP__1.doc

Attachments: TCEQ-AStrahl-LHAAP__1_.doc

TCEQ-AStrahl-LHAA P__1_.doc (34...

Ann -

Here is the second file we worked from. I incorporated the text from your two e-mails into our responses to comments on the Longhorn Site 59 report.

- Frank

-----Original Message-----
From: Ann Strahl [mailto:ASTRAHL@tceq.state.tx.us]
Sent: Monday, June 04, 2007 11:48 AM
To: Eidson, Frank
Subject: LHAAP__1.doc

Here some draft language

Attachment 5

00049019

Eidson, Frank

From: Elliott, John
Sent: Friday, July 20, 2007 8:44 AM
To: Eidson, Frank; Olson, Nicole
Subject: FW: Fwd: FW: Final LHAAP-59 RTCs
Attachments: RTC LHAAP 59-Strahl-final_1__1.doc

Latest & greatest on LHAAP-59.

From: Fay Duke [mailto:FDUKE@tceq.state.tx.us]
Sent: Thursday, July 19, 2007 6:30 PM
To: rose.zeiler@us.army.mil
Cc: Elliott, John; Srivastav, Praveen; Cliff Murray; John R SWT Lambert
Subject: Re: Fwd: FW: Final LHAAP-59 RTCs

Rose,

We have completed our review of the RTC and generally concur with the response. However, Ann indicated that she made a few editorial change. I'm not sure what they are. I was out yesterday and today she is out. Since I will be out of the office tomorrow, I decided to just forward the revised RTC. Let me know if you should have any questions or concerns with the editorial changes. Thanks, fd

Enclosure: RTC LHAAP 59-Strahl-final_1.doc

>>> <rose.zeiler@us.army.mil> 6/25/2007 10:46 AM >>>

Fay,
Please see attached RTCs for Site 59 - Ann Strahl's comments have been incorporated. As soon as you provide concurrence, we will begin finalizing the documents.
Thanks,
Rose

Rose M. Zeiler, Ph.D.,
Site Manager
Longhorn Army Ammunition Plant
479-635-0110 (0112 – fax)
(918) 605-8398 (cell)

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					This question was discussed with Fay Duke at a meeting on April 4, 2007. It was confirmed by the TCEQ in an April 9 e-mail that the laboratory MQL value is not corrected for moisture content. The importance of this question was discussed with Ann Strahl at the TCEQ by telephone on April 12 and in a telephone conference on May 17, 2007. Based on these conversations, the following text was inserted in Section 3.0 of the revised document to define terms: "Terms used in this report to describe concentrations at or near the detection limit are defined as follows: **Practical quantitation limit (PQL)** is the concentration of the lowest non-zero standard in the laboratory's calibration curve adjusted for laboratory reagent matrix type and sample size. The PQL is analogous to the method quantitation limit (MQL) reported by the laboratory and described in Section 7 of SW846-Method 8000B. The PQL is used under the 30 TAC 335 rule to evaluate the capability of the analytical method used by the laboratory to quantitate the chemicals at concentrations below the regulatory level, e.g., the medium specific concentrations (MSCs). When the PQL of the most sensitive standard available method is greater than the regulatory level, the PQL from that method is used as the regulatory limit in lieu of the MSC as allowed in 30 TAC 335. Upon TCEQ concurrence, that PQL remains the MSC for the life of the work related to the site being investigated if no extenuating circumstance arises and warrants investigating the chemical to lower levels. An example of an extenuating circumstance warranting a change to the PQL used as the MSC and relative to LHAAP would be a substantial change in circumstances that would result in increased risk to human health or the environment.	

Comments on Draft Final Site Investigation Report, LHAAP-59
Longhorn Army Ammunition Plant

November 2006

Submitted to Army on April 2, 2007

Reviewer: Fay Duke,TCEQ; Scott Harris, EPA Region 6
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
					Sample quantitation limit (SQL) is the PQL adjusted for sample-specific factors affecting the quantitation of the chemical measured in an environmental sample, such as dilution or moisture content, and flagged with a "U" qualifier to indicate the chemical was not detected in the in the sample.. **Method detection limit (MDL)** is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix type containing the analyte (Consistency Memo, Appendix B.1.1.2). The laboratory establishes the MDL for the chemical and verifies the value on at least a quarterly basis using a detectability check sample (DCS) to demonstrate that the laboratory can detect the chemical at that MDL. The DCS is a laboratory reagent grade matrix sample spiked with the chemical at or within two times the laboratory's MDL and carried through the entire sample preparation and analysis procedures. **Sample detection limit (SDL)** is the laboratory's MDL for the chemical adjusted for sample-specific factors affecting the detection of the chemical measured in an environmental sample, such as dilution or percent moisture, and flagged or qualified with a "U" or "<" to indicate the chemical was not detected in the sample. As agreed upon between the TCEQ and LHAAP during a May 17, 2007 telephone conference, the SDL is used in this document to report nondetected results for chemicals only when the PQL is being used as the regulatory limit in lieu of the MSC for the chemical. **Note:** The analytical data test reports received from the	

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					laboratory use similar terms but define the terms differently. The following terms used by the Kemron laboratory are defined relative to the PQL, SQL, and SDL listed above: • The Kemron laboratory's MQL is as defined in the Consistency Memorandum (Section B.1.1.3). MQL values for chemicals at LHAAP-59 are provided in Appendix C of the revised document. • The Kemron laboratory's MDL is as defined in the Consistency Memorandum (Section B.1.1.3). • The Kemron laboratory's "PQL" is analogous to the SQL defined in Section 3.0 of this report. • The Kemron laboratory's "SQL" is analogous to the SDL defined in Section 3.0 of this report."	
3		Section 3.1.2	We note that several compounds were detected at concentrations above GWP-Ind, but not above their SAI-Ind values. It is further stated in this report that because there is no intention to access groundwater at LHAAP, the SAI-Ind concentrations are the more applicable medium specific concentrations. Unless a land use control is implemented for this area the presumption that there is no intention to access groundwater should not be used as the rational for dismissing the GWP-Ind values. Please revise.	C	The report will be revised to address the GWP-Ind MSC values.	

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			TCEQ Comment (Fay Duke, from email dated March 20, 2007): I must revise my comments relating to Section 3.1.2 (TCEQ comment No. 3). Unlike RRR Std 3, there is limited flexibility in determining cleanup levels. In other words, one cannot modify or chose not to comply with GWP-Ind MSC just because there is no intention to access groundwater. I have included the citation below: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=559			
4		Section 3.1.3	We note that in the screening process for samples collected in the previous study the data was evaluated against the ecological screening value. Please explain why this process was not conducted for the samples collected in 2006. Are the additional data collected in 2006 being incorporated into the installation-wide risk assessment?	C	The ecological screening of historic data was done for information purposes only. The 2006 data were not screened for ecological evaluations because they are included in the site-wide ecological risk assessment. Yes, they have been included in the site-wide ecological risk assessment.	

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5			I completed my review of the SI report for LHAAP-06, 07...68. The comment letter is currently under review by management. However, I wanted to point out another major concern that I have regarding the data evaluation being conducted under TCEQ Risk Reduction Standard 2 medium specific concentrations (MSC). In this report and likely in the SI report for LHAAP-59, a screening process was conducted to eliminate chemical with concentration that are equal or below the TCEQ risk based screening value (RSBV) from further evaluation against the Std 2 MSC. Please note that the screening chemical against the TCEQ RBSV is only to be use to be used under RRR std 3 for the purpose of eliminating chemical from the baseline risk assessment; the RBSV are not to be use compliance with RRR standard 2. Under RRR Standard 2, the sample results must be compared to the lower of the SAI-Ind and the GWP-Ind MSC unless the PQL or background is lower than the applicable MSC.	C	Longhorn AAP sites can be evaluated according to Risk Standard 3 as provided in TCEQ correspondence dated April 2, 2000. However, at this time, the Army intends to screen the data under Standard 2. The screen against RBSV will be deleted from the document.	

Comments on Draft Final Site Investigation Report, LHAAP-59
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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
EPA Review Comments						
1		Section 3.1.2	Section 3.1.2 indicates that under the TCEQ RRS, the future use of LHAAP as wildlife refuge corresponds to commercial/industrial land use regulations, rather than residential regulations. Thus the use of commercial/industrial criteria. Please verify and document that this is an accurate interpretation. I found an apparently conflicting interpretation at: http://www.tceq.state.tx.us/assets/public/remediation/trrp/update033104.pdf This document seems to indicate that such a land use would be considered residential.	C	Shaw concurs with the following TCEQ comment from Fay Duke: *TCEQ Comment (Fay Duke, from email dated March 20, 2007): I went back to look at the rule and my comments regarding Scott's comment and wanted to clarify the issue regarding land use scenarios.* *First of all, the land use concept really only applies to RRR Std 3 in developing site specific baseline risk assessment. Under RRR Std 2, all facility are subject to residential soil requirements unless one of the three conditions are satisfied. The situation at Longhorn appears to satisfy the conditions under 335.557(3), which states that for government owned property which have nonresidential activities, as long as access are restricted such that exposure assumptions remain valid for the duration of government control and therefore, can be subject to nonresidential requirements. The citation for 30 TAC 335.557 is included below: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=557*	
2		Section 3.1.2	Section 3.1.2 indicates that GWP-Ind standards will not be considered since there is no intent to access GW. Verify whether this is a sufficient rationale to disregard those standards, absent any type of land use restrictions.	C	The report will be revised to address the GWP-Ind MSC values.	

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FINAL

ENGINEERING EVALUATION/COST ANALYSIS

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Contract Number W912BV-04-D-2019
Task Order DY-04

Prepared for:

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
FORT WORTH DISTRICT
819 Taylor Street, Room 2A19
Fort Worth, Texas 76102-0300

Prepared by:

12037 Starcrest Drive
San Antonio, Texas 78247

CAPE Project 42019.004
October 2007

ENGINEERING CERTIFICATE

The attached Engineering Evaluation/Cost Analysis for the former Longhorn Army Ammunition Plant, Harrison County, Karnack, Texas, was prepared for the U.S. Army Corps of Engineers, Fort Worth District under my direction and supervision. I hereby certify that, within the scope of work and limitations stated herein, all data contained in this report are true and correct to the best of my knowledge and belief as of the date of this report.

By: _____ Date: 4 October 2007

Robert L. Vinson III, P.E.
Texas Licensed Professional Engineer, 81659

Michael Lamon
Quality Control Manager

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LIST OF ABBREVIATIONS AND ACRONYMS

AEC	Army Environmental Command
ARAR	applicable or relevant and appropriate requirement
ARPA	Archaeological Resources Protection Act
BIP	blown-in-place
BRAC	Base Realignment and Closure
CAA	Clean Air act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESWF	USACE, Fort Worth District
CFR	Code of Federal Regulations
CLNWR	Caddo Lake National Wildlife Refuge
COC	contaminant of concern
CRREL	Cold Regions Research Engineering Laboratory
CSM	conceptual site model
CWA	Clean Water Act
DA	U.S. Department of the Army
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DGPS	differential global positioning system
DMM	Discarded Military Munitions
DNT	dinitrotoluene
DO	Delivery Order
DOD	U.S. Department of Defense
DQO	Data quality objective
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ERDC	Engineering Research and Development Center
ESA	Endangered Species Act
ESS	Explosives Safety Submission
GCAL	Gulf Coast Analytical Laboratories, Inc.
GIS	geographical information system
GPO	geophysical prove out
HRR	historical record review
HTRW	Hazardous, Toxic, and Radioactive Waste
LCS	laboratory control sample
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MC	munitions constituents
MD	munitions debris
MDL	method detection limit
MEC	Munitions and Explosives of Concern
mm	millimeter
MMRP	Military Munitions Response Program

MOA	Memorandum of Agreement
MPPEH	Material Potentially Presenting Explosive Hazard
MRS	Munitions Response Sites
MS	matrix spike
MSC	medium-specific concentration
MSD	matrix spike duplicate
NA	No Action
NEPA	National Environmental Policy Act
NEW	net explosive weight
NHPA	National Historic Preservation Act
NTCRA	non-time-critical removal action
OB/OD	open burn/open detonation
OE	ordnance and explosives
OERIA	Ordnance and Explosives Risk Impact Assessment
OESS	Ordnance and Explosives Safety Specialist
QA	quality assurance
QC	quality control
RAB	Restoration Advisory Board
RAO	removal action objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRD	range-related debris
RRR	Risk Reduction Resources, Inc.
RTK	real-time kinematic
RTS	robotic total station
SAP	Sampling and Analysis Plan
SDWA	Safe Drinking Water Act
SI	site inspection
SOW	statement of work
SUXOS	Senior UXO Supervisor
TAC	Texas Administrative Code
TBC	to be considered
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
TPP	Technical Project Planning
TRRR	Texas Risk Reduction Rule
USACE	U.S. Army Corps of Engineers
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
WP	white phosphorus
WWII	World War II

EXECUTIVE SUMMARY

This Engineering Evaluation/Cost Analysis (EE/CA) summarizes investigative work performed on three Munitions Response Sites (MRSs) at the former Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. An EE/CA is similar to a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial investigation/feasibility study process but is streamlined to meet the needs of non-time-critical removal actions (NTCRAs). The purpose of the EE/CA is to identify the presence and/or the extent of a hazard, to identify the objectives of the removal action, to provide a risk-based analysis of the existing conditions, and to analyze the various alternatives that may be used to satisfy these objectives. This removal action is intended to be a final action.

The U.S. Army Base Realignment and Closure (BRAC) Division is the lead U.S. Department of Defense (DOD) organization for execution and oversight of work at the LHAAP. Funding for LHAAP-related work is provided by the Army Environmental Command (AEC) as a function of the Military Munitions Response Program (MMRP). The Fort Worth District (CESWF) is the contracting agency and technical manager for this project, and as such has responsibility for the site-specific project management and execution.

This EE/CA was prepared in accordance with Contract W912BV-04-D-2019, Delivery Order (DO) No. DY-04. The statement of work (SOW) governing this effort is contained in Appendix A. Plans for activities performed during this EE/CA were reviewed by the U.S. Environmental Protection Agency (EPA), Region 6, the Texas Commission on Environmental Quality (TCEQ), and the U.S Fish and Wildlife Service (USFWS). CESWF prepared an Explosives Safety Submission (ESS) and submitted it to the Sacrament District Design Center for approval before the start of field activities.

ES-1 Background

The former LHAAP is located in east-central Texas in the northeastern corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. LHAAP was established in October 1942 with the primary mission of producing trinitrotoluene (TNT) flake. TNT production continued until August 1945, when the plant went on standby status. Pyrotechnic ammunition (e.g., photoflash bombs, simulators, hand signals, and tracer ammunition) were manufactured at LHAAP from 1952 until 1956.

The LHAAP rocket motor facility began operation in November 1955. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was reestablished. Through 1994, operations consisted of producing pyrotechnic and propellant mixtures; loading, assembling, and packing activities; accommodating receipt and shipment of containerized cargo; and maintenance and/or layaway of standby facilities and equipment as they applied to mobilization planning.

LHAAP was also responsible for static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the United States and the former Union of Soviet Socialist Republics. LHAAP was declared excess to the Army's needs and was placed in inactive status in 1997. The initial 5,032 acres were transferred to USFWS in May 2004. Subsequent transfers increased the total acreage transferred to USFWS to more than 6,000 acres.

Numerous studies and investigations sponsored by the Army have been conducted at the LHAAP dating back to the early 1980s. The most recent study at the MRS locations was a site inspection (SI) completed in June 2005. The SI Report included a comprehensive historical record review (HRR) of the former operations at the facility. The SI Report identified three MRS locations encompassing a total of approximately 186 acres at LHAAP:

1. Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R) – 79 acres.
2. Site 53 – Static Test Area (LHAAP-002-R) – 27 acres.
3. Site 54 – Ground Signal Test Area (LHAAP-003-R) – 80 acres.

These three sites are also slated for transfer to the USFWS. The HRR confirmed the historical presence of Munitions and Explosives of Concern (MEC) items at all MRS locations. The SI Report recommended further investigation of these three sites. Munitions debris (MD) was identified in the MRS locations. Additionally, the SI Report identified data gaps in earlier soil sampling in that no analysis for white phosphorus (WP) was performed for Sites 27 and 54, and no analysis for munitions constituents (MC), including WP, was performed in the scarred areas at Site 53. The mission of LHAAP included production of illumination-type ordnance and the HRR identified demilitarization/demolition of leaking ordnance containing WP filler. Accordingly, field activities were included in this project to characterize MEC at each site and to address the data gaps.

ES-2 Current and Future Land Use

The land use of the previously transferred LHAAP acreage is as part of the Caddo Lake National Wildlife Refuge (CLNWR). The remaining land, including the MRS locations, is currently held by the Army while environmental restoration takes place in preparation for transfer to the USFWS.

Presently, the general public does not have unrestricted access to the Refuge or to the MRSs located inside the Refuge. The Refuge Manager currently allows only USFWS-led car tours of the Refuge. The Army does not grant MRS access to the general public. Presently, physical controls at the MRSs consist of gated access roads with restricted access warning signs at the gates. The former Longhorn plant's perimeter fence remains in place around the Refuge; however, the boundary along Caddo Lake is unfenced. Due to the physical restraints in place, access by trespass is possible. The most reasonably anticipated future land use of the MRS locations is incorporation into the existing wildlife refuge, where the use will be consistent with the rest of the refuge and the "big six" activities (hunting, fishing, wildlife observation, wildlife photography, wildlife education, and wildlife interpretation).

ES-3 Field Activities

Primary tasks of the EE/CA activities included physical investigation of each MRS, intrusive investigation to determine the characteristics of anomalies identified by the geophysical investigation, evaluation of the potential explosives hazards associated with the sites, and preparation of an EE/CA Report. Secondary tasks included brush clearing, surveying, sampling for MCs, attendance at Technical Project Planning (TPP) meetings, and other general project management activities.

During the field activities, 77,808 linear feet of transects were investigated, 2,964 anomalies were identified for investigation during the geophysical mapping, and 3,320 metallic objects were excavated. Of the 2,964 anomalies selected for investigation, 100 percent were actually investigated. Thirty-five items of Material Potentially Presenting Explosive Hazard (MPPEH) were recovered along with 1,470 pounds of munitions debris, cultural debris, and range-related debris. MPPEH is defined as material potentially containing explosives or munitions. MPPEH is inspected by competent personnel who by training and experience can positively identify the munitions item and confirm or deny the presence of explosive or munitions. The MPPEH items discovered during the field activities were positively identified as ordnance items, however it was not possible to safely determine if these items contained explosives or pyrotechnics. The MPPEH items were determined to be pyrotechnic or illumination in nature except the miscellaneous fuzes. All fuzes were inspected and were determined to have functioned as designed. No high-explosive or fuzed items were identified. All items were recovered at surface or within 6 inches of the surface. The MPPEH items recovered were inspected to determine if they were Unexploded Ordnance (UXO) or Discarded Military Munitions (DMM). A positive determination was not confirmed and all items were destroyed by detonation on site. All MD recovered was transported off site for recycling.

Soil samples were collected and analyzed for MC and WP. The analyses were performed acceptably but the data reporting required qualifying statements in accordance with U.S. EPA protocols due to surrogate recovery marginally outside the laboratory lower acceptance criteria. Analytical results do not indicate the presence of MC or WP at detectable concentrations. Accordingly, MC and WP can be eliminated as potential contaminants for future activities.

Pre- and postdetonation samples were collected during three onsite demolition activities to verify that the demolition activities add any MC contamination to the sites. Analytical results did not indicate the presence of MC in any of the pre- or postdetonation samples.

ES-4 Risk Evaluation

Previously compiled historical information was reviewed along with the information gathered during this project to evaluate potential risks associated with the sites investigated at the former LHAAP. The USACE's Ordnance and Explosives Risk Impact Assessment (OERIA) process provides a qualitative risk assessment for MEC sites by using direct analysis of site-specific conditions and human issues that create risks associated with Ordnance and Explosives (OE) sites. The OERIA provides a qualitative risk assessment in lieu of a statistically based risk assessment that allows a more effective risk communication among stakeholders, including the general public. Details of the OERIA analysis are presented in Chapter 5.

ES-5 Recommendation

Four potential response actions were evaluated:

- Alternative 1 – No Action (NA)
- Alternative 2 – Land Use Controls (LUCs) Only
- Alternative 3 – Surface Removal with Selected LUCs
- Alternative 4 – Subsurface Removal with Selected LUCs.

The four alternatives were evaluated individually for each of the three MRSs. Potential response actions for each site were comparatively based on the following criteria:

- Effectiveness
- Implementability
- Cost
- Stakeholder acceptance.

Details of the comparative analysis are presented in Chapter 6. Cost details are presented in Appendix E.

The recommended response action for each MRS is presented below.

Munitions Response Site	Acreage	Recommendation	Est. Cost
Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R)	79	Surface Removal and Partial Subsurface Removal (OB/OD area) with Selected LUCs and six 5-year reviews	$857,302.53
Site 53 – Static Test Area (LHAAP-002-R)	27	NA (ESS only)	$8,586.86
Site 54 – Ground Signal Test Area (LHAAP-003-R)	80	Surface Removal with Selected LUCs and six 5-year reviews	$636,546.61

The LUCs selected for the recommendations include:

- Post UXO Warning signs around the perimeter of Sites 27 and 54
- Allow future public use consistent with the management of a wildlife refuge and the "big six" activities
- Continue the existing UXO education programs provided to authorized workers (e.g., USFWS staff) and refuge visitors
- Incorporate land use and dig restrictions into transfer documents.

Implementation of the recommended alternatives would require 5-year reviews consistent with the CERCLA process for a minimum of 30 years.

1.0 INTRODUCTION

This Engineering Evaluation/Cost Analysis (EE/CA) was prepared in accordance with Contract W912BV-04-D-2019, Delivery Order (DO) No. DY-04. The statement of work (SOW) governing this effort is contained in Appendix A. Plans for activities performed during this EE/CA were reviewed by the U.S. Environmental Protection Agency (EPA), Region 6, the Texas Commission on Environmental Quality (TCEQ), and the U.S Fish and Wildlife Service (USFWS). The U.S. Army Corps of Engineers (USACE) Fort Worth District prepared an Explosives Safety Submission (ESS) and submitted it to the Sacramento District Design Center for approval before the start of field activities.

The U.S. Army Base Realignment ad Closure (BRAC) Division is the lead U.S. Department of Defense (DOD) agency for execution and oversight of work performed at Longhorn Army Ammunition Plant (LHAAP). Funding for LHAAP-related work is provided by the Army Environmental Command (AEC) as a function of the Military Munitions Response Program (MMRP). CESWF is the contracting agency and technical manager for this project, and as such has responsibility for the site-specific project management and execution.

This EE/CA is organized into the following chapters and appendices:

- Chapter 1.0, Introduction
- Chapter 2.0, Site Description/Problem Identification
- Chapter 3.0, Project Objectives
- Chapter 4.0, Site Characterization
- Chapter 5.0, Risk Evaluation
- Chapter 6.0, Response Alternatives Evaluation
- Chapter 7.0, Recommended Response Alternatives
- Chapter 8.0, Quality Control
- Chapter 9.0, References
- Appendix A, Statement of Work
- Appendix B, Munitions Debris Disposition Forms
- Appendix C, Material Potentially Presenting Explosive Hazard (MPPEH) Demolition Activity
- Appendix D, Munitions constituents (MC) Sampling and Analysis Results
- Appendix E, Cost Details and Assumptions
- Appendix F, Responsiveness Summary
- Appendix G, Quality Control (QC) Reports
- Appendix H, Dig Sheets.

1.1 Project Authorization

The DOD established the MMRP within the Defense Environmental Restoration Program (DERP) in 2001 in recognition of the requirements and the complexity posed at MMRP sites. DOD guidance directs MMRP actions be conducted within the framework of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). An EE/CA is similar to a CERCLA remedial investigation/feasibility study process but is more streamlined to meet the needs of non-time-critical removal actions (NTCRAs).

This action is taken in accordance with the National Contingency Plan, 40 Code of Federal Regulations (CFR) 300, Section 120, in which the DOD is identified as the removal response authority for weapons and munitions under the jurisdiction, custody, or control of the DOD.

1.2 Purpose and Scope

The purpose of the EE/CA is to identify the presence and/or the extent of a hazard, to identify the objectives of the removal action, to provide a risk-based analysis of the existing conditions, and to analyze the various alternatives that may be used to satisfy these objectives.

Primary work tasks included a geophysical investigation of each Munitions Response Site (MRS), intrusive investigation to determine the characteristics of anomalies identified, evaluation of potential explosives hazards associated with the sites, and preparation of this EE/CA Report. Secondary tasks included brush clearing, land surveying, soil sampling for munitions constituents, attendance at Technical Project Planning (TPP) meetings, and general project management. The SOW for this project is included in Appendix A.

1.3 Public Participation

Activities associated with the fieldwork performed during this project were presented at a public meeting held in conjunction with a Restoration Advisory Board (RAB) meeting July 2006. The results of the EE/CA activities, including the recommended response actions, were presented at the June 12, 2007, RAB meeting after review of the draft EE/CA Report by U.S. Department of the Army (DA), USACE, and regulatory agency personnel.

The draft final EE/CA Report will be made available to the public for a formal 30-day public review and comment period. Public comments will be considered and may impact the final recommendations. Written responses will be provided to significant public comments received during this period.

An Action Memorandum addressing all regulatory and public comments will be prepared. As the primary decision document, the action memorandum will identify the response action selected, explain the rationale for selecting the response action, and substantiate the need for the response action.

1.4 Previous Studies

Numerous studies and investigations sponsored by the Army have been conducted at the LHAAP dating back to the early 1980s. Data collected during the earlier studies may be reviewed in the Administrative Record located at the Marshall, Texas, library. The most recent study at the MRS locations addressed under this effort was a site inspection (SI) completed in June 2005 (e2M, 2005).

1.4.1 Site 54 – Ground Signal Test Area (LHAAP-003-R)

A historical record review (HRR) conducted during the SI did not identify any previous investigations for Munitions and Explosives of Concern (MEC) and no certificates of ordnance

clearance, decontamination, or dedudding were encountered in the historic records review at Site 54 – Ground Signal Test Area (LHAAP-003-R). According to the HRR, the area served as a test area for pyrotechnic munitions, a test and demilitarization area for rocket motors, and possibly a demolition area for XM40E5 Anti-intrusion Mines.

A site visit conducted by the CESWF in December 2004 found a Mortar Test Area, and numerous expended mortar rounds were identified on the surface inside and outside the berm located in the Mortar Test Impact Area in the west portion of the test area. Munitions debris (MD) was identified as being visible throughout the site.

A Record of Decision (ROD) under CERCLA for Hazardous, Toxic, and Radioactive Waste (HTRW) was signed in January 1998 for the area; however, soil samples were not analyzed for white phosphorus (WP), and the HRR indicated leaking WP munitions were destroyed in this area. Accordingly, the SI Report recommended WP sampling be conducted to address this data gap.

1.4.2 Site 53 –Static Test Area (LHAAP-002-R)

The SI Report also recommended additional investigation for MEC items in "scarred" areas at Site 53 – Static Test Area (LHAAP-002-R) based on finding expended flare casings and flare casing remnants in the vicinity of one of the former buildings. Analysis of aerial photographs of the site revealed scarred and stained areas that may indicate three possible burial or burn areas in the vicinity of buildings formerly used for ordnance manufacturing and storage. The SI Report recommended these "scarred" areas be investigated to determine if past ordnance burial activities may have occurred. Additionally, the "scarred" areas had not been sampled for the standard MC constituents, including WP. The mission of LHAAP included production of illumination-type ordnance and the HRR identified demilitarization/demolition of leaking ordnance containing WP filler. Accordingly, the SI Report recommended WP sampling be conducted.

1.4.3 Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R)

Investigation of Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R) in December 2004 indicated the presence of a demolition area northwest of the site within 50 feet of the road that defined the perimeter of the site. Subsequently, analysis of aerial photographs revealed a trail from an area within the area referred to as the burning stalls to the area northwest of the area referred to as Demolition Sub Area 1. It is suggested the trail from the burning stalls to the demolition area was used as a route to transport materials from the burning stalls for disposal.

USFWS personnel regularly found parachutes in the trees, discovered numerous spent flares, and have encountered several 155-millimeter (mm) primer caps in a drainage area. USFWS personnel indicated a 155-mm WP projectile was confirmed on the site in March 2004 and was disposed of by the local explosive ordnance disposal (EOD) unit. The item was identified as a 155-mm Smoke, WP, M825 Canister. The item was found armed and was blown-in-place (BIP). The identification of this round as WP has been questioned by the Army. The historical record reviews conducted during previous investigations confirmed the production of 155-mm illumination rounds at LHAAP but no record of production of 155-mm WP rounds (other than metal projectile component) at LHAAP has been identified. According to U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) (1989), WP operations at LHAAP were assembly

and packout operations only; no loading of this material was conducted at the site. In the event MEC items are identified and recovered during future clearance activities, they would be detonated in place or undergo a demilitarization process if in good enough condition.

Review of aerial photographs also revealed two cleared areas, one in the southeast portion of the inside the perimeter road and one northwest of the site just off the perimeter road. The SI Report speculates these may be the location of ordnance demolition areas. The site boundary was expanded to include these areas. The HRR determined that leaking illuminating signal devices and WP munitions were demilitarized in pits excavated in the vicinity of the test pad at the site. Other sources indicate that possibly 3- to 4-pound canisters of WP were demilitarized in the vicinity of the test pad. Ordnance received regular inspection and any items determined nonserviceable were removed from storage for disposal. The two most common methods of demilitarization in the era when LHAAP was most active are open pit burning and explosive detonation. Previous soil sampling activities addressed standard MC constituents but did not include analysis for WP. Accordingly, the SI Report recommended WP sampling be conducted to address this data gap.

2.0 SITE DESCRIPTION/PROBLEM IDENTIFICATION

2.1 Site Location

LHAAP is located in east-central Texas in the northeastern corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana (Figure 2-1). The former LHAAP property occupies approximately 8,000 acres. Mixed pine and hardwood forests that cover gently rolling to hilly terrain characterize the site. LHAAP is also forested with loblolly and short leaf pine, a variety of oaks, sweet gum, black tupelo, ash, bald cypress, and a few scattered willows. Flora at the MRSs ranges from open, grassy areas to 20-year forest growth.

LHAAP is situated on the outcrop of the Wilcox Group of sediments. A shallow layer of interbedded soils ranging from sandy silts to clay silts overlays the sediment. Groundwater is encountered at approximately 7 feet to 9 feet below ground surface. Surface water and groundwater flow is toward Caddo Lake, which is located northeast of the MRS locations.

2.2 Site History

LHAAP was established in October 1942 with the primary mission of producing trinitrotoluene (TNT) flake. Production of TNT continued until August 1945, when the plant went on standby status. Pyrotechnic ammunition (e.g., flares, photoflash bombs, simulators) and tracers for 40-mm ammunition were manufactured at LHAAP from 1952 until 1956.

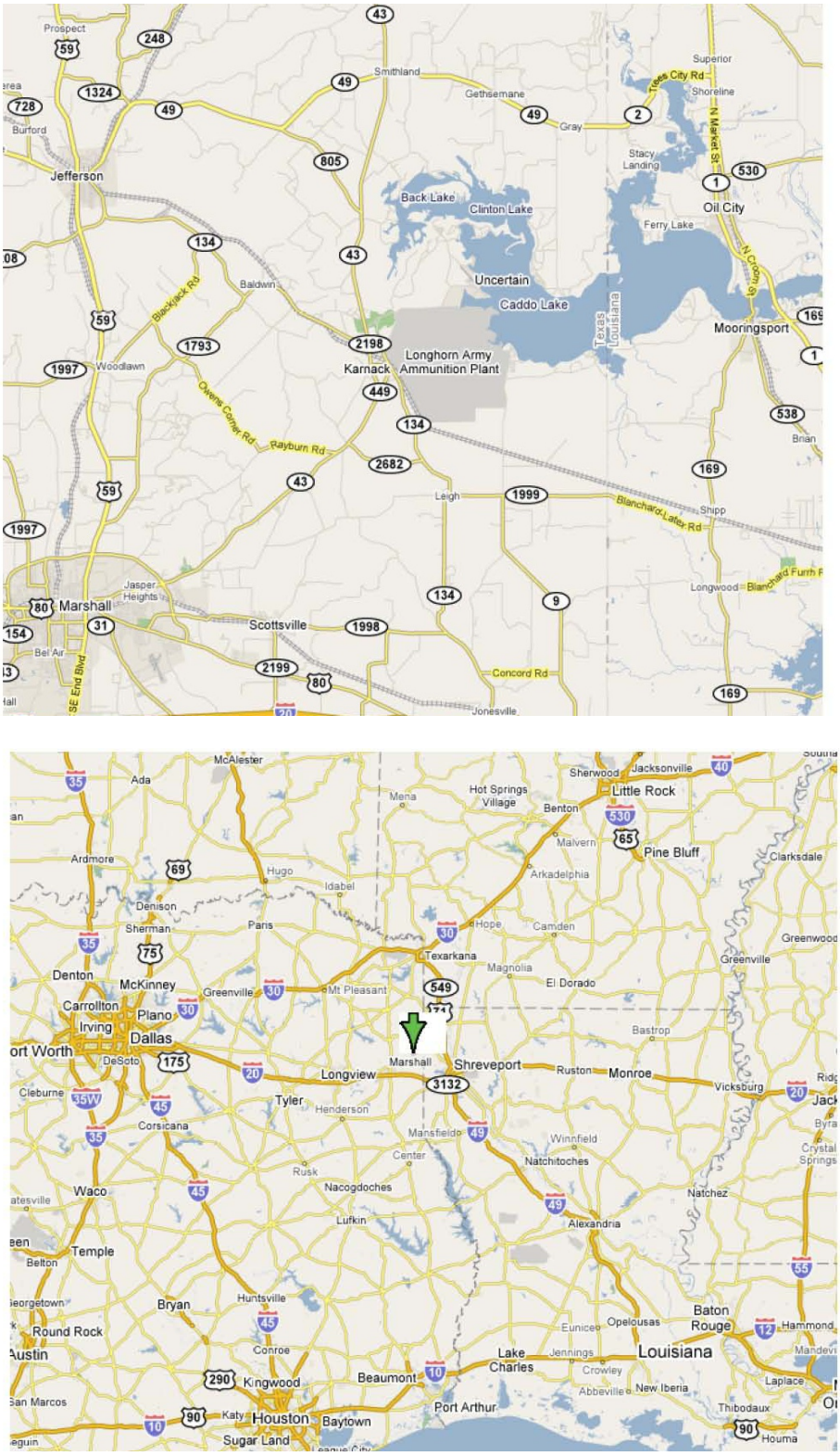
The LHAAP rocket motor facility began operation in November 1955. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was reestablished. Through 1994, operations consisted of producing pyrotechnic and propellant mixtures; loading, assembling, and packing activities; accommodating receipt and shipment of containerized cargo; and maintenance and/or layaway of standby facilities and equipment as they applied to mobilization planning.

LHAAP was responsible for static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate Range Nuclear Force Treaty between the United States and the former Union of Soviet Socialist Republics. The last rocket motor was destroyed in 1991 and the Static Firing Stands were decontaminated for explosives as standard procedure. In June 1998, the units were again inspected and decontaminated in accordance with the closure plan.

LHAAP became inactive and excess to the DA's needs in July 1997. A Memorandum of Agreement (MOA) between the DA and USFWS was executed in October 2002 for the future transfer of the LHAAP property. The initial 5,032 acres were transferred to the USFWS in May 2004. Subsequent transfers have increased the total acreage transferred to the USFWS to more than 6,000 acres. The remaining property, including the MRS locations, is held by the DA while environmental restoration takes place in preparation for transfer to USFWS.

While an active installation, LHAAP was under the administrative control of the Army Materiel Command. Upon closure, control of the installation was transferred to the BRAC Division. Funding and program oversight for LHAAP-related work is provided by the AEC as a function of the MMRP.

Figure 2-1: Longhorn Army Ammunition Plant Area Map



A 2005 SI identified three MRSs for additional investigation before transfer of the properties to the USFWS could be accomplished. See Figure 2-2 for the following MRS locations:

1. Site 27 – South Test Area/Bomb Test Area, (LHAAP-001-R).
2. Site 53 – Static Test Area (LHAAP-002-R).
3. Site 54 – Ground Signal Test Area (LHAAP-003-R).

The most recent study at the MRS locations addressed under this effort was an SI completed in June 2005 (e2M, 2005). The HRR conducted during the SI confirmed the presence of MEC items at Site 54 – Ground Signal Test Area (LHAAP-003-R) in the Mortar Test Impact Area portion of the site. Additionally, a review of aerial photos indicated other disturbed areas were present at the site. The SI Report recommended these areas be investigated to determine if ordnance burial activities may have occurred in the past.

The SI Report also recommended additional investigation for MEC items at Site 53 – Static Test Area (LHAAP-002-R) based on finding an expended flare casing in the vicinity of one of the former buildings. Additionally, review of aerial photos indicated some disturbed (scarred) areas present at the site. The SI Report recommended these areas be investigated to determine if ordnance burial activities may have occurred in the past.

Review of aerial photos indicated the presence of disturbed areas at Site 27 – Ground Signal Test Area (LHAAP-003-R). The SI Report recommended these areas be investigated to determine if ordnance disposal or burial activities may have occurred in the past.

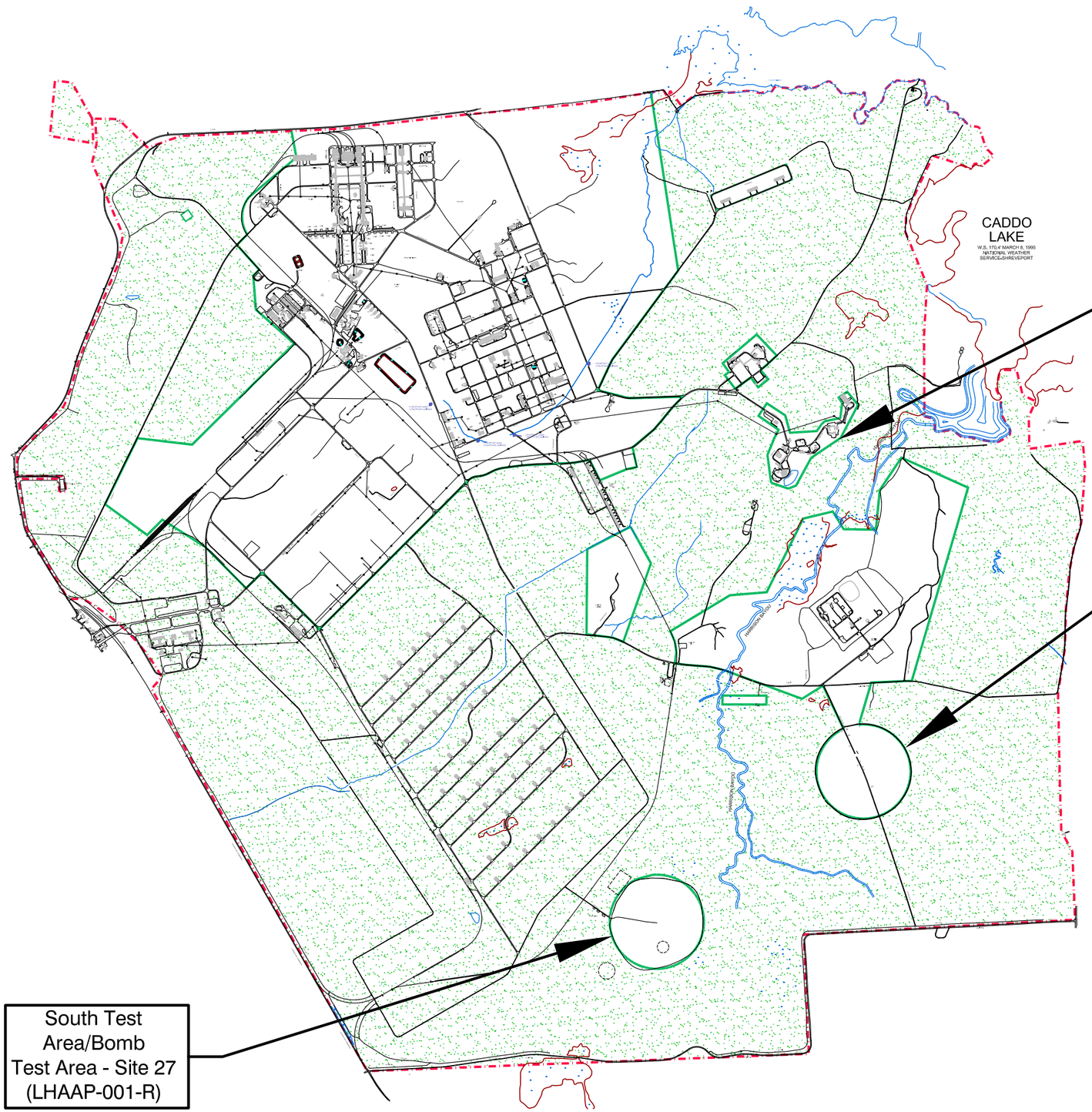
Additionally, the SI Report identified data gaps in earlier soil sampling in that no analysis for WP was performed for Sites 27 and 54, and no analysis for MC, including WP, was performed in the scarred areas at Site 53. WP was used in the production of illumination rounds at LHHP. Accordingly, soil sampling activities needed to address the data gaps were incorporated into the field investigation.

2.2.1 Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R)

This area encompasses approximately 79 acres (see Figure 2-3). The original site boundary was modified to include approximately 4 acres adjacent to the site during the course of the SI characterization. The site is located in the south-central portion of LHAAP and was used for testing photoflash bombs and demilitarization of illuminating devices and leaking production items. The site was constructed in 1954 and used until the early 1980s. According to the HRR, the following MEC are potentially associated with this site:

- M120A1 photoflash bombs
- Pyrotechnic illuminating devices
- XM 40E5 anti-intrusion mines
- Leaking WP munitions
- Photoflash cartridges (0.5 and 1 pound).

00049048



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REVISIONS:

No.	Date	Remarks

LONGHORN
ARMY AMMUNITION PLANT/
CADDO LAKE
NATIONAL WILDLIFE REFUGE

PROJECT NAME
EE/CA LONGHORN
ARMY AMMUNITION PLANT

SHEET TITLE
MRS LOCATION MAP

CONTRACT NO:
N/A
JOB NO:
42019.004.001
CHECKED BY:
R.VINSON
DRAWN BY:
E.B / C.RIOS
DATE:
MAY 2007
FILE NAME:
LNGHRFIG2-2
SHEET NUMBER:
FIGURE 2-2

00049049

NOTES:

1. THE CHARACTERIZATION SAMPLE LOCATIONS ARE APPROXIMATE IN THAT THEY ARE BASED ON THE FIELD TECHNICIAN'S OBSERVATIONS. A GPS UNIT WAS USED TO SURVEY THE SAMPLE LOCATIONS. HOWEVER, DUE TO AN EQUIPMENT MALFUNCTION, CAPE HAS BEEN UNABLE TO EXTRACT THE COORDINATES TO DATE.
2. THE LOCATIONS OF THE FORMER BURNING STALLS, THE TEST STAND AREA, SCARRED AREA #1 AND SCARRED AREA #2 ARE APPROXIMATE. THE LOCATIONS ARE BASED ON A REVIEW OF AERIAL PHOTOGRAPHS AND/OR FIELD OBSERVATIONS.

AVENUE "P"

70TH ST.

STOCK PILES

SUSPECT DEMOLITION AREA #1

FORMER BURNING STALLS LOCATION

TEST STAND AREA

BTA-27-LHAAP-001-RS-01A

OB/OD AREA

SCARRED AREA #1

BTA-27-LHAAP-001-RS-01B

SCARRED AREA #2

SUSPECT DEMOLITION AREA #2

SUSPECT DEMOLITION AREA #3

15N 14N 13N 12N 11N 10N 9N 8N 7N 6N 5N 4N 3N 2N 1N

16N 17N 18N 19N

19S 18S 17S 16S 15S 14S 13S 12S 11S 10S 9S 8S 7S 6S 5S 4S 3S 2S 1S

22N 21N 20N

22S 21S 20S

2 4 21 20 5 3 11 7 10 15, 16, 17 19 24 18 8 1, 12, 13, 14 6

N

LEGEND

- Soil Sample location
- MEC Item Location
- CAPE Detonation location
- Geophysical Transects
- OB/OD Area

GRAPHIC SCALE

250' 125' 0 250'

SCALE: 1"= 250'-0"

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REVISIONS:

No.	Date	Remarks
1	7/23/07	REFER TO NOTE No.2

LONGHORN ARMY AMMUNITION PLANT/ CADDO LAKE NATIONAL WILDLIFE REFUGE

PROJECT NAME: EE/CA LONGHORN ARMY AMMUNITION PLANT

SHEET TITLE: SOUTH TEST AREA/BOMB TEST AREA SITE 27 LHAAP-001-R

CONTRACT NO: N/A
JOB NO: 42019.004.001
CHECKED BY: R.VINSON
DRAWN BY: E.B / C.RIOS
DATE: MAY 2007
FILE NAME: LNGHRFIG2-3
SHEET NUMBER: FIGURE 2-3

2.2.2 Site 53 – Static Test Area (LHAAP-002-R)

This area encompasses approximately 27 acres (see Figure 2-4). It is located in the east-central portion of LHAAP and was previously used for static test firing of rocket motors, red phosphorus smoke wedge testing, and illuminating candle testing. The site may have been active until 1998. According to the HRR, the following MEC are potentially associated with this site:

- Illuminating candles
- Red phosphorus smoke wedges
- Nike, Sergeant, and Pershing rocket motors
- XM 10 Lacrosse rocket motors
- M7A1 JATO rocket motors.

2.2.3 Site 54 – Ground Signal Test Area (LHAAP-003-R)

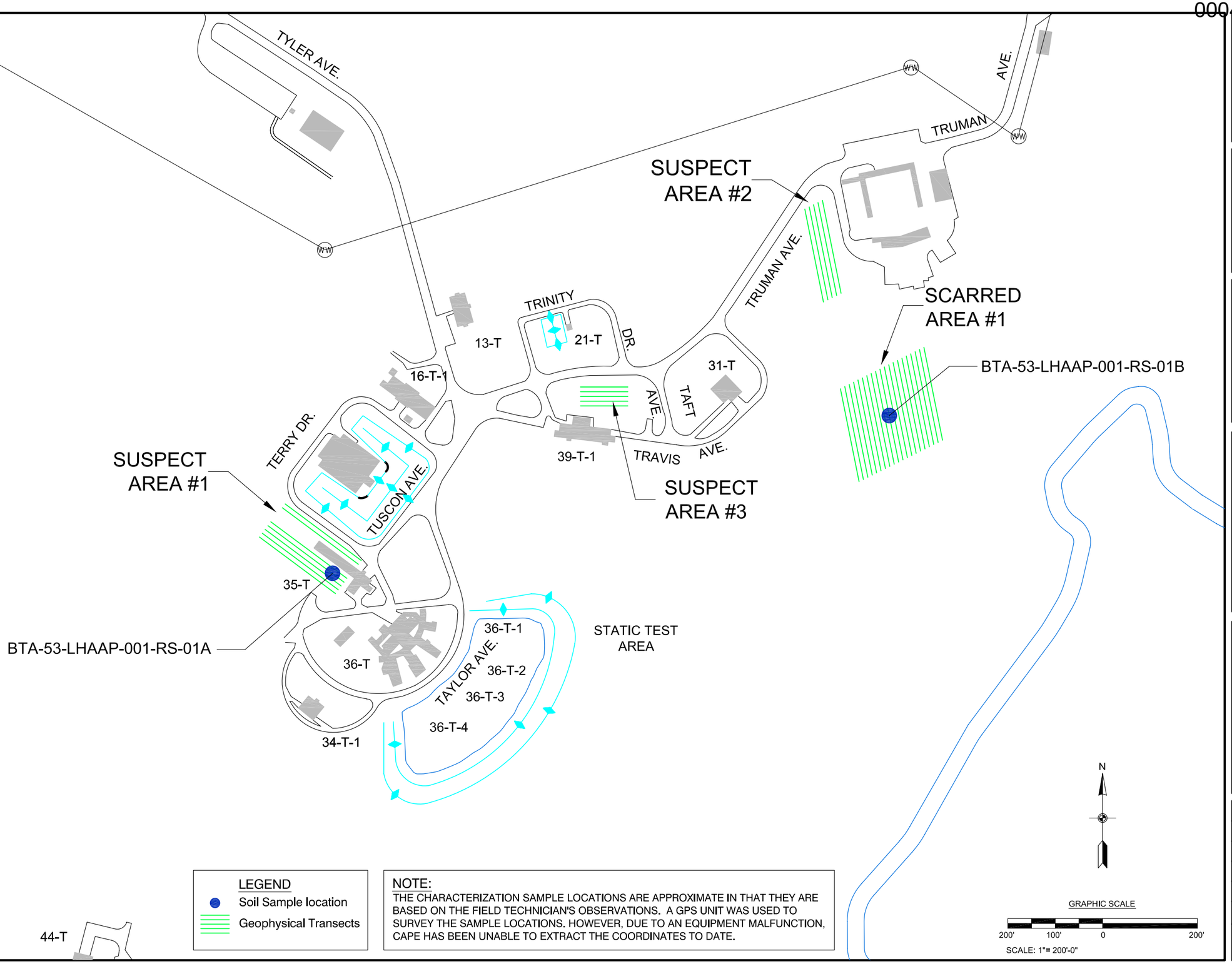
This area encompasses approximately 80 acres (see Figure 2-5). It is located in the southeast portion of LHAAP and served as a test area for pyrotechnic munitions and the testing and demilitarization of rocket motors. The following MEC are potentially associated with this site:

- Red phosphorus smoke wedges
- Infrared flares
- Pyrotechnic signal devices
- 60-mm illuminating mortars
- 81-mm illuminating mortars
- 4.2-inch illuminating mortars
- Illuminating munitions ranging from 40 mm to 155 mm
- Leaking WP munitions
- XM40E5 anti-intrusion mines
- Nike rocket motors
- Sergeant rocket motors
- Pershing missile rocket motors.

2.3 Demographic Profile

The following demographic information was obtained from the U.S. Census Bureau (revised June 8, 2006) and telephone interviews with Harrison County and the Marshall City Manager's offices.

00049051



LEGEND
- Soil Sample location
- Geophysical Transects

NOTE:
THE CHARACTERIZATION SAMPLE LOCATIONS ARE APPROXIMATE IN THAT THEY ARE BASED ON THE FIELD TECHNICIAN'S OBSERVATIONS. A GPS UNIT WAS USED TO SURVEY THE SAMPLE LOCATIONS. HOWEVER, DUE TO AN EQUIPMENT MALFUNCTION, CAPE HAS BEEN UNABLE TO EXTRACT THE COORDINATES TO DATE.

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REVISIONS:

No.	Date	Remarks
1	7/23/07	REVISED LEGEND

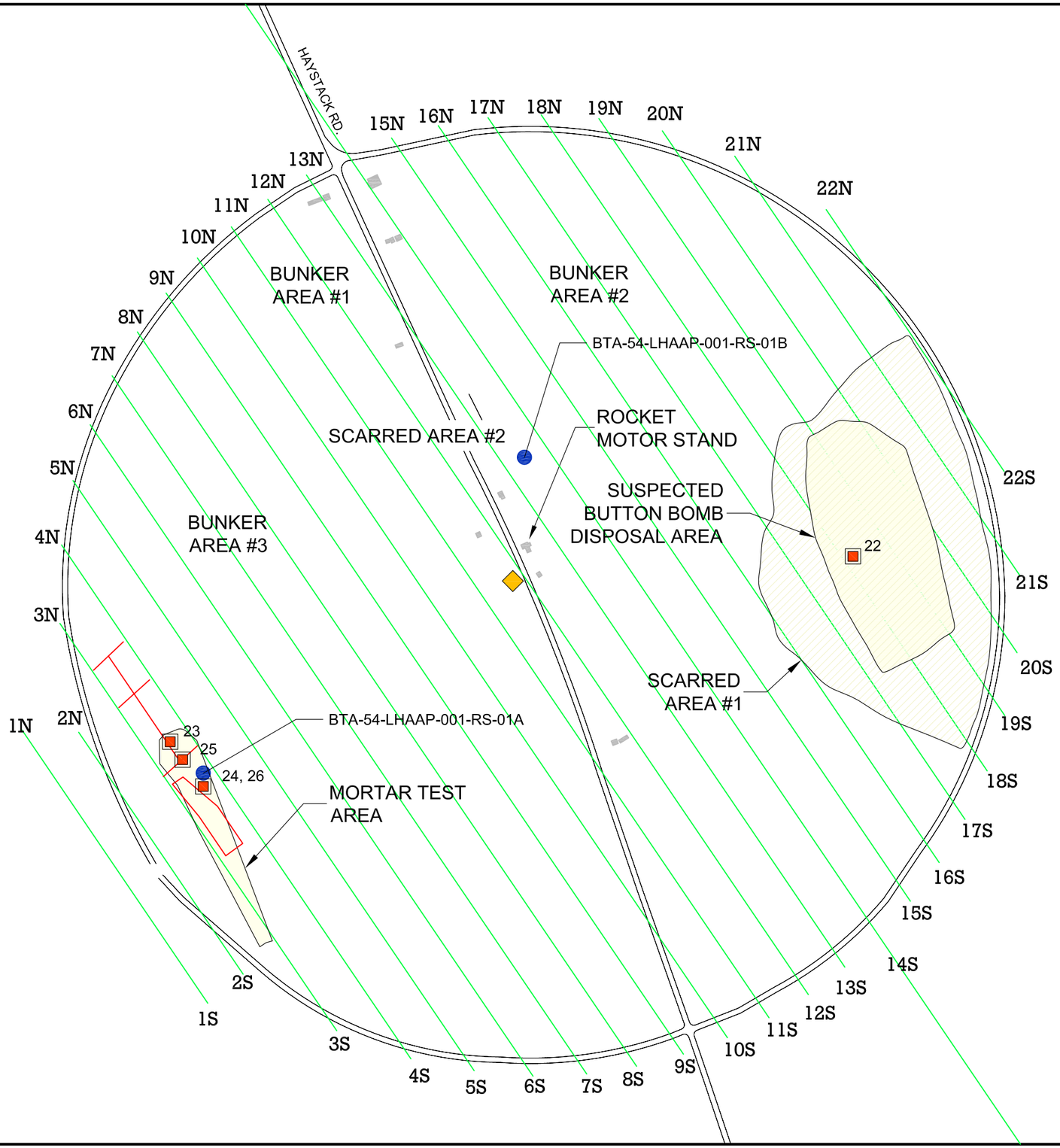
LONGHORN ARMY AMMUNITION PLANT/ CADDO LAKE NATIONAL WILDLIFE REFUGE

PROJECT NAME: EE/CA LONGHORN ARMY AMMUNITION PLANT

SHEET TITLE: STATIC TEST AREA SITE 53 LAAHP-002-R

CONTRACT NO: N/A
JOB NO: 42019.004.001
CHECKED BY: R.VINSON
DRAWN BY: E.B / C.RIOS
DATE: MAY 2007
FILE NAME: LNGHRFIG2-4
SHEET NUMBER: FIGURE 2-4

00049052



NOTES:

1. THE CHARACTERIZATION SAMPLE LOCATIONS ARE APPROXIMATE IN THAT THEY ARE BASED ON THE FIELD TECHNICIAN'S OBSERVATIONS. A GPS UNIT WAS USED TO SURVEY THE SAMPLE LOCATIONS. HOWEVER, DUE TO AN EQUIPMENT MALFUNCTION, CAPE HAS BEEN UNABLE TO EXTRACT THE COORDINATES TO DATE.
2. THE LOCATIONS OF THE SUSPECTED BUTTON BOMB DISPOSAL AREA, MORTAR TEST AREA,SCARRED AREA #1, SCARRED AREA #2 AND BUNKER AREAS #1, #2, AND #3 ARE APPROXIMATE. THE LOCATIONS ARE BASED ON A REVIEW OF AERIAL PHOTOGRAPHS AND/OR FIELD OBSERVATIONS.

N

LEGEND

- Soil Sample location
- MEC Item Location
- CAPE Detonation location
- Geophysical Transects

GRAPHIC SCALE

250' 125' 0 250'

SCALE: 1"= 250'-0"

CAPE

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San Antonio, TX 78247
(210) 377 - 2008

REVISIONS:

No.	Date	Remarks
1	7/23/07	REFER TO NOTE No.2

LONGHORN ARMY AMMUNITION PLANT/ CADDO LAKE NATIONAL WILDLIFE REFUGE

PROJECT NAME
EE/CA LONGHORN ARMY AMMUNITION PLANT

SHEET TITLE
GROUND SIGNAL TEST AREA
SITE 54
LAAHP-003-R

CONTRACT NO: N/A
JOB NO: 42019.004.001
CHECKED BY: R.VINSON
DRAWN BY: E.B / C.RIOS
DATE: MAY 2007
FILE NAME: LNGHRFIG2-5
SHEET NUMBER: FIGURE 2-5

2.3.1 Businesses

The breakdown of business establishments in Harrison County is as follows:

- Trade and Finance – 40.7 percent
- Services – 37.3 percent
- Construction – 8.3 percent
- Manufacturing – 6.5 percent
- Other – 7.2 percent.
- The time required to implement the alternative.

2.3.2 Employment

Based on types of establishments, the breakdown of employment is as follows:

- Trade and Finance – 34.5 percent
- Services – 33.0 percent
- Manufacturing – 18.1 percent
- Other – 14.4 percent.

2.3.3 Housing

Housing in Marshall, Texas, is composed of single and multi-family dwellings. The median value of owner-occupied housing units is $58,500. The 2000 census reports a home ownership rate of 65.6 percent.

2.3.4 Population

Population and racial demographics are presented in Table 2-1 below.

Table 2-1: Population and Racial Demographics

Site Population Demographics (2000 Census (County/City)	County: Harrison	City: Marshall
Land Area (square miles)	899	29.6
Population	62,110	23,935
Population Density (square mile)	69.1	809.5
Race: White	71.3%	54.7%
Race: Black	24.0%	38.6%
Race: Native Indian/Alaska Native	0.3%	0.4%
Race: Pacific Islander	0.0%	0.0%
Race: Asian	0.3%	0.6%
Race: Mixed	1.1%	0.9%
Race: Other	2.9%	4.8%

2.4 Current and Reasonably Anticipated Future Land Uses

The current land use of the non-Army property at the former LHAAP surrounding the MRS locations is as a national wildlife refuge, designated as the Caddo Lake National Wildlife Refuge

(CLNWR). The current land use of the remaining property still under U.S. Army ownership, including the MRS locations addressed by this EE/CA, is as a closed ammunition plant.

Currently, the USFWS restricts public access to the wildlife refuge, allowing only guided car tours of the CLNWR. Access roads into the MRSs are gated and signed; only individuals authorized by the Army are allowed to access the MRS locations. The perimeter fence of the former Army plant restricts access along the entire boundary of the Refuge except along Caddo Lake, where unauthorized access by trespass is possible.

The most reasonably anticipated future land use of the MRS locations is incorporation into the existing wildlife refuge. The sites will be used consistent with the rest of the refuge and "big six" activities (hunting, fishing, wildlife observation, wildlife photography, wildlife education, and wildlife interpretation). A potential future land use is for oil and gas exploration.

Figures 2-3, 2-4, and 2-5 present site maps for Sites 27, 53, and 54, respectively.

3.0 PROJECT OBJECTIVES

The purpose of the EE/CA is to identify the presence and/or the extent of a hazard, to identify the objectives of the removal action, to provide a risk-based analysis of the existing conditions, and to analyze the various alternatives that may be used to satisfy these objectives.

3.1 Project Organization

The U.S. Army BRAC Division is the lead U.S. DOD agency for execution and oversight of work performed at LHAAP. Funding for LHAAP-related work is provided by the AEC as a function of the MMRP. CESWF is the contracting agency and technical manager for this project, and as such has responsibility for the site-specific project management and execution.

All work on this project was coordinated through the LHAAP BRAC Site Manager. In turn, the BRAC Site Manager was responsible for coordination of project activities with other government agencies including the EPA Region 6, TCEQ, and the USFWS. Project plans for the activities performed during the EE/CA were reviewed, and comments provided, by the EPA, TCEQ, and the USFWS. Additionally, EPA, TCEQ, and USFWS representatives made site visits to observe the work during the field activities.

CAPE performed the fieldwork. All unexploded ordnance (UXO) technician personnel assigned to the project were qualified for their assigned positions, and met all the requirements of USACE training and experience requirements. Risk Reduction Resources, Inc. (RRR) performed digital geophysical mapping investigation, land surveying, and provided the geographical information systems (GIS) support. Cox Land Services provided land-clearing services to allow site access. Analytical chemistry analysis was provided by Gulf Cost Analytical Laboratories for MC, supplemented by Data Chem Laboratories for analysis of WP.

3.2 Stakeholder Concerns

Regulatory agencies expressed concerns the investigation was only planned to address about 3 percent of the total land area. The scope of this project was to confirm that these sites are MRS sites and to collect data (anomaly density) necessary to evaluate the nature and extent of MEC and ultimately evaluate action alternatives. Based on guidance in EM 1110-1-4009, more than 3 percent of the total land areas at the MRS sites should have been investigated if the MRS sites were typical ranges where MEC could potentially be found throughout a large land area. However, Sites 27, 53, and 54 at LHAAP were evaluated through the SI process and were determined not to be impact areas and are areas where MEC is likely deposited more discretely. For Site 53, only the scarred areas were investigated as recommended with the SI, and this investigation provided 100 percent coverage of the scarred areas. For Sites 27 and 54, the USACE determined the 3 percent coverage rate provided sufficient data to meet the objectives of site characterization, evaluation of potential of risk, and for developing recommendations for follow-on activities. The recommended action alternatives for Sites 27 and 54 is 100 percent surface clearance (plus subsurface clearance at the OB/OD area at Site 27), so the lower investigation rate at these two sites should no longer be a cause for concern.

3.3 Constraints

Thick overhead canopy precluded the planned use of real-time kinematic/differential global positioning system (RTK/DGPS) to position data as it was collected. Instead, the transect start and endpoint location surveying was accomplished using a Leica 1200 Series robotic total station (RTS). Reference points for the RTS included monitoring wellhead casings installed and surveyed during previous investigations.

No other significant constraints were encountered. The property is owned and controlled by Federal government agencies so access to the MRS locations was easily obtained. The areas are heavily forested but tree and brush clearing was accomplished with conventional equipment. The terrain is generally flat and allowed the effective use of wheeled carts for most of the geophysical investigation area. A portion of Site 27 was underwater due to recent rains at the beginning of the initial fieldwork but dried out enough to allow accomplishment of the work.

3.4 Removal Action Objectives

The removal action objectives (RAOs) are:

1. Protection of human safety from explosive hazards.
2. Protection of human health from MC at unacceptable concentrations.

3.5 Data Quality Objectives

Data quality objectives (DQOs) are qualitative and quantitative criteria used to guide sample collection and analysis activities. The EPA has set a seven-step process for establishing DQOs.

3.5.1 Problem Statement

The first step toward establishing DQOs is to define the problem. Two problem statements were developed by the TPP team for this EE/CA.

1. "What are the type, extent, and distribution of MEC items within the three MRSs and what is the risk associated with these MEC items." This addresses RAO 1.
2. "What are the concentration levels of MC and WP in the MRS areas." This addresses RAO 2.

The results of the field investigation, as detailed in the following sections, provided sufficient information to answer both of the problem statements.

3.5.2 Identify the Decision

The second step is to identify the decision statement the study will resolve. For this EE/CA, the decision is to recommend future site-specific removal actions for the protection of human health and safety at each MRS.

3.5.3 Identify Inputs into the Decision

The primary field data inputs for the EE/CA included the type, location, and depth of MEC items identified and the collection and analysis of soil samples for MC or WP concentrations.

Digital Geophysical Mapping (DGM) was performed on approximately 5 acres, or about 3 percent of the total area encompassed by the three MRSs. The DGM data was used to identify anomalies for further investigation. UXO Technicians investigated the anomalies and classified them as MPPEH, MD, or non-ordnance-related debris. The data are used to estimate the density of potential MEC items remaining in the MRS areas and to analyze the risk associated with type of MEC items identified. Details of the field investigation process that provided data inputs for MEC concentrations are provided in Chapter 4. Evaluation of risk factors associated with MEC is presented in Chapter 5.

Soil samples were collected to address data gaps in previous investigations to determine if any WP or MC contamination existed. Soil samples were also collected in areas with the heaviest MPPEH concentrations and at areas of historical detonations identified by previous investigations to address potential MC contamination associated with these activities. Pre- and postdetonation soil samples were collected to determine if demolition activities impacted the environment during field activities. Details of the soil sampling process and results are presented in Chapter 4. Analytical data are presented in Appendix D.

The USACE's Ordnance and Explosives Risk Impact Assessment (OERIA) process provides a qualitative risk assessment for Ordnance and Explosives (OE) sites by using direct analysis of site-specific conditions and human issues that create risks associated with OE. The OERIA process provides a qualitative risk assessment in lieu of a statistically based risk assessment that allows a more effective risk communication among stakeholders, including the general public. The OERIA process provides risk-based analysis input for the decision process. OERIA process details are in Chapter 5.

Evaluation factors for the potential response activities include effectiveness, implementability, cost, and stakeholder acceptance. Comparative analysis of evaluation factors is provided in Chapter 6.

3.5.4 Define the Study Boundaries

The boundaries of the individual MRS locations addressed by this study are identified on Figures 2-3, 2-4, and 2-5. The MRS boundaries were established by HRR, aerial photograph reviews, and field observations collected during earlier studies.

3.5.5 Develop a Decision Rule

A Decision Rule defines the parameters of interest, specifies action levels, and integrates DQO outputs into a single statement that describes a logical basis for choosing the best removal action from a list of alternative removal actions.

For this EE/CA, the site-specific MEC, MC, and WP characterization data collected was used to evaluate the risks associated with each individual MRS location. The OERIA process provides a risk-based analysis of existing conditions and evaluation of potential removal action based on effectiveness, implementability, costs and stakeholder acceptance leads to the recommendation of a site-specific response alternative for each individual MRS location. Recommended removal actions, and therefore the decision rule, are presented in Chapter 7.

3.5.6 Specify Tolerable Limits on Decision Errors

The following is a list of DQOs that were developed for the project and were included in the project's Work Plan.

Geophysical DQOs parameters identified for this project include:

1. **Along-Track Sampling:** Less than 0.25 meter

2. **Across-Track Sampling:** Less than 1.0 meter. This metric is intended to control data gaps for inconsistent track plots associated with trees or other obstructions. Minor occurrences were accepted if they did not exceed 1.0 foot.

3. **Latency Correction:** No visible chevron effects in the data or pseudo-color plots. The use of appropriate color scaling was maintained throughout the project.

4. **Data Leveling:** Consistent parameters and processing methods were used for all channels within each data set. Consistent processing routines were used for all data sets throughout the project.

5. **Anomaly Selection:** Anomaly selections were made by the Site Geophysicist and reviewed by the Project Geophysicist. A QC Geophysicist reviewed 25 percent of the anomalies selected before the generation of the dig sheets. These individuals verified that anomaly selections for a given data set were reasonable and identified buried metal anticipated at the project site. Anomaly reacquisition was performed on 100 percent of all selected anomalies.

6. **Reacquisition Location:** Reacquisition of 95 percent of the anomalies must be successful to within 1.0 meter of their interpreted locations unless physical obstacles require realignment of the detection equipment during reacquisition. Correction of minor navigation inaccuracies resulting in successful reacquisition of a low value target anomaly (less than 9-millivolts) will be made.

All geophysical DQOs were met with the exception of reacquisition location. The actual results according to the dig sheets indicated that 91.2 percent of the found targets were reported to be within 1.0 meter of the flags. The failure to meet the accuracy standard of 95 percent is the result of over-aggressive search and reporting of positive findings outside the 1-meter radius of the marked position. In reality, the investigation coverage was qualitatively improved due to the over-aggressive searching by the field investigative team. Field personnel investigated 100 percent of the anomalies from the reacquisition list, including the QC test locations (blank anomalies) inserted in the list by the geophysicist. At these QC locations, which are typically

low-millivolt anomalies (less than 9 millivolts), field crews extended the search beyond the 1-meter radius and discovered anomalies. By not limiting the search to the 1-meter radius, the reacquisition rate was artificially lowered by assuming there was a navigation error, when in fact no anomalies should have been discovered at the QC locations. The investigative team explored out farther than 1 meter from a given flag in more than 200 instances. The actual reacquisition rate was greater than 100 percent, as the field crew expanded their search area until an anomaly was located at each reacquisition location designated by the geophysicist.

Another reason for the discrepancy was that no metal detectors were used to assist in the flag insertion points when reacquisition was being performed, so the flag placements were an estimation of the anomaly location. Other reasons for offset flags included rough terrain in Site 27 where the instrument had to negotiate tall mounds, wetlands, and weave around trees, as well as having to be lifted over obstructions in the traverse lanes.

Reacquisition accuracy was tested during the geophysical prove out (GPO) using repeated lines and overlaying the data sets to identify any differences in the datasets. Details of the procedures are found in the GPO report that was included with the Work Plan. It should also be noted that the accuracy standard of 95 percent is typically not applicable to a transect-type investigation and is more appropriate to projects where geophysics are used to cover 100 percent of the investigation area. Based on the process to locate and investigate the anomalies, the transects that did not meet the Reacquisition Location DQO are deemed to be usable for the purposes of this EE/CA and have not been rejected.

Chemical constituent DQO parameters identified for this project include:

1. **Sample Collection/Handling Procedures:** Soil samples collection and handling were performed using procedures recognized and accepted by regulatory agencies. A detailed Sampling and Analysis Plan (SAP) was prepared to define the procedures, and field personnel followed the SAP procedures during sample collection and handling.

2. **Standard Analytical Methods:** Samples were analyzed using the standard analytical methods defined by the U.S. EPA *Test Methods for Evaluating Solid Waste Physical/Chemical Method, Final Update III* (SW 846) and the U.D. DOD *Quality Systems Manual, Version 3.0*, January 2006. Analytical Methods selected include Method 8330 for MC, supplemented by Method 7580 for analysis of WP.

3. **Data Validation:** Analytical data produced by the laboratory were reviewed by a CAPE chemist. Additionally, a senior chemist conducted an independent validation on 10 percent of the laboratory data. Quality assurance (QA) samples were collected and sent to DHL Analytical of Round Rock, Texas, at the direction of USACE. The QA data results were reported directly to USACE and not evaluated by CAPE.

4. **Analytical Sensitivity:** Laboratory reporting limits and method detection limits (MDLs) were defined in the SAP before testing. The analytical laboratories were directed to report detected results down to their MDLs to facilitate meeting as many of the project screening levels as possible. Two compounds (2,4-dinitrotoluene [DNT] and 2,6-DNT) had MDLs that were above the Texas Risk Reduction Rule (TRRR) soil medium-specific concentration (MSC) values for residential use based on groundwater protection,

inhalation, ingestion, and dermal contact screening levels.

These compounds have screening levels that are developed based on statistical risk calculations, and do not consider current analytical technology. EPA-promulgated methods do not cite the use of technology that can detect the TRRR limits for 2,4-dinitrotoluene (DNT) and 2,6-DNT. In these cases, the screening levels default to the laboratory MDL, which is the lowest level at which the compound can be detected.

All chemical constituent DQOs were met. The SAP was prepared and the applicable procedures followed for collection and handling of field samples. The analyses were performed according to standard protocols and a CAPE Chemist performed a full data evaluation and validation on 10 percent of the samples. The laboratory analyses were performed acceptably, but the data required qualifying statements in accordance with U.S. EPA protocols due to surrogate, laboratory control sample (LCS), and matrix spike/matrix spike duplicate (MS/MSD) spike recoveries outside the laboratories' acceptance criteria. No data were rejected and the data were deemed useable for the purposes of this EE/CA.

All DQOs were met except as noted above. The results of the site characterization work were determined to have provided sufficient data to evaluate and develop site-specific response alternatives for the protection of human health and safety for each MRS area.

3.6 Optimize the Design for Obtaining Data

Cost- and resource-effective data collection is necessary to satisfy the DQOs. This EE/CA was optimized by placing transect lines in known and suspected target areas based on the HRR reviews and aerial photographs. Geophysical methods selected were based on extensive historical data produced during EE/CAs conducted at similar sites. Soil contaminants of concern (COCs) were selected for analysis based on review of historical operations and previously performed field investigations.

4.0 SITE CHARACTERIZATION

Primary tasks of the EE/CA activities included physical investigation of each MRS, intrusive investigation to determine the characteristics of anomalies identified by the geophysical investigation, evaluation of the potential explosives hazards associated with the sites, and preparation of an EE/CA Report. Secondary tasks included brush clearing, surveying, sampling for MC and WP, attendance at TPP meetings, and other general project management activities.

4.1 Analysis of Historical Records

Numerous studies and investigations sponsored by the Army have been conducted at the LHAAP dating back to the early 1980s. Data collected during the earlier studies may be reviewed in the Administrative Record located at the Marshall, Texas, library.

Site 54

The most recent study at the MRS locations addressed under this was an SI completed in June 2005 (e2M, 2005). At Site 54 – Ground Signal Test Area (LHAAP-003-R), an HRR conducted during the SI did not identify any previous investigations for MEC and no certificates of ordnance clearance, decontamination, or dedudding were encountered in the HRR for the site. According to the HRR, the area served as a test area for pyrotechnic munitions, a test and demilitarization area for rocket motors, and possibly a demolition area for XM40E5 Anti-intrusion Mines.

A site visit conducted by the CESWF in December 2004 found a Mortar Test Area, and numerous expended mortar rounds were identified on the surface inside and outside the berm located in the Mortar Test Impact Area in the west portion of the Mortar Test Area. MD was identified as being visible throughout the site.

A ROD under CERCLA for HTRW was signed in January 1998 for the area; however, soil samples were not analyzed for WP, and the HRR indicated leaking WP munitions were destroyed in this area. Accordingly, the SI Report recommended WP sampling be conducted to address this data gap.

Site 53

The SI Report also recommended additional investigation for MEC items at Site 53 – Static Test Area (LHAAP-002-R) based on finding expended flare casings and flare casing remnants in the vicinity of one of the former buildings. Analysis of aerial photographs of the site revealed scarred and stained areas that may indicate three possible burial or burn areas in the vicinity of buildings formerly used for ordnance manufacturing and storage. The SI Report recommended these areas be investigated to determine if past ordnance burial activities may have occurred. Additionally, previous soil sampling activities did not address scarred areas. The mission of LHAAP included production of illumination-type ordnance and the HRR identified demilitarization/demolition of leaking ordnance containing WP filler. Accordingly, the SI Report recommended MC and WP sampling be conducted.

Site 27

Investigation of Site 27 – South Test Area/ Bomb Test Area (LHAAP-001-R) in December 2004 indicated the presence of a demolition area northwest of the site within 50 feet of the road that defined the perimeter of the site. Subsequently, analysis of aerial photographs revealed a trail from an area within the area referred to as the burning stalls to the area northwest of the area referred to as Demolition Sub Area 1. It is suggested the trail from the burning stalls to the demolition area was used as a route to transport materials from the burning stalls for disposal.

USFWS personnel regularly found parachutes in the trees, discovered numerous spent flares, and have encountered several 155-mm primer caps in a drainage area. USFWS personnel indicated a 155-mm WP projectile was confirmed on the site in March 2004 and was disposed of by the local EOD unit. The item was identified as a 155-mm Smoke, WP, M825 Canister. The item was found armed and was BIP. The identification of this round as WP has been questioned by the Army. The historical record reviews conducted during previous investigations confirmed the production of 155-mm illumination rounds at LHAAP but no record of production of 155-mm WP rounds (other than metal projectile component) at LHAAP has been identified. According to USATHAMA (1989), WP operations at LHAAP were assembly and packout operations only; no loading of this material was conducted at the site.

Review of aerial photographs also revealed two cleared areas, one in the southeast portion of the inside the perimeter road and one northwest of the site just off the perimeter road. The SI Report speculates these may be the location of ordnance demolition areas. The site boundary was expanded to include these areas. The HRR determined that leaking illuminating signal devices and WP munitions were demilitarized in pits excavated in the vicinity of the test pad at the site. Other sources indicate that possibly 3- to 4- pound canisters of WP were demilitarized in the vicinity of the test pad. Previous soil sampling activities addressed standard MC constituents but did not include analysis for WP. Accordingly, the SI Report recommended WP sampling be conducted to address this data gap.

4.2 Summation of Personal Interviews

Interviews were conducted with USFWS staff who confirmed the presence of MD throughout the MRS locations. Examples cited included sighting of parachute remnants in trees, expended flare casings, and MD lying on the ground in multiple areas. Army personnel Lanis Rieger was interviewed, but he was not present when the plant was operational, so he did not have much historical knowledge of the operations. Jim Smith, a former employee of Thiokol who was working at LHAAP as a security guard during the time of this project, was also interviewed. He provided information on the location of the suspect disposal areas. He also reviewed the transect layout and confirmed that the transects passed through all of the areas that he remembered as being in use.

4.3 Aerial Photograph Review

Review of historical aerial photos indicated disturbed areas were present at all MRS locations. The SI Report recommended these areas be investigated to determine if any disposal or burial activities may have occurred in the past.

Aerial photographs were reviewed during the project planning to establish the MRS boundaries, verify the location of former facilities, etc. For Sites 27 and 54, the transect layout was established to uniformly cover the site with transects lanes regularly spaced at 100-foot intervals. The transect layout was overlaid over maps of the disturbed areas to verify that one or more transects would pass through the disturbed areas identified in the SI Report. The effective transect width coverage of the EM-61 equipment was 1 meter wide, translating into about 3 percent coverage for each 100 feet of width.

At Site 53, the aerial photos revealed a large number of buildings and paved areas that could reasonably be eliminated as possible disposal sites. The assessment was that areas formerly covered by buildings or roadways had a very low probability of containing subsurface anomalies. The investigation at Site 53 was focused on open, scarred areas that were selected from review of historical aerial photographs. Transect grids were established for each site identified in the SI Report to ensure coverage of the disturbed areas identified in the report. Lanes within the grids were set at 1.5-meter intervals to provide total coverage of the selected areas.

4.4 Geophysical Prove-Out

A test grid was established by burying inert ordnance items with a similar size and mass of common ordnance items that could reasonably be expected to be found during the survey based on the HRR. Inert ordnance included mortar rounds (81 mm and 60 mm) and projectiles ranging in size from 30 mm to 105 mm. Inert ordnance was buried to depths ranging from 5 inches to 2 feet and the inert ordnance was placed at various orientations. Additionally, the USACE placed two blind seed items in the test grid for QC. After placement, all seed items and corner markers were surveyed and photographed. Seeded items were painted blue and tagged with a nonbiodegradable label identifying the items as inert and providing the USACE Fort Worth District project manager's name, address, and phone number. A list of the seed items is included in Table 4-1 below:

Table 4-1: GPO Seed Items

ID Number	X (feet)	Y (feet)	Target Type	Depth (feet)	Orientation	Azimuth
1	3302562.3	6952644.5	81mm Mortar	1.5	60°	00
2	3302571.6	6952663.6	60mm Mortar	1.5	Horizontal	000
3	3302579.6	6952684.8	105mm Projectile	2.1	Horizontal	000
4	3302579.3	6952658.9	2.75" Rocket Nose	1.4	Horizontal	000
5	3302614.4	6952675.9	81mm Mortar	1.4	Horizontal	000
6	3302620.3	6952666.8	60mm Illumination	1.1	45°	000
7	3302633.4	6952672.5	40mm Rifle Grenade	0.75	Horizontal	000
8	3302653.1	6952638.8	155 mm	2.0	Horizontal	000
9	3302643.5	6952635.4	60mm HE	1.5	Horizontal	000
10	3302631.3	6952626.9	30mm	0.4	Horizontal	000

Before beginning the geophysical survey, a Geonics EM61 MKII total metals detector was run over the test grid. A standard six-line test was used to determine instrument response to a known target (large bolt), consistency of positioning, and instrument lag generated by traversing the test line at different velocities. The line test was run as follows:

- Traversed the line in north and then south directions at normal speed with no targets to establish a background standard

- Placed a target of interest at the mid-point along the centerline of the test line and traversed the line north then south at normal speed

- Traverse the line with the target still in place north at a fast speed and then south at a slow speed.

Test data was downloaded and analyzed to determine if instrument responses were consistent and to determine if significant positioning latencies were detected. No significant latencies were identified using the fiducial data collection. Historically, the EM61 total metals detectors have a slight tendency to experience response drift over a relatively long period of time (40 minutes of data collection). However, drift was readily corrected in the processing stage of data analysis.

Instrument data repeatability was demonstrated by a static test at a single point containing no detectable targets for 3 minutes. The test was then conducted with a large bolt under the sensor for a period of 1 minute. Data collected during these tests was analyzed to evaluate if significant changes (+/- 20 percent of response) occurred during either test.

The instrument was then run across the test grid and data collected was compared to the known location and orientation of the previously buried test items. The prove-out test indicated the field instrument could reliably detect MEC items as small as a 30-mm projectile at a 1.5-foot depth and larger ordnance at the deeper depths.

The handheld detectors planned for use during reacquisition activities were also run over the test grid to measure their ability to locate the buried items. The test determined handheld detectors could reliably and consistently detect all ordnance buried in the test grid.

The final *Geophysical Prove-Out Report* was submitted to the USACE in September 2005 and is appended to the Work Plan (CAPE, March 2006).

4.5 Site Preparation

Controlled burns were performed at the Site 27 – South Test Area/Bomb Test Area, and Site 54 – Ground Signal Test Area, to remove smaller brush and ground cover. A field team mobilized to clear larger brush and trees that would hinder passage of the geophysical mapping equipment along the transect lanes in all three MRS areas. UXO Technicians performed a visual sweep of the brush clearance areas and the fall zone of the trees and brush designated for cutting. After the UXO Technician cleared an area, mechanized equipment (e.g., skid steer-mounted tree shear, brush hog) was employed to clear 6- to 8-foot-wide pathways at 100-foot intervals. Workers also used small, hand-operated equipment (e.g., chain saws, brush blades on weed eaters) to clear paths for transects or meandering pathways to supplement the geophysical investigation.

An onsite explosives storage facility was established in accordance with the approved Explosives Siting Plan to facilitate the demolition of MEC items recovered during the project. The donor explosives magazine consisted of a 4- by 4- by 4-foot, Type 2, Class ABC, ATF 3-inch lined

magazine with an 18- by 18- by 18-inch, Type 4, Class BC cap box attached. Explosives storage was limited to 50 pounds net explosive weight (NEW) of explosives.

Due to a miscommunication with the explosives supplier, the initial supply of donor explosives needed for demolition operations for recovered MEC items delivered to the site exceeded the approved storage capacity of the magazine. A dry run of demolition procedures for use during the project was conducted and the explosives in excess of the approved rated storage capacity of the magazine were consumed during the training. Inventory control procedures were maintained throughout the project. Explosives control records are provided in Appendix C.

4.6 Digital Geophysical Mapping

The geophysical survey was completed using a Geonics EM61 MKII total metals detector. The EM61 operates by firing short electromagnetic pulses into the ground from the bottom coil. The pulses generate secondary electrical fields in the soils and conductive targets. The electrical fields in the surrounding soils rapidly dissipate, whereas electric fields induced into conductive bodies (metal) dissipate at a slower rate and are recorded to indicate the presence of an object.

The controlled burns did not reduce the overhead canopy so the RTK/DGPS initially planned was not used to position data as it was collected. Instead, the transect start and endpoint location surveying was accomplished using a Leica 1200 Series RTS. Reference points for the RTS were monitoring wellhead casings installed and surveyed during previous investigations.

After each transects lane origin and endpoints were surveyed, the lane was segmented into 25-foot intervals with tape measurers. A nylon pin flag labeled with the transect line identification and distance from origin was inserted at 25-foot intervals. Fiducial navigation with the EM-61 was performed during the GPO to serve as an alternative navigation approach in the event the DGPS navigation approach planned was prevented by overhead canopy density. Navigation along transects in the study areas was accomplished using the fiducial markers at 25-foot intervals from the beginning of each transect.

Individual transect lines were assigned unique names and the beginning of lane origin (the zero distance assigned) was at the same end for the entire set of transects at each MRS. The EM61 traveled the transect from one end to the other inserting fiducial marks into the data stream. The data points were stored in a data logger carried by the instrument operator. At the end of a data collection session, data was downloaded into a computer for processing and interpretation.

At Site 53 – Static Test Area (LHAAP-002-R), the geophysical investigation also included a mag and flag survey at Scarred Area #1 using handheld instruments to work an area where problems with the DGM mapping equipment were encountered. The EM-61 failed to pass daily QC checks during mapping of Scarred Area #1. The instrument was replaced with a different instrument shipped to the site. The area investigated before the QC test failure was reinvestigated using handheld detectors using mag and flag techniques; 100 percent of the area was investigated. Lanes 1.5 meters wide were marked and 25-foot intervals were measured out with tape measurers and marked with a nylon pin in each lane. Where there was a physical obstacle (e.g., Site 53, Grid 4), lane length and location were noted. Field books containing grid sketches, geophysical collection parameters, equipment operators, team members, battery storage

capacities, and other details deemed pertinent to interpret the data being collected were maintained.

The geophysical survey was completed under the direction of a Project Geophysicist. The Project Geophysicist was responsible for the final data interpretations and anomaly selection. A separate QC Geophysicist was responsible for instrument QC results relating to the geophysical survey. The Site Geophysicist was responsible for all data collection methods, downloads, data processing, and interpretation. The Site Geophysicist was also responsible for the daily QC instrumentation prove-outs and for the initial layout of the project perimeter and transects identification assignments.

Following the review of the data, transect data anomalies were selected directly from the transect profiles. Twenty-five percent of the raw data were also submitted to the QC Geophysicist. The QC Geophysicist overlaid the anomaly selections made by the Site Geophysicist and evaluated the preliminary analyses.

Dig sheets were generated listing anomalies to be investigated. The identification and position of each anomaly was completed by using tape measures to measure the distance from the nearest fiducial mark on the transect lane. The investigative team used the dig sheets to record all pertinent information regarding the results of the anomaly investigation.

An area of high anomaly density was encountered at the Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R). Additional investigation indicated the area historically was used as an open burn/open detonation (OB/OD) area. The presence of MEC items along the edge of the area is consistent with the former usage activities. During open detonation activity, "kick-outs" are a common occurrence where MEC items intended for demolition are physically blown clear of the effective detonation zone and are distributed randomly into the surrounding area. Additionally, open detonation results in fragmentation of the ordnance item being destroyed and these metal fragments are also blown clear and distributed randomly into the surrounding area.

UXO Technicians used handheld instruments to estimate the boundary of the high-anomaly-density area as extending about 600 feet to 800 feet in roughly an oblong pattern. The size of this area suggests that it is consistent with other OB/OD areas and should contain most of the "kick-outs" and fragmentation produced. The extensive presence of metal fragments from historical activities resulted in a large number of false positives during reacquisition (e.g., the handheld detectors identified all metal fragments) so the individual anomaly investigation was suspended based on a determination that since the presence of MEC was confirmed and the MEC items recovered were consistent with former usage activities, sufficient information was available to address the project objectives of providing a risk-based analysis of existing conditions, evaluating removal action alternatives, and providing recommendations for follow-on activities.

4.7 Investigation Results

4.7.1 MEC Recovery and Disposition

The UXO Technicians used the data from the dig sheets to investigate anomalies identified as potential targets. Upon reaching a target point along a transect or grid, the UXO Technician

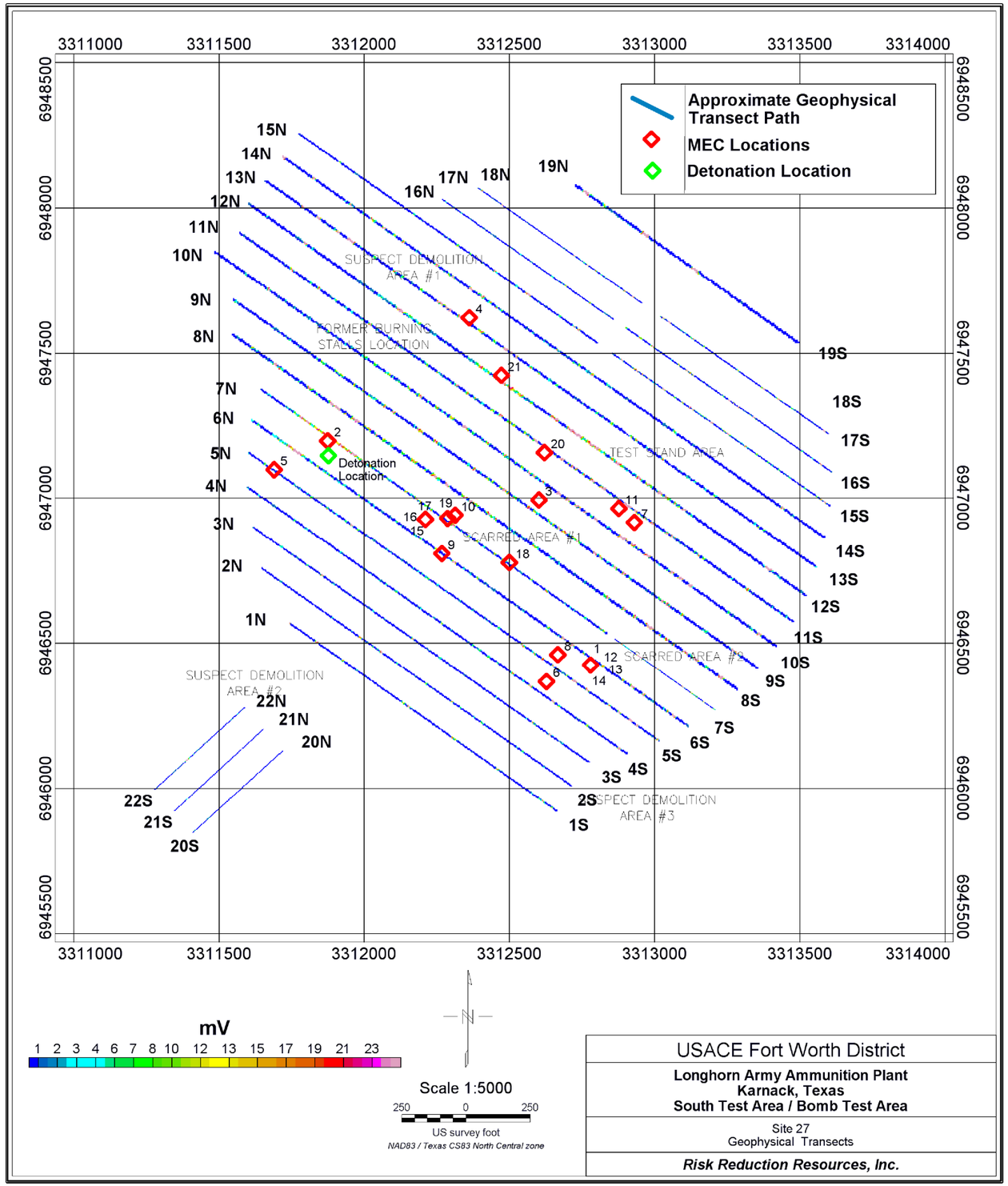
conducted a visual inspection of the area and looked for any items visible on the surface. Items recovered were inspected, identified and classified as MPPEH. Handheld metal detectors were used to locate buried items. The contact area was carefully excavated and all items recovered were identified and inspected. Items that were clearly ordnance or ordnance components were identified as MPPEH. MPPEH is defined as material potentially containing explosives or munitions. MPPEH is inspected by competent personnel who by training and experience can positively identify the munitions item and confirm or deny the presence of explosive or munitions. The MPPEH items discovered during the field activities were positively identified as ordnance items, however it was not possible to safely determine if these items contained explosives or pyrotechnics. All the MPPEH recovered was treated as MEC and detonated since it was not possible to exclude the possibility that these items contained explosive or pyrotechnic material.

The geophysicist selected 2,964 anomalies. The investigative team investigated 100 percent of the selected anomalies, and located and identified 3,320 anomalies. Of these 3,320 anomalies, 35 items were determined to be MPPEH and were destroyed by detonation. The remainder of the anomalies were categorized as MD (such as fragments), cultural debris (such as nails, tin cans, etc.), or range-related debris (RRD) (such as ammunition cans or fuze safety pins). Dig sheets summarizing the anomalies that were selected and investigated at each site, as well as the results of the investigations and digs, are included in Appendix H, Dig Sheets. The dig sheets are separated by site and transect or grid number.

Twenty-one items were recovered at Site 27 and 14 items were recovered at Site 54. No MEC, MD, or RRD items were identified at Site 53. The MPPEH items recovered were inspected to determine if they were UXO or Discarded Military Munitions (DMM). A positive classification determination was not confirmed and all items were destroyed by detonation on site. All MPPEH items recovered were illumination or pyrotechnic, except the miscellaneous fuzes. All fuzes were inspected and were determined to have functioned as designed. No high-explosives items were identified. Additionally, all the MPPEH items were recovered at the surface or within 6 inches of the surface. All MPPEH items recovered were consolidated and destroyed on site during the two demolition activities. A summary of the MPPEH items recovered is presented in Table 4-2 below.

The location and distribution of the MPPEH items recovered at Sites 27 and 54 are indicated in Figures 2-3 and 2-5, respectively. No MEC items were identified or received at Site 53 (see Figure 2-4). Appendix C presents photos of the individual MEC items and their disposition records. The response/signal strengths for Sites 27 and 54 are shown on Figures 4-1 and 4-2.

00049068



USACE Fort Worth District
Longhorn Army Ammunition Plant **Karnack, Texas** **South Test Area / Bomb Test Area**
Site 27 Geophysical Transects
Risk Reduction Resources, Inc.

CAPE
12037 Starcrest Drive
San Antonio, TX 78247
(210) 377-2008

REVISIONS:

No.	Date	Remarks

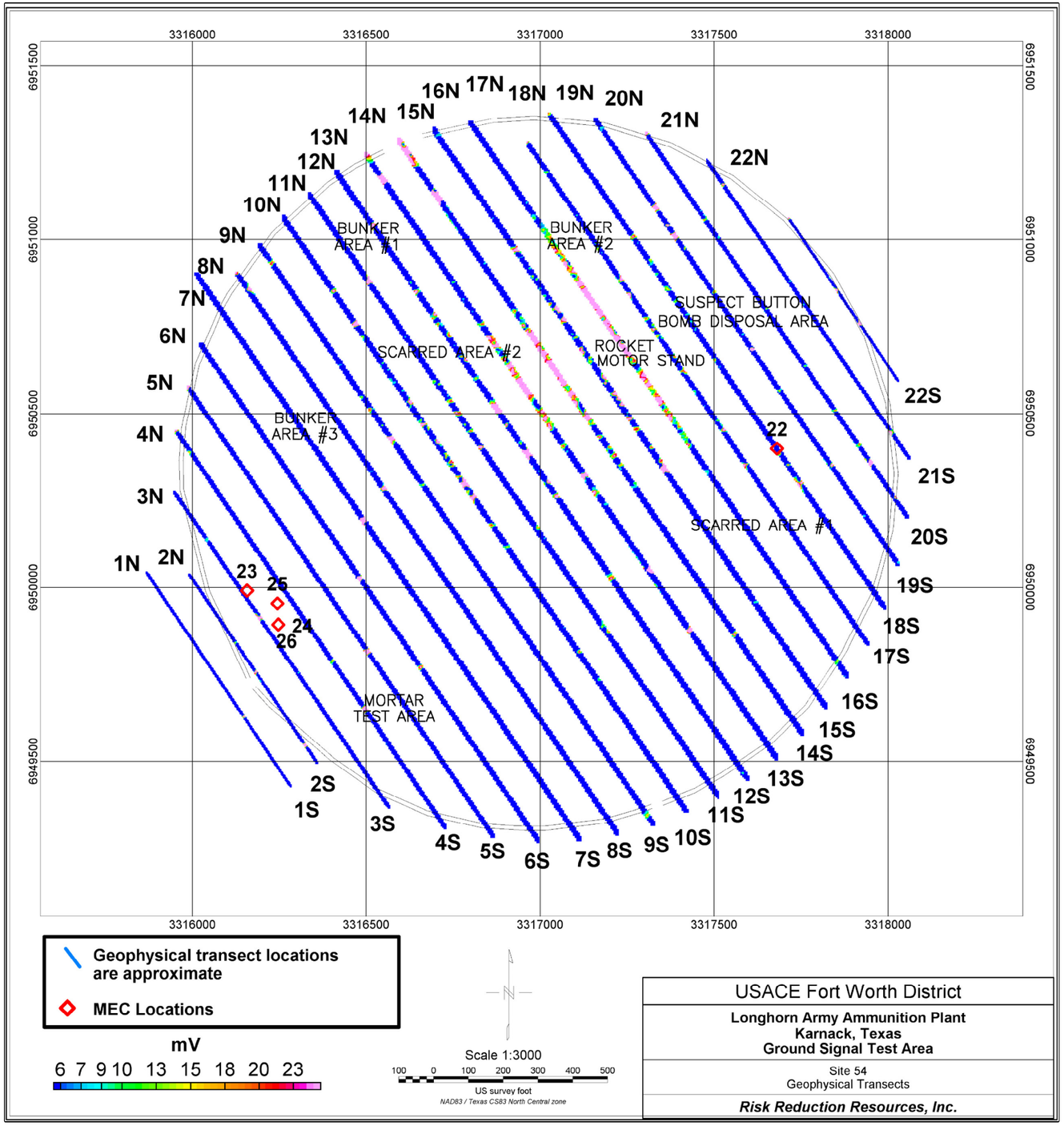
LONGHORN
ARMY AMMUNITION PLANT/
CADDO LAKE
NATIONAL WILDLIFE REFUGE

PROJECT NAME
EE/CA LONGHORN
ARMY AMMUNITION PLANT

SHEET TITLE
SOUTH TEST AREA/BOMB TEST AREA
SITE 27
RESPONSE/SIGNAL STRENGTH

CONTRACT NO:
N/A
JOB NO:
42019.004.001
CHECKED BY:
R.VINSON
DRAWN BY:
E.B / C.RIOS
DATE:
MAY 2007
FILE NAME:
LNGHRFIG4-1
SHEET NUMBER:
FIGURE 4-1

00049069



USACE Fort Worth District

Longhorn Army Ammunition Plant
Karnack, Texas
Ground Signal Test Area

Site 54
Geophysical Transects

Risk Reduction Resources, Inc.

CAPE
12037 Starcrest Drive
San Antonio, TX 78247
(210) 377-2008

REVISIONS:

No.	Date	Remarks

LONGHORN
ARMY AMMUNITION PLANT/
CADDO LAKE
NATIONAL WILDLIFE REFUGE

PROJECT NAME
EE/CA LONGHORN
ARMY AMMUNITION PLANT

SHEET TITLE
GROUND SIGNAL TEST AREA
SITE 54
RESPONSE SIGNAL STRENGTH

CONTRACT NO:
N/A
JOB NO:
42019.004.001
CHECKED BY:
R.VINSON
DRAWN BY:
E.B / C.RIOS
DATE:
MAY 2007
FILE NAME:
LNGHRFIG4-2
SHEET NUMBER:
FIGURE 4-2

Table 4-2: MPPEH Items Recovered

Date	Site	Number	Item Description	GPS Location
6/28/2006	27	001	M-123 A-1, Photoflash Cartridge	N 32’ 38’ 50.5” W 094’ 07’ 52.3”
6/28/2006	27	002	M-123 A-1, Photoflash Cartridge	N 32’ 38’ 58.5” W 094’ 08’ 02.5”
6/29/2006	27	003	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 56.2” W 094’ 07’ 54.1”
6/30/2006	27	004	M-112 A-1, Photoflash Cartridge	N 32’ 39’ 02.5” W 094’ 07’ 56.6”
7/3/2006	27	005	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 57.6” W 094’ 08’ 04.7”
7/3/2006	27	006	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 50.0” W 094’ 07’ 54.1”
7/5/2006	27	007	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.3” W 094’ 07’ 50.3”
7/5/2006	27	008	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 50.9” W 094’ 07’ 53.6”
7/5/2006	27	009	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 54.5” W 094’ 07’ 58.1”
7/5/2006	27	010	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.8” W 094’ 07’ 57.5”
7/6/2006	27	011	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.8” W 094’ 07’ 50.9”
7/6/2006	27	012	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 50.5” W 094’ 07’ 52.3”
7/6/2006	27	013	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 50.5” W 094’ 07’ 52.3”
7/6/2006	27	014	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 50.5” W 094’ 07’ 52.3”
7/6/2006	27	015	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.7” W 094’ 07’ 58.7”
7/6/2006	27	016	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.7” W 094’ 07’ 58.7”
7/6/2006	27	017	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.7” W 094’ 07’ 58.7”
7/6/2006	27	018	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 54.1” W 094’ 07’ 55.4”
7/6/2006	27	019	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 55.7” W 094’ 07’ 57.8”
7/6/2006	27	020	M-112 A-1, Photoflash Cartridge	N 32’ 38’ 57.8” W 094’ 07’ 53.8”
7/6/2006	27	021	M-112 A-1, Photoflash Cartridge	N 32’ 39’ 00.5” W 094’ 07’ 55.4”
7/10/2006	54	022	CDU 10 Components/ Detonator	N 32’ 39’ 27.9” W 094’ 06’ 52.9”
7/18/2006	54	023	60-mm Illumination Mortar	N 32’ 39’ 24.5” W 094’ 07’ 10.6”
7/18/2006	54	024	3 ea. 60-mm Illumination Candles 4.2-inch Mortar Candle	N 32’ 39’ 23.5” W 094’ 07’ 09.8”

Date	Site	Number	Item Description	GPS Location
7/18/2006	54	025	81-mm Illumination Mortar	N 32’ 39’ 24.1” W 094’ 07’ 10.3”
7/18/2006	54	026	7 ea. Misc. Mortar Fuzes	N 32’ 39’ 23.5” W 094’ 07’ 09.8”

MD items were inspected for any visual evidence of residual energetic material by the UXO Technician recovering the item. The items were inspected again by the Senior UXO Supervisor (SUXOS) and UXO QC/Safety Officer to verify the absence of energetic material. The MD was then staged for future disposal. At the conclusion of field activities, the SUXOS and the Ordnance and Explosives Safety Specialist (OESS) jointly inspected the MD again to verify the absence of energetic materials.

MD was placed into open-topped 55-gallon drums, the lids were secured in place, and the debris was picked up by Waste Transport Company of Melissa, Texas, for smelting and return to the recyclable metal stream. A total of 1,470 pounds of MD was recovered during the field activities. MD disposition records are presented in Appendix B.

MD was segregated from nonordnance debris (e.g., nails, cans, survey hubs). The nonordnance debris was collected and disposed of as nonhazardous industrial waste at a local landfill at the conclusion of the field activities.

4.7.2 Soil Sampling

Soil sampling activities during the field activities fell into one of three categories. The SI Report identified data gaps in earlier soil sampling in that no analysis for WP was performed for Sites 27 and 54, and no analysis for MC, including WP, was performed at Site 53. Accordingly, soil samples were collected in each area to determine if evidence of WP existed.

Additionally, the MRS area representative soil samples were also analyzed for MC at the request of the EPA due to the presence of MC detected at low levels in groundwater during the SI. The sampling locations for the data gap analysis and the MC analysis were selected at areas where MC were most likely to exist based on the heaviest MPPEH concentrations or historical detonations. Sample locations are shown on Figures 2-3, 2-4, and 2-5. The sample collection locations were:

- Site 27 – One sample was collected near the center of the OB/OD area. A second sample was collected in an area identified on historical photos as a scarred area previously noted as a photo flash cartridge disposal area. Both areas are located near locations where MPPEH items were recovered during the field investigation.

- Site 53 – There were no areas of specific interest identified in the historical review. Therefore, samples were collected near the center of Grid 1 and Grid 4, both identified as scarred areas on historical photos.

- Site 54 – One sample was collected within the area identified as the mortar firing range. A second sample was collected in a scarred area identified as the Rocket Motor Area in the historical review.

The third soil sampling activity was collection of pre- and postdetonation samples associated with explosive demolition of MPPEH recovered during the field activities. Predetonation samples were discrete samples located as near to the MPPEH item to be detonated as was safe and feasible. Postdetonation samples were composite samples based on the Cold Regions Research Engineering Laboratory (CRREL) seven-sample wheel approach (as described in Engineering Research and Development Center [ERDC] Document SR 96-15), as defined in the Work Plan.

Soil samples were collected using a stainless steel scoop and stainless steel bowls cleaned in accordance with the procedures described in the project SAP. Samples were collected from the ground surface from a depth of 0 to 6 inches below ground surface. Samples were placed on ice, the cooler was sealed, and the samples transported to the laboratory via Federal Express with the appropriate chain-of-custody documentation. Duplicate samples were collected and sent to a USACE-contracted QA laboratory. A summary of the sampling activities is presented in Table 4-3 below. Analytical data results and the data validation report are provided in Appendix D.

Table 4-3: Environmental Sampling Summary

Number of Samples	Sample Type	Parameters	Preservation	Receiving Lab
6	Characterization	MC [a,b]	Cool to 4ºC	GCAL[c] , Data Chem[d]
3	Predetonation	MC [a]	Cool to 4ºC	GCAL[c]
6	Postdetonation	MC [a,]	Cool to 4ºC	GCAL[c]
2	QA Samples (Pre- and Postdetonation)	MC [a,]	Cool to 4ºC	DHL[e]
6	QA Samples (Characterization)	MC [a,b]	Cool to 4ºC	DHL[e]

a *Resource Conservation and Recovery Act (RCRA) Method SW846-8330 for explosives*
b *RCRA Method SW846-7580 for White Phosphorus*
c *Gulf Coast Analytical Laboratories, Inc. (GCAL)*
d *Data Chem Laboratories, Inc.*
e *DHL Analytical (Government Quality Assurance Laboratory)*

The analytical results were screened against the TRRR levels, except for 2,4-DNT and 2,6-DNT, which were screened against the laboratory's MDL, and the data did not trigger any requirements under the rules. No WP was identified at detectable concentrations in any of the samples. No MC constituents were identified at concentration levels above the method detection limit in any samples. However, several of the samples did not meet laboratory standards for surrogate recovery, laboratory control sample duplicate recovery or indicated possible matrix interference. As such, the existing nondetect "U" qualifier reported on data was appended with a "J" qualifier indicating the data reporting levels are estimated in accordance with EPA protocols. Analytical data results are presented in Table 4-4 below.

The removal action objective of protection of human health from MC at unacceptable concentrations has been achieved as demonstrated by the soil analytical results.

8/2/2007

TABLE 4-4
LONGHORN ARMY AMMUNITION PLANT VALIDATED ANALYTICAL DATA RESULTS

Sample Identification	Texas Risk Reduction Rule (Lower of GWP-Res and SAI-Res)	LHAAP-2-1	LHAAP-2-3	LHAAP-2-5	LHAAP-2-7	LHAAP-2-9	LHAAP-1-1
Lab Identification		**206070813-01**	**206070813-02**	**206070813-03**	**206070813-04**	**206070813-05**	**206070813-06**
Parameter							
Explosives SW-846 8330	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***
1,3,5-Trinitrobenzene	110,000	72.7U	72.2U	73.7U	75.4U	74.9U	84.5U
1,3-Dinitrobenzene	370	72.7U	72.2U	73.7U	75.4U	74.9U	84.5U
2,4,6-Trinitrotoluene	1800	67.6U	67.1U	68.5U	70.1U	69.6U	78.6U
2,4-Dinitrotoluene	13	47.2U	46.9U	47.9U	49.0U	48.6U	54.9U
2,6-Dinitrotoluene	13	63.0UJ	62.5UJ	63.8UJ	65.3UJ	64.9UJ	73.2UJ
2-Amino-4,6-dinitrotoluene	610	71.9U	71.4U	72.9U	74.6U	74.0U	83.6U
2-Nitrotoluene	37000	71.4U	70.9U	72.4U	74.1U	73.6U	83.1U
3-Nitrotoluene	37000	57.6U	57.2U	58.4U	59.7U	59.3U	67.0U
4-Amino-2,6-dinitrotoluene	610	62.9U	62.4U	63.7U	65.2U	64.8U	73.1U
4-Nitrotoluene	37000	54.6U	54.2U	55.3U	56.6U	56.2U	63.5U
HMX	180,000	64.9U	64.4U	65.7U	67.3U	66.8U	75.4U
Nitrobenzene	1800	53.3U	53.0U	54.1U	55.3U	54.9U	62.1U
RDX	770	77.2U	76.6U	78.2U	80.1U	79.5U	89.8U
Tetryl	37000	65.9UJ	65.5UJ	66.8UJ	68.4UJ	67.9UJ	76.7UJ
White Phosphorus SW-846 7580	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***
White Phosphorus	73	NA	NA	NA	NA	NA	NA

Notes:
ug/kg-micrograms per kilogram
U - Result is not detected
J - Result is a quantitative estimate
UJ - Reporting limit is a quantitative estimate
GWP-Res - Soil MSC for Residential Use Based on Groundwater Protection
SAI-Res - Soil MSC for Residential Use Based on Inhalation, Ingestion, and Dermal Contact
MSC - medium specific concentration
SAP - Sampling and Analysis Plan
NA- not analyzed

TABLE 4-4
LONGHORN ARMY AMMUNITION PLANT VALIDATED ANALYTICAL DATA RESULTS

8/2/2007

Sample Identification	Texas Risk Reduction Rule (Lower of GWP-Res and SAI-Res)	LHAAP-1-2	GT-SO-PD-01-02	GT-SO-PT-01-02	BTA-27-LHAAP-001-RS-01A	BTA-27-LHAAP-001-RS-01B	BTA-53-LHAAP-001-RS-01A	BTA-53-LHAAP-001-RS-01B
Lab Identification		**206070813-07**	**206072104-01**	**206072104-02**	**206091107-01**	**206091107-02**	**206091107-03**	**206091107-04**
Parameter								
Explosives SW-846 8330	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***
1,3,5-Trinitrobenzene	110,000	67.6U	79.5U	78.9U	79.5U	86.0U	79.3U	83.3UJ
1,3-Dinitrobenzene	370	67.6U	79.5U	78.9U	79.5U	86.0UJ	79.3U	83.3UJ
2,4,6-Trinitrotoluene	1800	62.8U	73.9UJ	73.3UJ	73.9UJ	79.9U	73.7U	77.5UJ
2,4-Dinitrotoluene	13	43.9U	51.6U	51.2U	51.7U	55.9UJ	51.5U	54.2UJ
2,6-Dinitrotoluene	13	58.6UJ	68.9UJ	68.3UJ	68.9UJ	74.5UJ	68.7UJ	72.2UJ
2-Amino-4,6-dinitrotoluene	610	66.8U	78.6U	78.0U	78.6U	85.0U	78.4U	82.4UJ
2-Nitrotoluene	37000	66.4U	78.1U	77.5U	78.1UJ	84.5U	77.9U	81.9UJ
3-Nitrotoluene	37000	53.5U	63.0U	62.5U	63.0U	68.1U	62.8U	66.0UJ
4-Amino-2,6-dinitrotoluene	610	58.5U	68.8U	68.2U	68.8UJ	74.4UJ	68.6UJ	72.1UJ
4-Nitrotoluene	37000	50.8U	59.7UJ	59.2U	59.7UJ	64.6UJ	59.5U	62.6UJ
HMX	180,000	60.3U	70.9U	70.4U	70.9UJ	76.7U	70.7U	74.4UJ
Nitrobenzene	1800	49.6U	58.3U	57.9U	58.3U	63.1U	58.2U	61.2UJ
RDX	770	71.8U	84.4UJ	83.8U	84.4U	91.3U	84.2U	88.5UJ
Tetryl	37000	61.3UJ	72.1UJ	71.5U	72.1U	78.0UJ	71.9U	75.6UJ
White Phosphorus SW-846 7580	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***	***ug/Kg***
White Phosphorus	73	NA	NA	NA	0.0518U	0.0534U	0.0570U	0.0519U

Notes:
ug/kg-micrograms per kilogram
U - Result is not detected
J - Result is a quantitative estimate
UJ - Reporting limit is a quantitative estimate
GWP-Res - Soil MSC for Residential Use Based on Groundwater Protectio
SAI-Res - Soil MSC for Residential Use Based on Inhalation, Ingestion, a
MSC - medium specific concentration
SAP - Sampling and Analysis Plan
NA- not analyzed

TABLE 4-4
LONGHORN ARMY AMMUNITION PLANT VALIDATED ANALYTICAL DATA RESULTS

8/2/2007

Sample Identification	Texas Risk Reduction Rule (Lower of GWP-Res and SAI-Res)	BTA-54-LHAAP-001-RS-01A	BTA-54-LHAAP-001-RS-01B
Lab Identification		**206091107-05**	**206091107-06**
Parameter			
Explosives SW-846 8330	***ug/Kg***	***ug/Kg***	***ug/Kg***
1,3,5-Trinitrobenzene	110,000	74.2U	78.3U
1,3-Dinitrobenzene	370	74.2U	78.3U
2,4,6-Trinitrotoluene	1800	68.9U	72.8U
2,4-Dinitrotoluene	13	48.2U	50.9U
2,6-Dinitrotoluene	13	64.2UJ	67.8UJ
2-Amino-4,6-dinitrotoluene	610	73.3U	77.4U
2-Nitrotoluene	37000	72.9U	76.9U
3-Nitrotoluene	37000	58.7U	62.0U
4-Amino-2,6-dinitrotoluene	610	64.2UJ	67.7UJ
4-Nitrotoluene	37000	55.7U	58.8U
HMX	180,000	66.2U	69.9U
Nitrobenzene	1800	54.4U	57.5U
RDX	770	78.7U	83.1U
Tetryl	37000	67.3U	71.0U
White Phosphorus SW-846 7580	***ug/Kg***	***ug/Kg***	***ug/Kg***
White Phosphorus	73	0.0544U	0.0509U

Notes:
ug/kg-micrograms per kilogram
U - Result is not detected
J - Result is a quantitative estimate
UJ - Reporting limit is a quantitative estimate
GWP-Res - Soil MSC for Residential Use Based on Groundwater Protecti
SAI-Res - Soil MSC for Residential Use Based on Inhalation, Ingestion, a
MSC - medium specific concentration
SAP - Sampling and Analysis Plan
NA- not analyzed

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5.0 RISK EVALUATION

The Interim Guidance, OERIA developed by the U.S. Army Engineering and Support Center, Huntsville, was selected to evaluate risk at former LHAAP. OERIA uses direct analysis of site conditions and demographics to evaluate MEC risk. The results of this risk assessment are used to determine the most appropriate response action alternatives for screening and comparison in Chapter 6.

5.1 Conceptual Site Model

Two conceptual site models (CSMs) were developed to provide a summary of the MEC and MC sources, potential pathways for MEC and MC exposure, and potential receptors to MEC and MC at LHAAP MRS locations. A narrative description of the CSM is presented below while a graphical presentation is provided in Figure 5-1, MEC Source-Receptor Conceptual Site Model, and Figure 5-2, MC Source-Receptor Conceptual Site Model.

5.1.1 Source Areas

The field activities identified MEC items at two of the three MRS locations at the former LHAAP, Site 27 – South Test Area/Bomb Test Area, and at Site 54 – Ground Signal Test Area respectively. No MEC items were identified or recovered at Site 53 – Static Test Area. All MPPEH items were recovered at the surface or within the top 6 inches of the soil. This finding is consistent with the historical records that indicate the sites were not historically used as impact areas with exception of the Mortar Test Area at Site 54.

The Mortar Test Area was historically used only to fire illumination rounds. An illumination round is designed with a small parachute in the nose section that deploys and "suspends" the round in the air. The round eventually falls to the ground but at a much lower velocity than a conventional mortar round, thus significantly reducing the ability of the round to penetrate deeply into the subsurface.

Surface soil sampling did not identify the presence of MC or WP at any of the three MRS locations. Chapter 4.7 describes sampling locations and methodology.

5.1.2 Potential Exposure Pathways

Since all MPPEH items encountered were at or very near the surface, the most probable exposure pathway for exposure to MEC items would be during recreational activity (e.g., hunting, hiking), where potential receptors walk through the MRS locations. Intrusive activities during industrial development that involve digging, drilling or driving items into the soil also present potential exposure for workers moving around on the work site. Examples of these activities could include construction excavations, oil and gas exploration, or driving fence posts.

Since no MC or WP were detected in any of the six samples collected at the three MRS, there is not a complete exposure pathway for MC or WP. Therefore, the risk associated with MC is not evaluated since no MC is present at an unacceptable concentration.

5.1.3 Potential Receptors

The land use of the transferred LHAAP acreage is as part of the CLNWR. The remaining land, including the MRS locations, is held by the Army while environmental restoration takes place in preparation for transfer to the USFWS. The general public will have access to the sites.

The future land use of the MRS locations is incorporation into the existing wildlife refuge. The sites will be used consistent with the rest of the refuge and "big six" activities. A potential future land use is for oil and gas exploration.

Figure 5-1: MEC Source-Receptor Conceptual Site Model

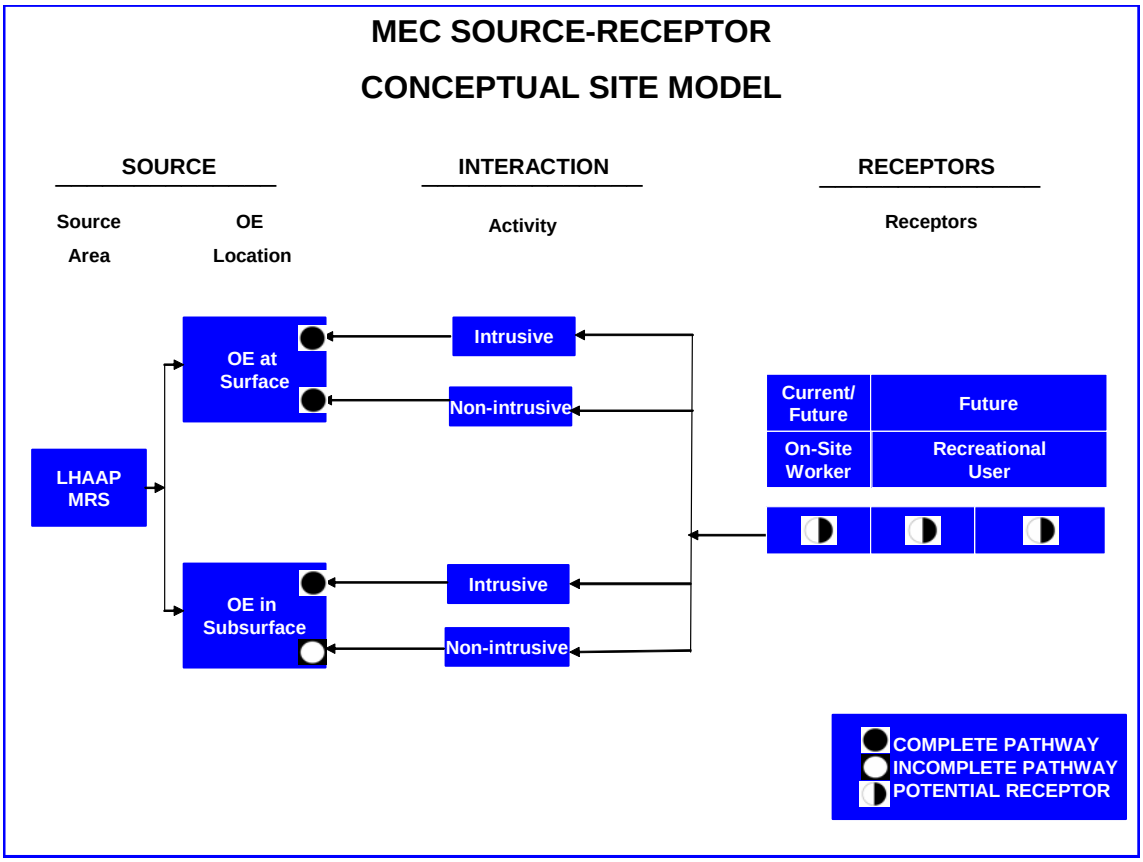
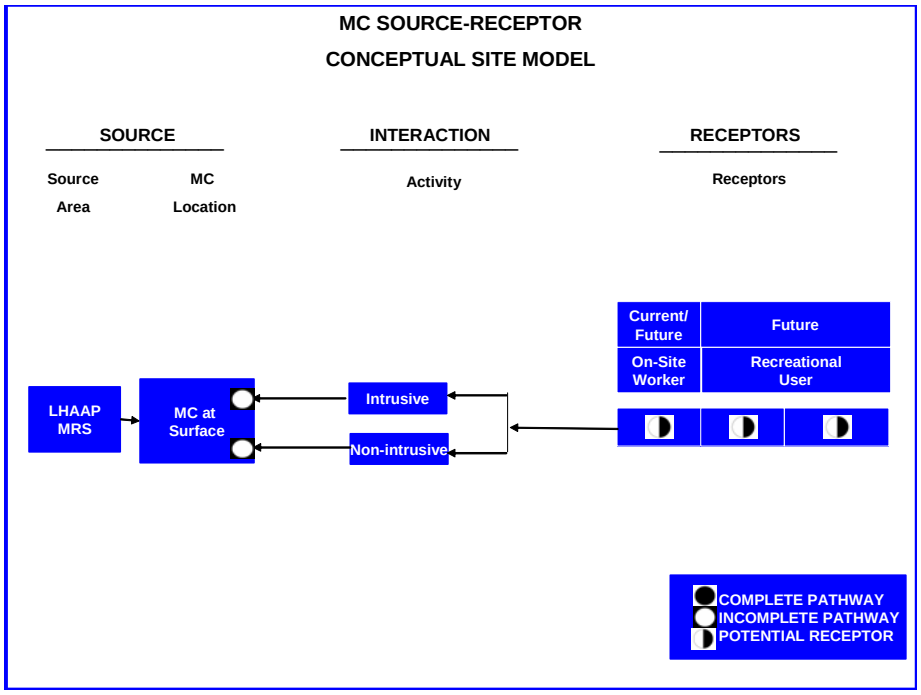


Figure 5-2: MC Source-Receptor Conceptual Site Model



5.2 MEC Risk Assessment

There are three basic steps in the OERIA risk assessment process:

1. Review baseline risk factors and identify additional factors to assess.
2. Develop a baseline risk assessment.
3. Assess the potential response alternatives.

5.2.1 Review the Baseline Factors and Identify Additional Factors

The first step in the OERIA process is to review the risk factors and to determine if additional factors exist at the site. The availability and completeness of available data must be considered. If the data available are not sufficient to perform the risk assessment, additional data must be collected. If the data are sufficient, the process can move to the next step, the baseline risk assessment.

At the LHAAP, significant historical data exists to identify past activities and locations of the activities at the sites. Historical aerial photo review was employed to identify boundaries of the MRS locations and to guide the location of the transects investigated during the field activities. Field activities (e.g., geophysical anomaly mapping, intrusive investigation) were spread uniformly across a representative area of the sites to provide data sufficient to characterize the risks associated with MEC at the sites.

5.2.2 Develop a Baseline Risk Assessment

The baseline risk assessment provides a qualitative evaluation of the risk associated with the reasonably anticipated future usage of the site as a refuge by evaluating the factors identified during the review of base factors. The basic risk factors associated with MEC items at a site are categorized into three classes:

- Ordnance and explosives factors
- Site characteristics factors
- Human factors.

5.2.2.1 Ordnance and Explosive Factors

MEC factors include the type of ordnance found at the site (Table 5-1), the sensitivity of ordnance at the site (Table 5-2), quantity (e.g., density) of ordnance at the site, and the depth of MEC items at the site. Site characteristic factors include the accessibility and stability of areas where MEC items are located (Tables 5-3 and 5-4, respectively). Human factors are related to the population density and population activities (Table 5-5).

The hazard associated with the type ordnance is ranked on a scale of 0 to 3 depending on the severity of injury that might occur if an MEC item is picked up, moved, or stepped on by an individual.

Table 5-1: Risk Categories by MEC Type

Category	Description
3	MEC that may kill an individual if detonated by the individual's activities
2	MEC that may cause major injury to an individual if detonated by the individual's activities
1	MEC that may cause minor injury to an individual if detonated by the individual's activities
0	Inert MEC or scrap that will not detonate

The sensitivity of a MEC item to movement by individuals that encounter the item or other environmental conditions (e.g., freeze-thaw cycles) that may cause the item to function is ranked on a scale of 0 to 3.

Table 5-2: Risk Categories by MEC Sensitivity

Category	Description
3	MEC that is very sensitive
2	MEC that is less sensitive
1	MEC that may have functioned correctly or is unfuzed but has a residual risk
0	Inert MEC or scrap that will not detonate

The quantity or density of MEC items at a given site is a factor in how likely an individual is to encounter a MEC item. At sites with a high density of MEC items the sheer number of MEC items increases the probability of encountering a MEC item vs. a site with a lower density.

The depth of a MEC item is also a function of how likely an individual is to encounter a MEC item. In general, the deeper a MEC item is the less likely it will be encountered or be uncovered by natural events such as erosion, frost heave, etc. However, future activities at the site must also be considered (e.g., the possibility of future construction or development at the site).

5.2.2.2 Site Characteristics Factors

Site characteristics are the physical conditions at the site and potential impacts of natural events that may occur in the future. Site characteristics include the accessibility and stability of areas where MEC items are located.

Site accessibility plays a significant role in the probability of individuals encountering MEC items. In general, the less access individuals have to a site, the less likely an individual will encounter a MEC item. Additionally, the activity at a given site will affect the probability of encountering MEC items; sites with little access or low usage have a lower probability of encountering MEC items.

Manmade barriers (e.g., fences) or natural physical barriers (e.g., steep slopes, deep ravines) that restrict access to the site reduce the number and or frequency of people accessing the sites. Likewise, lakes and rivers may prevent access to some sites but may also provide an access route that is difficult to control at other locations. Accessibility factors are ranked as No Restrictions, Limited Restrictions, or Complete Restrictions.

Table 5-3: Risk Categories by Site Access Level

Access Level	Access Description
No Restrictions to Site	No man-made barriers, gentle sloping terrain, no vegetation that restricts access, and no water that restricts access
Limited Restriction to Site Access	Man-made barriers; vegetation that restricts access; water, snow, or ice cover; and/or terrain that restricts access
Complete Restriction to Site Access	All points of entry controlled

Site stability is a function of how the natural environmental conditions at the site may affect the probability of encountering MEC. Naturally recurring processes (e.g., shifting sands, erosion, frost heave) over time may expose MEC items that previously were buried and inaccessible. Extreme events (hurricanes, tornados, etc.) may also cause previously buried MEC items to become exposed. Site stability factors are ranked as Stable, Moderately Stable, or Unstable based on the likelihood that natural events will expose MEC items at a given site.

Table 5-4: Risk Categories by Site Stability Level

Stability Level	Stability Description
Site Stable	MEC should not be exposed by natural events
Moderately Stable Site	MEC may be exposed by natural events
Site Unstable	MEC most likely will be exposed by natural events

5.2.2.3 Human Factors

Human factors are activities that currently occur on the site, or can reasonably be expected to occur in the future that are related to the likelihood of individuals encountering MEC items. Activities are generally classified as recreational (hiking, camping, hunting, etc.) or occupational (farming, industrial, etc.). The contact probabilities associated with these activities is a function of the depth and sensitivity of MEC items at the site and the depth of the intrusive actions caused by an activity.

The population density at the site is another human factor. The frequency that individuals use the site and the density of the use for events are both factors in the likelihood of an encounter with MEC items. The potential for human factors to impact the probability of an individual encountering MEC items is rated as Low, Moderate, or Significant. For this EE/CA, relative values for population and Overall Evaluation are defined as follows:

Population is an estimate of the number of people using a site, and the frequency of that use, and is determined based upon the type and location of the site, access restrictions, natural and man-made barriers, surrounding population and other demographics." The levels "low," "moderate," and "high" each refer to a relative evaluation level of population. Low population could be considered 0 to 100 people. A moderate population could be 100 to 1,000 and a high population could be 1,000+ people using the site.

Table 5-5: Risk Categories by Population Activities

Examples of Activities	Actual Depth of MEC (in)	Contact Level
Child play, hunting, fishing, swimming	0–6	Significant
	6–12	Low
	>12	Low
Picnicking, camping, metal detecting	0–6	Significant
	6–12	Moderate
	>12	Low
Construction, archaeology, crop farming	0–6	Significant
	6–12	Significant
	>12	Moderate

5.3 Summary of MEC Risk Assessments

Risk assessments for each MRS at the former LHAAP are presented below. Additionally, Table 5-6 presents a summary of the risk assessment for each MRS location.

Table 5-6: Baseline MEC Risk Assessment

OOU	Ordnance				Site		Human Demographics		Ordnance Concern	Overall Evaluation
	Type	Sensitivity	Density	Depth	Access	Stability	Activity	Population		
Site 27	1	1	Moderate	0 to >06″	Unlimited Restrictions	Stable	Refuge workers and visitors	Low	M-112 A-1 Photoflash Cartridge	Moderate
Site 53	NA	NA	NA	NA	Unlimited Restrictions	Stable	Refuge workers and visitors	Low	None	No Risk
Site 54	1	1	Low	0 to >06″	Unlimited Restrictions	Stable	Refuge workers and visitors	Low	81mm Illumination Mortar	Low

5.3.1 Site 27 – South Test Area/Bomb Test Risk Assessment

5.3.1.1 OE Factors

A total of 21 MPPEH items were recovered at Site 27 – South Test Area/Bomb Test Area. The size of the investigation area was approximately 2 acres so the average density of MEC items in the investigation area is 10.5 items per acre. However, 19 of the 21 MPPEH items recovered were found clustered within the vicinity of the suspected Demolition Area #3 and the scarred area identified as a former OB/OD area. Therefore, MEC density across the entire site may be lower as activities conducive to the transport and deposition of MEC items did not occur in most of the areas away from the OB/OD area. The only types of ordnance item found at this site were the M-123 A-1 and Photoflash Cartridge and the M-112 A-1 Photoflash Cartridge.

Based on the ordnance item found at this site, the M-123 A-1 and M-112 A-1 Photoflash Cartridges, the ordnance-type hazard was assigned a value of 1. This rating is assigned to MEC items that are likely to cause only minor injuries if detonated by an individual's action when encountering the item. Although TNT flake was manufactured at the plant during the World War II (WWII) era, the historical record indicates that production of high explosives did not continue after the WWII era. Additionally, no high explosives or fuzed items were identified during field investigations; all MPPEH items discovered were pyrotechnic or illumination in nature.

The sensitivity factor is assigned a value of 1. The MPPEH items recovered are not highly sensitive to movement and are not likely to function if accidentally stepped on or if moved by natural events. All MPPEH items identified and recovered during the field investigation were destroyed by detonation and none of the post detonation ordnance scrap recovered exhibited any evidence of residual energetic material. However, the type of MPPEH items which may remain may still contain small amounts of energetic material (predominantly black powder expelling charges) or ignitable filler material that could cause burns if ignited.

All MPPEH items were recovered at the surface or within the top 6 inches of the soil. This finding is consistent with the historical records that indicate the sites were not historically used as impact areas.

5.3.1.2 Site Characteristics

The land use of the transferred LHAAP acreage is as part of the CLNWR. The remaining land, including the MRS locations, is held by the Army while environmental restoration takes place in preparation for transfer to the USFWS. The general public will have access to the sites.

The future land use of the MRS locations is incorporation into the existing wildlife refuge. The sites will be used consistent with the rest of the refuge and "big six" activities. A potential future land use is for oil and gas exploration.

The LHAAP area is not subject to soil freezing conditions that would produce frost heave allowing buried MEC items to migrate toward the surface. The area is heavily forested with well-established ground cover so potential erosion from either wind or precipitation is limited. The area is subject to some impacts due to extreme events; however, the area lies south of most tornado activity in the region. Likewise, the site is far enough north that most hurricanes have diminished in intensity by the time they reach the LHAAP area. For example, Hurricane Rita in 2005 passed almost directly over the site, producing heavy rains and higher than normal winds but causing little damage or producing conditions that would likely lead to exposing MEC items. Accordingly, a site stability rating of stable has been assigned to Site 27.

5.3.1.3 Human Factors

The future land use of the non-Army property at the former LHAAP surrounding the MRS locations is as a national wildlife refuge, designated as the CLNWR. The general public will have access to the sites, which will be used consistent with the rest of the refuge and the "big six" activities.

All MEC recovered during the investigation were found at the surface or within 6 inches of the surface. Accordingly, the rating for contact level risk associated with future human activities is Significant. However, the most reasonably anticipated future land use is incorporation into the existing wildlife refuge. The probable future population density at the site is Low.

5.3.1.4 Overall MEC Risk Impact Assessment

Taking all risk factors above into consideration, the baseline risk assessment for Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R) is for Moderate MEC risk to individuals in the area.

5.3.2 Site 53 – Static Test Area Risk Assessment

5.3.2.1 OE Factors

No MEC items were identified or recovered at Site 53 – Static Test Area. Accordingly, the MEC density, ordnance-type hazard, and sensitivity factors are all assigned a value of 0. Therefore, there is no risk identified for Site 53.

5.3.3 Site 54 – Ground Signal Test Area Risk Assessment

5.3.3.1 OE Factors

Fourteen MPPEH items were recovered at Site 54 – Ground Signal Test Area (LHAAP-003-R). The investigation area was approximately 2 acres so the overall average density of MEC items in the area is seven items per acre. However, 13 of the 14 MPPEH items recovered were found clustered within the immediate vicinity of the suspected Mortar Test Area, which occupies approximately 5 acres. Therefore MEC density across the entire site may be lower as activities conducive to the transport and deposition of MEC items did not occur in most of the areas away from the Mortar Test Area. The following MPPEH items were found at Site 54:

- CDU 10 Components
- 60-mm Illumination Mortar
- 60-mm Illumination Candles
- 4.2-inch Illumination Candle
- 81-mm Illumination Candle
- Miscellaneous Mortar Fuzes.

The ordnance-type hazard was assigned a value of 1. This rating is assigned to MEC items likely to cause only minor injuries if activated by an individual's action if encountering the item. Although TNT flake was manufactured at the plant during the WWII era, the historical record indicates that production of high explosives did not continue after the WWII era. Additionally, no high explosives or fuzed items were identified during field investigations; all MPPEH items discovered were pyrotechnic or illumination in nature except the miscellaneous fuzes. All fuzes were inspected and were determined to have functioned as designed.

The sensitivity factor is assigned a value of 1. The MPPEH items recovered are not highly sensitive to movement and are not likely to function if accidentally stepped on or if moved by natural events. All MPPEH items identified and recovered during the field investigation were destroyed by detonation and none of the postdetonation ordnance scrap recovered exhibited any evidence of residual energetic material. However, the type of MPPEH items that may remain may still contain small amounts of energetic material (predominantly black powder expelling charges) or ignitable filler material that could cause burns if ignited.

All MPPEH items were recovered at the surface or within the top 6 inches of the soil. This finding is consistent with the historical records that indicate the sites were not historically used as impact areas.

A significant factor on assessing MEC risk is the fact that the Mortar Test Area was historically used only to fire illumination rounds. An illumination round is designed with a small parachute in the nose section that deploys and "suspends" the round in the air. The round eventually falls to the ground but at a much lower velocity than a conventional mortar round, thus significantly reducing the ability of the round to penetrate deeply into the subsurface.

5.3.3.2 Site Characteristics

The land use of the transferred LHAAP acreage is as part of the CLNWR. The remaining land, including the MRS locations, is held by the Army while environmental restoration takes place in preparation for transfer to the USFWS. The general public will have access to the sites.

The future land use of the MRS locations is incorporation into the existing wildlife refuge. The sites will be used consistent with the rest of the refuge and "big six" activities. A potential future land use is for oil and gas exploration.

The LHAAP area is not subject to soil freezing conditions that would produce frost heave allowing buried MEC items to migrate toward the surface. The area is heavily forested with well-established ground cover so potential erosion from either wind or precipitation is limited. The area is subject to some impacts due to extreme events; however, the area lies south of most tornado activity in the region. Likewise, the site is far enough north that most hurricanes have diminished in intensity by the time they reach the LHAAP area. For example, Hurricane Rita in 2005 passed almost directly over the site, producing heavy rains and higher than normal winds but causing little damage or producing conditions that would likely lead to exposing MEC items. Accordingly, a site stability rating of Stable is recommended.

5.3.3.3 Human Factors

The future land use of the non-Army property at the former LHAAP surrounding the MRS locations is as a national wildlife refuge, designated as the CLNWR. The general public will have access to the sites, which will be used consistent with the rest of the refuge and the "big six" activities.

All MPPEH recovered during the investigation were found at the surface or within 6 inches of the surface. Accordingly, the rating for contact level risk associated with future human activities is Significant. The most reasonably anticipated future land use of the MRS locations is incorporation into the existing wildlife refuge. The probable population density at the site is Low.

5.3.3.4 Overall MEC Risk Impact Assessment

Taking all risk factors above into consideration, the baseline risk assessment for Site 54 – Ground Signal Test Area (LHAAP-003-R) is for Low MEC risk to individuals in the area.

6.0 REMOVAL ACTIONS IDENTIFICATION

This removal action is intended to be the final action for the sites. The two removal action objectives identified are protection of human safety from explosive hazards and protection of human health from MC at unacceptable concentrations. Since no MC was detected at unacceptable concentrations, the second removal action objective has been achieved. This chapter identifies, comparatively screens, and analyzes the potential removal alternatives for Sites 27 and 54 for protection of human safety. No action is required for Site 53 since the exposure pathway is incomplete; therefore, this site is not evaluated in this chapter. An ESS would be required for the No Action (NA) alternative at Site 53.

6.1 Removal Alternative Identification

Four potential removal actions are evaluated:

- Alternative 1 –NA
- Alternative 2 –Land Use Controls (LUCs)
- Alternative 3 – Surface Removal with Selected LUCs
- Alternative 4 – Subsurface Removal with Selected LUCs.

6.1.1 No Action

The NA alternative is included to provide a baseline for comparison of other risk-reduction alternatives. No alternative technology is associated with this alternative, and no risk-reduction measure resulting in the treatment, containment, removal of, or limited exposure to MEC will take place.

The NA alternative is appropriate for sites where no MEC has been found; where there is no documented evidence of MEC firing, burial, or impact areas; or where the nature and extent of exposure (e.g., small arms ammunition) poses minimal threat to those who may encounter MEC.

6.1.2 Land Use Controls

LUCs are MEC response actions intended to mitigate or reduce potential residual risk remaining. Selected LUCs may be also be used to supplement removal actions. LUCs as a stand alone response action do not remove MEC. To the extent the controls are effective and are maintained, the threat to human safety is reduced. The level of protection is greater than that provided by Alternative 1 (NA) because informing the public of dangers related to ordnance reduces the likelihood of accidental MEC exposure.

However, any MEC present remains in place and may pose potential risk to the public. Because MEC would remain in place and no long-term change to site conditions occurs, this alternative requires future maintenance effort and oversight by regulatory and governmental agencies.

LUCs may include legal mechanisms, physical controls, and educational programs. Legal mechanisms may include restrictive language, such as restricted access or use, as part of transfer documents. Administrative mechanisms are related to legal mechanisms and may include dig restrictions, notices, adopted local land use plans and ordinances, construction permitting, or other land use management systems that ensure compliance with use restrictions.

Physical controls may include engineered barriers and signs (see Figure 6-1 for an example sign). Barriers limit or restrict access and possible exposure to MEC, while signs like the example sign pictured below alert individuals to the former use and dangers at the site. Signs can provide information regarding the nature of the hazard, how to avoid the hazard, and also provide a contact for additional information. Signs deter access to a site and give notice so inappropriate uses at the site are avoided. A sign has the added benefit of providing information to the public on the nature of the hazard found at a site. More specifically, UXO warning signs provide hazard communication before entering wooded areas from roadways. If used, signs should be placed around the perimeter of the sites and should be visible at all points.

Figure 6-1: Example Warning Sign

Educational and notification programs are designed as an integral part of LUCs. Educational programs are intended to inform the public about the controls, how to identify hazards, and what to do if hazards are discovered. Informational pamphlets can warn the public of the hazards of ordnance based on the historical context of former operations that occurred at the LHAAP. An effective informational pamphlet contains photographs and/or drawings of typical ordnance items that the public might encounter and maps of previously recovered MEC site locations.

Informational pamphlets can also be developed and distributed to support safety briefings and/or speaking engagements and are effective as stand-alone educational materials. Informational pamphlets can be mailed to residents in the vicinity of a MEC site or they can be distributed from central locations such as libraries. A telephone number for the appropriate local authority would be included in the informational pamphlet.

Formal education seminars may include periodic community education classes. Classes can be given to different audiences including local government and/or regulatory personnel, emergency response personnel, adjacent property owners, and children at local schools. Training seminars can be tailored to meet the specific interests/concerns of the audience and can be an effective method to educate the audience on the nature and extent of hazards associated with MEC and the precautions to take in the event a person comes in contact with a MEC item.

6.1.3 Surface Removal with Selected Land Use Controls

Removal actions are designed to locate and remove MEC items, thus eliminating the risk to the future land users. Surface removal involves UXO specialists, trained to recognize, handle, and dispose of ordnance, performing visual inspection of the entire surface and removing any MEC or MPPEH visible at or protruding from the ground surface. Items recovered during surface removal may be detonated in place or moved to an area specifically designated for destruction of recovered MEC or MPPEH items. MD recovered during a surface removal is certified as free of explosives, taken off site, and turned in to a scrap metal recycler.

This alternative is effective in minimizing the risk of incidental contact with MEC or MPPEH in areas where intrusive activities are not likely. Site preparation activities are required in some areas including the brush removal to perform a visual survey. The efforts associated with this alternative vary, depending upon topography and ground cover (vegetative and pavement).

Surface removal is appropriate where surface MEC or MPPEH is confirmed, or where surface inspections have not been performed. Because this alternative only addresses MEC or MPPEH found on the surface of the site, the possibility of future impacts to human health and the environment from subsurface MEC or MPPEH remains. Therefore, selected LUCs are often required to supplement this alternative. Typical LUCs may include dig restrictions and erection of UXO warning signs.

6.1.4 Subsurface Removal with Selected Land Use Controls

This alternative involves all activities necessary to locate, excavate, and remove MEC or MPPEH to a depth consistent with the expected future land use. Removal depth is dictated by the type of ordnance present and the depth of MEC detection that is technically feasible at the time of removal. This alternative is an effective solution for reducing risk of exposure by reducing the potential for any direct contact with MEC or MPPEH.

Activities include vegetation clearance as necessary to conduct geophysical surveys, completion of geophysical investigations, excavation of anomalies, and the destruction of all MEC items recovered. MEC or MPPEH items recovered during subsurface removal are detonated in place or moved to an area designated for destruction of recovered MEC or MPPEH items. MD recovered during a subsurface clearing effort is certified as free of explosives and turned in to a scrap metal recycler.

Technologies used for this alternative include magnetic and/or electromagnetic geophysical investigative methods and management/disposal of MEC (including UXO detonation). This alternative includes surface removal over the entire site with excavation and removal in impact areas or suspected burial grounds. The effort associated with implementing this alternative varies depending upon vegetation and site access.

This alternative does not require consideration of annual operation and maintenance costs; this issue is addressed only if additional intrusive activities are initiated below the depth cleared. Subsurface removal to depth does not provide for unlimited intrusive activities because no detection and MEC clearance using aboveground detection methods can be 100 percent effective. Intrusive activities requiring excavations below the level of removal must still be evaluated and performed in conjunction with construction support. Therefore, LUCs such as construction permitting or land use restrictions requiring digging activities may still be required to supplement this alternative.

6.2 Description of Response Screening Process

This section describes the evaluation criteria and process used to determine the most appropriate MEC response actions for former LHAAP. The results of the qualitative risk assessment are used as a basis for the evaluation of the MEC response action alternatives. Each alternative is evaluated according to three criteria:

- Effectiveness
- Implementability
- Cost.

6.2.1 Effectiveness

Effectiveness is the measure of a response alternative to reduce the potential for exposure to or interaction with MEC. Additionally, it is a measure of a response alternative's ability to meet the criteria of protecting public safety and the identified applicable or relevant and appropriate requirements (ARARs) while still accomplishing the goals established at the first TPP meeting. Effectiveness analysis considers protection of human safety, compliance with ARARs, and both the long- and short-term effectiveness.

6.2.1.1 Protection of Human Safety

This criteria measures how well a responses alternative reduces public exposure and interaction with MEC, the reduction in terms of possible injury or death to humans, and protection of the environment. The following factors are evaluated for this criterion:

- Net reduction in MEC
- Estimated quantity of residual MEC
- Expected depth of residual MEC
- Potential exposure pathway between humans and MEC for projected future land use
- Potential for an individual to interact with MEC if an exposure occurs.

6.2.1.2 Compliance with ARARs

This criterion measures how well a response alternative meets chemical-, action-, and location-specific ARARs (federal, state, and local). Chemical-specific ARARs exist for MEC sites and are related to the presence of MC and RAO 2, the protection of human health. Because the screening of MC and WP sampling data at the three sites indicated they were not constituents of

concern, RAO 2 was met and the addition of MC-related ARARs was not necessary. A summary of ARARs for the former LHAAP is provided in Table 6-1.

Table 6-1: Applicable or Relevant and Appropriate Requirements

Requirement	Citation	Description	Type	Comments
Clean Water Act (CWA) of 1972 and 1977	33 USC 1251 et seq.	Establishes the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so they can support the protection and propagation of fish, shellfish, and wildlife.	Location specific	Section 404 of the CWA is the principal federal regulatory program protecting wetland resources.
Archaeological Resources Protection Act (ARPA)	16 USC 470	The ARPA prohibits unauthorized excavation of, and sets standards for protection of, archaeological resources. Prohibits disclosure of archaeological resources by federal agencies.	Location Specific	If any sites (properties) are uncovered or affected by the fieldwork, proper procedures must be in place under the ARPA to evaluate and protect cultural resources.
National Historic Preservation Act (NHPA)	16 USC 470	Requires action to be taken to locate, identify, evaluate, and protect cultural resources.	Location specific	If additional properties are uncovered or existing sites are affected by intrusive MEC sampling, conditions of the NHPA must be followed.
National Environmental Policy Act (NEPA)	42 USC 4371	Assures that each federal agency will implement environmental policy and give proper consideration to the environment before undertaking any major federal action that significantly affects the environment	Location specific	Federal agencies will comply with all existing and future environmental laws. All proposed and implemented response actions must take into consideration the environmental impacts and consider alternatives.
Endangered Species Act (ESA)	16 USC 460	Provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found	Location specific	There are no known endangered species present at the MRS sites. If any are discovered, site actions must comply with the ESA.
Ammunition and Explosives Standard	DOD 6055.9 STD	Establishes uniform safety standards applicable to ammunition and explosives, to associated personnel and property, and to unrelated personnel and property exposed to potential damaging effects of an accident involving ammunition and explosives	Action specific	Addresses safety considerations for potential UXO at defense sites.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities – Miscellaneous Units	40 CFR 264 Subpart X	Sets environmental performance standards for facilities that treat, store, or dispose of hazardous waste in miscellaneous units	Action specific	If any sites are determined to contain hazardous waste, proper handling/treatment/disposal procedures must be followed.

Requirement	Citation	Description	Type	Comments
Transportation – Hazardous Materials Regulations	49 CFR 100-199	Sets standards for transportation of hazardous materials by rail, aircraft, vessel, public highway, etc.	Action specific	If hazardous materials are removed from a site and transported offsite for disposal, proper transport procedures (including labeling, placarding, permitting, etc.) must be followed.

CFR = Code of Federal Regulations
USC = United States Code
TAC = Texas Administrative Code

ARARs are derived from both federal and state laws. Section 121 of CERCLA requires that cleanups comply with federal ARARs except in those cases where state ARARs are more stringent than the federal requirements. Under CERCLA Section 121(d) (2), federal ARARs for response actions could include requirements under any of the federal environmental laws (e.g., Clean Air Act [CAA], Clean Water Act [CWA], or Safe Drinking Water Act [SDWA]).

State ARARs applicable to response actions include requirements promulgated under state environmental or facility siting laws that are more stringent than federal ARARs and that have been identified in a timely manner, according to 40 CFR Part 300.400(g)(4). A requirement may be either "applicable" or "relevant and appropriate."

Applicable requirements are defined as cleanup or control standards, or other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state laws. Applicable requirements are identified on a site-specific basis by determining whether the jurisdictional prerequisites of a requirement fully address the circumstances at the site or the proposed remedial activity. All pertinent jurisdictional prerequisites must be met for the requirement to be applicable. These jurisdictional prerequisites are as follows:

- The party must be subject to the law
- The substances or activities must fall under the authority of the law
- The law must be in effect at the time the activities occur
- The statute or regulation requires, limits, or protects the types of activities.

A requirement is applicable if the specific terms (or jurisdictional prerequisites) of the statute or regulation directly address the circumstances at the site.

If not applicable, a requirement may still be relevant and appropriate if circumstances at the site are sufficiently similar to the problems or situations regulated by the requirement. "Relevant and appropriate" refers to cleanup standards or other substantive environmental protection criteria, requirements, or limitations promulgated under federal or state law that while not necessarily applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site, and whose use is well suited to the particular site.

The relevance and appropriateness of a requirement is judged by comparing a number of factors including the characteristics of the removal action, the items in question, or the physical circumstances of the site, with those addressed in the requirement. If there is sufficient similarity between the requirements and circumstances at the site, the requirement may be determined to be relevant and appropriate.

Determining whether a requirement is both relevant and appropriate is a two-step process. First, to determine relevance, a comparison is made between the response action, location, or chemicals covered by the requirement and related conditions at the site, release, or potential remedy. A requirement is relevant if it generally pertains to these conditions.

Second, to determine whether the requirement is appropriate, the comparison is further refined by focusing on the nature of the items, the characteristics of the site, the circumstances of the release, and the proposed response action. The requirement is appropriate if, based on such comparison, its use is well suited to the particular site. The facility must comply with requirements that are determined to be both relevant and appropriate.

6.2.1.2.1 Nonpromulgated Advisories

In addition to ARARs, nonpromulgated advisories or guidance referred to as "to be considered" (TBC) materials may also apply to the conditions found at a site. TBCs are not legally binding.

6.2.1.2.2 Waiver Under Certain Circumstances

ARARs may be waived under certain circumstances. CERCLA Section 121(d) allows the selection of alternatives that will not attain ARAR status if any of six conditions for a waiver of ARARs exists. However, the selected alternative must be protective even if an ARAR is waived. The conditions for a waiver are as follows:

- The removal action selected is only part of a total response action that will attain such level or standard of control when completed
- Compliance with such a requirement at a particular site will result in greater risk to human safety (i.e., worker safety) than alternative options
- Compliance is technically impracticable from an engineering perspective
- The removal action selected will result in a standard of performance that is equivalent to an applicable requirement through the use of another method or approach
- A state requirement has not been equitably applied in similar circumstances on other removal actions within the state
- A fund-financed removal action does not provide a balance between available monies and the need for protection of public safety and the environment at sites where the need is more immediate (not applicable to DOD sites).

6.2.1.2.3 CERCLA Site ARARs

ARARs that govern actions at CERCLA sites fall into three broad categories based upon the contaminants present, site characteristics, and alternatives proposed for cleanup. These three categories are described in the following subsections.

6.2.1.2.4 Chemical-specific ARARs

Chemical specific ARARs do exist for MEC sites and are related to the presence of MC and RAO 2, the protection of human health. Because the screening of MC and WP sampling data at the three sites indicated they were not constituents of concern, RAO 2 was met and the addition of MC-related ARARs was not necessary.

6.2.1.2.5 Location-specific ARARs

Location-specific ARARs govern activities in environmentally sensitive areas. The requirements are triggered by the particular location and the proposed activity at the site. An example of a location-specific ARAR is compliance with the Endangered Species Act of 1973, as amended, to avoid sensitive ecosystems or habitats. Location-specific ARARs may also focus on wetlands, floodplain protection areas, or archaeologically significant areas to prevent site-specific actions.

6.2.1.2.6 Action-Specific ARARs

Action-specific ARARs are restrictions that define acceptable treatment and disposal procedures for hazardous substances. These ARARs generally set performance, design, or other similar action-specific controls or restrictions on particular kinds of activities. An example might be a state Air Quality Management Authority that sets limitations on fugitive dust generated during grading and excavation activities during a removal action. Other examples of action-specific ARARs include the Ammunition and Explosives Standard and the Department of Transportation Hazardous Materials Regulations.

6.2.1.2.7 Pertinent Requirements

In determining whether a requirement is pertinent to future response actions (i.e., surface removal), potential ARARs are screened for applicability. If determined not applicable, the requirement is then reviewed for both relevance and appropriateness. Requirements that are considered relevant and appropriate command the same importance as applicable requirements.

6.2.1.3 Long-term Effectiveness

This criteria measures how well a MEC response action alternative protects human safety once it is implemented. Potential for exposure or interaction with UXO is characterized by:

- Magnitude of potential MEC exposure and interaction following implementation of the selected alternative
- Permanence of the exposure and interaction reduction resulting from implementing the selected alternative
- Reliability of the controls and maintenance measures in managing any residual MEC following implementation of the selected alternative.

6.2.1.4 Short-term Effectiveness

This criteria measures how well a response action alternative meets the exposure and interaction reduction objectives during its implementation and is characterized by:

- The ability of the alternative to reduce risk during implementation
- The potential for adverse effects on the environment during the implementation
- The time required to implement the alternative
- The potential for adverse effects on humans, including the community and personnel involved in implementation of the alternative.

6.2.1.5 Effectiveness Rankings

Effectiveness rankings are based primarily on whether MEC was recovered during the EE/CA field investigation (or during previous investigations) and the probability of exposure to MEC based on current and the reasonably anticipated future land uses. For LUCs, it is difficult to account for the reduction of exposure as a result of posting UXO warning signs or implementing community awareness programs. Therefore, effectiveness of LUCs in protecting human safety is greater than the NA alternative but is less effective than either of surface removal or subsurface removal to depth.

6.2.2 Implementability

Implementability is a measure of whether a MEC response action alternative can be physically and administratively implemented, maintained, and enforced. It is also a measure of the availability of the services and materials needed to implement the alternative. Another consideration for implementability is regulatory agency and community acceptance of a given alternative. For implementability, the response alternatives are ranked by technical and administrative feasibility, the availability of services and materials and the regulatory agency and community acceptance of the alternative.

6.2.2.1 Technical Feasibility

This criterion includes the following factors:

- Reliability of the action being implemented
- Ease of field implementation (e.g., brush clearing, removal action)
- Ease of undertaking future actions related to the initial actions
- Ability to monitor the effectiveness of the action.

6.2.2.2 Administrative Feasibility

This criterion measures ease that an alternative can be implemented in terms of permits and rights of entry, coordination of non-field services to support the action (e.g., legal services) and the arrangement of materials delivery or security services. Additionally, this factor includes the agency coordination required among government agencies and other significant stakeholders.

6.2.2.3 Availability of Services and Materials

This criterion measures the availability of goods and services needed to implement an alternative. Examples include the availability of specialized personnel (e.g., UXO-qualified technicians) and equipment (e.g., geophysical instruments), availability of explosives for

demolition purposes, availability of a suitable disposal facility for the ordnance scrap (e.g., proximity of local scrap metal recycling facility), and condition of the existing infrastructure to allow access of personnel and material to and from the project site.

6.2.2.4 Regulatory Agency Acceptance

This criterion includes the acceptance of the recommended alternative by applicable federal and state agencies. Regulatory agency acceptance is based on information gathered during TPP workshops, public meetings, and interaction with agencies and this factor may be updated at any time during the EE/CA review process. Final evaluation of this factor is addressed in the final EE/CA document after review and comments are received from regulatory agencies.

6.2.2.5 Community Acceptance

This criterion relates to the degree of acceptance of the alternative by the community. Public sentiment expressed during RAB meetings, city council or county supervisor meetings, and from comments received during the public review period are means to gauge community acceptance. Final evaluation of this factor is addressed in the final EE/CA document after review and comments are received from the public during the overall review process and this factor may be updated at any time during the EE/CA review process.

6.2.3 Cost

Both the initial alternative implementation and postimplementation costs are considered. For initial implementation the costs are one-time costs for labor, materials, specialty subcontractors, equipment rental, etc., necessary for a contractor to conduct the field activities (e.g., surface removal, geophysical mapping, intrusive investigation, installing signs).

Postremoval site control costs are recurring costs such as 5-year reviews and maintenance costs for LUCs (e.g., replacing weathered signs). Cost considerations are evaluated using detailed cost estimates. The cost of implementing each of the MEC response action alternatives has been estimated and backup cost data is presented in Appendix E.

The benefit of the investment in risk reduction is also considered when ranking the MEC response action alternatives. This involves evaluating the reduction in risk to the public versus the cost of implementing the alternative. For example, if two alternatives provide an equal or comparable amount of risk reduction, the less expensive alternative provides greatest benefit for the dollars spent, and therefore, would be ranked as the better alternative in terms of cost benefit.

6.3 Comparative Screening of Response Action Alternatives

Comparative screening of risk reduction alternatives is presented in this section. The alternative NA (Alternative 1) is not screened out during this process and remains active as a potential alternative for future review and baseline comparison. The response alternatives identified in Chapter 6.1 are screened for effectiveness, implementability, and cost for Sites 27 and 54 in Chapter 6.4. The alternatives presented in this chapter were developed based on future land use as a wildlife refuge with unrestricted access, with usage limited to “big six” activities, and the transfer of the site to USFWS.

6.3.1 Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R)

NA (Alternative 1) is not considered an effective MEC response action alternative for Site 27 as the presence of MPPEH at the site was confirmed during the field investigation, thus precluding acceptance of the NA alternative. However, the NA alternative will not be screened out and will remain active as a potential alternative for future review.

LUCs (Alternative 2) meets the RAO. LUCs would serve to inform potential site receptors of any MEC or MPPEH hazards that remain in the area. LUCs have been rated as moderate because they prohibit use of the site and educate the public of the dangers even though they do not remove the dangers. LUCs may consist of restricted access and UXO warning signs spaced every 100 feet, a display case containing photos of MEC potentially encountered at the site, information pamphlets, and a UXO safety seminar/course to present MEC hazards and safety to the public and site workers. Alternative 2 is ranked low-to-moderate in effectiveness, low cost, and is considered implementable, giving it a fairly good standing.

MPPEH items were found on the ground surface during the EE/CA investigation, so a surface-only removal would typically be considered. However, because this MRS contains an OB/OD of approximately 11 acres, two combination/hybrid alternatives will be considered for Site 27. One combination alternative (Alternative 3) consists of surface removal and selected LUCs to include fencing of the OB/OD area with signs. Alternative 3 meets the RAO and would provide effective risk reduction benefit to future site receptors by removing potential MEC sources; however, residual MEC may remain below the surface across the site. Alternative 3 would be rated as moderate in effectiveness and cost and is considered implementable.

The other combination alternative (Alternative 4) meets the RAO and consists of surface removal with selected LUCs combined with a subsurface removal to depth in the OB/OD area. This alternative would also provide risk reduction by removing potential MEC sources, but residual MEC may remain below the surface in areas outside of the OB/OD area. Alternative 4 would be rated moderately high in effectiveness, moderately high in cost, and is considered implementable.

Subsurface MEC removal to depth with selected LUCs (Alternative 5) meets the RAO and would provide effective risk reduction in the area by removing potential MEC sources and by removing residual MEC below the surface. It would be rated high in effectiveness and high in cost and is considered implementable.

The five alternatives for Site 27 are summarized in Table 6-2.

Table 6-2: Comparative Screening Summary for Site 27

Alternative	Effectiveness	Implementable	Cost	Keep Alternative?
1. NA	None	No	Very Low	Yes
2. LUCs (Signs, no access, education)	Low to Moderate	Yes	Low	Yes
3. Surface Removal, Selected LUCs (Signs, no dig, education,	Moderate	Yes	Moderate	Yes

Alternative	Effectiveness	Implementable	Cost	Keep Alternative?
fence OB/OD area, construction support)				
4. Surface Removal and Partial Subsurface Removal (OB/OD area), Selected LUCs (Signs, no dig, education, construction support)	Moderate to High	Yes	Moderate to High	Yes
5. Subsurface Removal to depth, Selected LUCs	High	Yes	High	Yes

6.3.2 Site 54 – Ground Signal Test Area (LHAAP-003-R)

NA (Alternative 1) is not considered an effective MEC response action alternative for Site 54 as the presence of MPPEH at the site was confirmed during the field investigation. However, the NA alternative will not be screened out and will remain active as a potential alternative for future review.

LUCs (Alternative 2) meets the RAO. LUCs would serve to inform potential site receptors of any MEC hazards that remain in the area. LUCs have been rated as moderate because they prohibit use of the site and educate the public of the dangers even though they do not remove the dangers. LUCs may consist of restricted access and MEC warning signs spaced every 100 feet, a display case containing photos of MEC potentially encountered at the site, information pamphlets, and a MEC safety seminar/course to present MEC hazards and safety to the public and site workers. Alternative 2 is rated low-to-moderate in effectiveness, low cost, and is considered implementable.

MPPEH items were found on the ground surface during the EE/CA investigation, so a surface-only removal (Alternative 3) with selected LUCs would provide effective risk reduction benefit to future site receptors by removing potential MEC sources; however, residual MEC may remain below the surface. Alternative 3 meets the RAO and would be rated as moderate in effectiveness and cost and is considered implementable.

Subsurface MEC removal to depth with selected LUCs (Alternative 4) would provide effective risk reduction in the area by removing potential MEC sources and by removing residual MEC below the surface. Alternative 4 meets the RAO and would be rated as high in effectiveness and high in cost and is considered implementable.

The four alternatives for Site 54 are summarized in Table 6-3.

Table 6-3: Comparative Screening Summary for Site 54

Alternative	Effectiveness	Implementable	Cost	Keep Alternative?
1. NA	None	No	Very Low	Yes
2. LUCs (Signs, no access, education, construction support)	Low to Moderate	Yes	Low	Yes
3. Surface Removal, Selected LUCs (Signs, no access, education, construction support)	Moderate	Yes	Moderate	Yes
4. Subsurface Removal to depth, Selected LUCs	High	Yes	High	Yes

6.4 Comparative Analysis of Response Alternatives

In this section, the alternatives selected from Chapter 6.3 are comparatively analyzed by MRS. The evaluation criteria used to assess the alternatives are presented in Chapter 6.2. The results of the qualitative risk assessment are presented in Chapter 5. The comparative analysis of the MEC response action alternatives in this chapter form the basis for the recommendations made for the LHAAP MRS sites presented in Chapter 7, Recommended Response Alternatives.

The ultimate objective of the selected response action is to protect human safety from explosive hazards in a fashion that meets environmental regulations, involves the public and stakeholders, minimizes environmental and economic impacts, and creates a documented record of findings and actions.

6.4.1 Site 27 – South Test Area/Bomb Test Area (LHAAP-001-R)

The overall MEC hazard level in this area is moderate based on the results of the EE/CA field investigation and evaluation of three risk factors (i.e., MEC type, site characteristics, and site demographics) defined in the qualitative risk assessment (Chapter 5). Using this information, the MEC response action alternatives evaluated in this EE/CA report are analyzed in the following subsections to determine the most appropriate MEC response action alternative.

6.4.1.1 Effectiveness

6.4.1.1.1 Protection of Human Safety

The MEC risk associated this site was evaluated as moderate. NA is not considered applicable due to the confirmation of MEC at the site and because it does not reduce MEC risk to potential onsite receptors. LUCs are protective of human safety because they cut off the exposure pathway; however, LUCs would not be as effective long term because there is no reduction in volume of MEC and there is residual MEC left in place that could present a long-term safety hazard. The LUC alternative meets the RAO.

MPPEH items were confirmed at, or very near, the surface. Surface-only removal would reduce risk by eliminating MEC at the surface or protruding from the surface, but it would present a short-term risk to protectiveness of workers, as does any MEC removal alternative. Surface removal has a greater long-term effectiveness than LUCs since there is a reduction in the volume

of MEC and there is less residual MEC to present a long-term hazard. Subsurface removal to the depth also presents a short-term risk to protectiveness of workers, but it would provide a higher level of long-term risk reduction with respect to human safety at the site because no residual MEC would be present.

6.4.1.1.2 Compliance with ARARs

Compliance with ARARs is ranked equally for all alternatives as full compliance with ARARs is expected for all response alternatives. No waivers of ARARs are identified as being needed. No federal threatened or endangered species are known to be present at the site.

6.4.1.1.3 Long-term Effectiveness

NA is the lowest ranked alternative for long-term effectiveness because it does not reduce MEC risk over the long term. LUCs can provide low risk reduction over the long term in reducing risk associated with MEC hazards as long as they are effectively maintained, but there is no reduction in the potential hazard because they do not reduce the volume of MEC and because there is residual MEC left in place. Surface removal provides moderate long-term effectiveness because erosion may eventually uncover shallow buried subsurface MEC. Subsurface removal to depth is considered the best alternative for long-term effectiveness because it provides more protection of human safety by removing residual MEC below the surface.

6.4.1.1.4 Short-term Effectiveness

NA would not contribute to the reduction of risk in the short term. LUCs would provide moderate short-term risk reduction by informing workers involved with implementing LUCs of hazards associated with MEC potentially at the site. While there would be no exposure for workers installing signs outside the perimeter of the site, there would be some exposure/risk for workers installing a fence around the high-anomaly-density area. Surface removal would be more effective than LUCs in reducing short-term risk to the general public but would increase risk to the worker involved in the implementation. Subsurface removal to depth would provide the greatest short-term effectiveness by removing MEC at and below the surface.

6.4.1.2 Implementability

6.4.1.2.1 Technical and Administrative Feasibility

The NA alternative is the easiest alternative to implement in terms of both technical and administrative feasibility. Preparation of National Environmental Policy Act (NEPA) and ESS documents associated with this option are relatively easy and can be completed rapidly. LUCs are ranked next easiest because the technical needs are less complex than removal actions.

Both the surface only and subsurface removal alternatives would be more difficult to implement than LUCs because they require more specialized technical planning and administrative support (e.g., preparation of work plans, explosives magazine siting plan, mobilizing personnel and equipment) than implementing LUCs at the site. The materials, equipment and specialized personnel needed are generally available but are not readily available in the immediate vicinity of LHAAP and would have to be mobilized in from other locations.

According to Section 9-8 of EP 1110-1-18, preparation of an ESS is required for both the NA alternative and the LUC alternative.

6.4.1.2.2 Services and Materials

NA requires no services or materials. The technology associated with implementing the LUCs alternative (i.e., sign posting) is reliable, readily accessible, and easily implemented. Implementation safety concerns relate to the potential for worker exposure during UXO warning sign installation and fence installation around the high-anomaly-density (OB/OD) area. UXO-qualified personnel are required to provide MEC avoidance procedures employed during sign post, sign, and fence installation.

Implementation of a surface removal or subsurface removal to depth requires brush clearing, geophysical equipment, providing specially trained and qualified personnel, providing donor explosives and establishing a MEC disposal area. The amount of services required for surface only removal is less that the resources required to perform subsurface removal. Resources to implement these actions are not readily available in the immediate vicinity of LHAAP and have to be mobilized from other locations.

6.4.1.2.3 Regulatory Agency and Community Acceptance

The draft-final EE/CA Report will be made available to the public for a formal 30-day public review and comment period. Public comments and regulatory agency input will be considered and may impact the final recommendations. Written responses will be provided to significant comments received during this period.

An Action Memorandum, addressing all regulatory and public comments, will be prepared. As the primary decision document, the Action Memorandum will identify the response action selected, explain the rational for selecting the response action and substantiate the need for the response action.

6.4.1.3 Cost

Table 6-4 provides implementation costs of the alternatives at Site 27. (An alternative cost summary is provided in Table 6-8 at the end of this section.)

Table 6-4: Alternative Costs for Site 27

Alternative	Cost
1. NA (ESS only)	$8,586.86
2. LUCs (Signs, no access, education) plus ESS and 6 5-year reviews	$254,952.05
3. Surface Removal, Selected LUCs (Signs, no dig, education, fence OB/OD area, construction support), and 6 5-year reviews	$783,346.45

Alternative	Cost
4. Surface Removal and Partial Subsurface Removal (OB/OD area), Selected LUCs (Signs, no dig, education, construction support), and 6 5-year reviews	$857,302.53
5. Subsurface Removal to depth, Selected LUCs, and 6 5-year reviews	$943,177.72

6.4.1.4 Investment and Benefit

Investment costs associated with NA are limited to preparation of an ESS. However, NA does not provide any MEC risk reduction at Site 27. LUCs costs are lower than both surface-only removal and subsurface removal to depth. Subsurface removal to depth has the highest investment costs but provides the greatest reduction of risk. A comparative analysis summary for Site 27 is presented in Table 6-5 below.

Table 6-5: Comparative Analysis Summary for Site 27

Alternative	Overall Effectiveness	Effort to Implement	Overall Cost
1. NA	None	Low	Very Low
2. LUCs	Low	Moderate	Low
3. Surface Removal with fenced OB/OD area, Selected LUCs	Moderate	High	Moderate
4. Surface Removal with Partial Subsurface Removal (OB/OD area), Selected LUCs	Moderate	High	Moderate to High
5. Subsurface Removal to depth, Selected LUCs	High	High	High

6.4.2 54 – Ground Signal Test Area (LHAAP-003-R)

The overall MEC hazard level in this area is low based on the results of the EE/CA field investigation and evaluation of three risk factors (i.e., MEC type, site characteristics, and site demographics) defined in the qualitative risk assessment (Chapter 5). Using this information, the MEC response action alternatives evaluated in this EE/CA Report are analyzed in the following subsections to determine the most appropriate MEC response action alternative.

6.4.2.1 Effectiveness

6.4.2.1.1 Protection of Human Safety

The MEC risk associated this site was evaluated as Low. NA is not considered applicable due to the confirmation of MPPEH at the site and because it does not reduce MEC risk to potential onsite receptors. LUCs are protective of human safety because they cut off the exposure pathway; however, LUCs would not be as effective long term because there is no reduction in volume of MEC and there is residual MEC left in place that could present a long-term safety hazard. The LUC alternative meets the RAO.

MPPEH items were confirmed at, or very near, the surface. Surface-only removal would reduce risk by eliminating MEC at the surface or protruding from the surface, but it would present a short-term risk to protectiveness of workers, as does any MEC removal alternative. Surface removal has a greater long-term effectiveness than LUCs since there is a reduction in the volume of MEC and there is less residual MEC to present a long-term hazard. Subsurface removal to the depth also presents a short-term risk to protectiveness of workers, but it would provide a higher level of long-term risk reduction with respect to human safety at the site because no residual MEC would be present.

6.4.2.1.2 Compliance with ARARs

Compliance with ARARs is ranked equally for all alternatives as full compliance with ARARs is expected with for all response alternatives. No waivers of ARARs are identified being needed. No federal threatened or endangered species are known to be present at the site.

6.4.2.1.3 Long-term Effectiveness

NA is the lowest ranked alternative for long-term effectiveness because it does not reduce MEC risk over the long term. LUCs can provide low risk reduction over the long term in reducing risk associated with MEC hazards as long as they are effectively maintained, but there is no reduction in the potential hazard because they do not reduce the volume of MEC and because there is residual MEC left in place. Surface removal provides moderate long-term effectiveness because erosion may eventually uncover shallow buried subsurface MEC. Subsurface removal to depth is considered the best alternative for long-term effectiveness because it provides more protection of human safety by removing residual MEC below the surface.

6.4.2.1.4 Short-term Effectiveness

NA would not contribute to the reduction of risk in the short term. LUCs would provide moderate short-term risk reduction by informing workers involved with implementing LUCs of hazards associated with MEC potentially at the site, though for sign installation outside the perimeter of the site, MEC would not be an issue. Surface removal would be more effective than LUCs in reducing short-term risk to the general public but would increase risk to the worker involved in the implementation. Subsurface removal to depth would provide the greatest short-term effectiveness by removing MEC at and below the surface.

6.4.2.2 Implementability

6.4.2.2.1 Technical and Administrative Feasibility

The NA alternative is the easiest alternative to implement in terms of both technical and administrative feasibility. Preparation of NEPA and ESS documents associated with this option are relatively easy and can be completed rapidly. LUCs are ranked next easiest because the technical needs are less complex than removal actions.

Both the surface-only and subsurface removal alternatives would be more difficult to implement than LUCs because they require more specialized technical planning and administrative support (e.g., preparation of work plans, explosives magazine siting plan, mobilizing personnel and equipment) than implementing LUCs at the site. The materials, equipment and specialized

personnel needed are generally available but are not readily available in the immediate vicinity of LHAAP and would have to be mobilized in from other locations.

According to Section 9-8 of EP 1110-1-18, preparation of an ESS is required for both the NA alternative and the LUC alternative.

6.4.2.2.2 Services and Materials

NA requires no services or materials. The technology associated with implementing the LUCs alternative (i.e., sign posting) is reliable, readily accessible, and easily implemented. There should be no implementation safety concerns related to the UXO warning sign installation, as this will occur outside the perimeter of the site.

Implementation of a surface removal or subsurface removal to depth requires brush clearing, geophysical equipment, providing specially trained and qualified personnel, providing donor explosives, and establishing a MEC disposal area. The amount of services required for surface-only removal is less than the resources required to perform subsurface removal. Resources to implement these actions are not readily available in the immediate vicinity of LHAAP and have to be mobilized from other locations.

6.4.2.2.3 Regulatory Agency and Community Acceptance

The draft final EE/CA Report will be made available to the public for a formal 30-day public review and comment period. Public comments and regulatory agency input will be considered and may impact the final recommendations. Written responses will be provided to significant comments received during this period.

An Action Memorandum, addressing all regulatory and public comments, will be prepared. As the primary decision document, the action memorandum will identify the response action selected, explain the rational for selecting the response action and substantiate the need for the response action.

6.4.2.3 Cost

Table 6-6 provides implementation costs of the alternatives at Site 54.

Table 6-6: Alternative Costs for Site 54

Alternative	Cost
1. NA (ESS only)	$8,586.86
2. LUCs plus ESS and 6 5-year reviews	$252,815.49
3. Surface Removal, Selected LUCs, and 6 5-year reviews	$636,546.61
4. Subsurface Removal to depth, Selected LUCs, and 6 5-year reviews	$946,182.90

6.4.2.4 Investment and Benefit

Investment costs associated with NA are limited to preparation of an ESS. However, NA does not provide MEC risk reduction at Site 54. LUCs costs are lower than both surface-only removal and subsurface removal to depth. Subsurface removal to depth has the highest investment costs but provides the greatest benefit in the reduction of risk. A comparative analysis summary for Site 54 is presented in Table 6-7 below.

Table 6-7: Comparative Analysis Summary for Site 54

Alternative	Overall Effectiveness	Effort to Implement	Overall Cost
1. NA	None	Low	Very Low
2. LUCs	Low	Moderate	Low
3. Surface Removal, Selected LUCs	Moderate	High	Moderate
4. Subsurface Removal to depth, Selected LUCs	High	High	High

6.4.3 Summary of Comparative Analysis of Removal Alternatives

An alternative costs summary that summarizes the information presented in Tables 6-4 and 6-6 is provided in Table 6-8.

Table 6-8: Alternative Costs Summary

Alternative	Site 27	Site 54
1. NA (ESS only)	$8,586.86	$8,586.86
2. LUCs plus ESS and 6 5-year reviews	$254,952.05	$252,815.49
3. Surface Removal, Selected LUCs, and 6 5-year reviews **(Site 54 only)**	Not applicable	$636,546.61
3. Surface Removal, Selected LUCs (Signs, no dig, education, fence OB/OD area, construction support), and 6 5-year reviews **(Site 27 only)**	$783,346.45	Not applicable
4. Surface Removal and Partial Subsurface Removal (OB/OD area), Selected LUCs (Signs, no dig, education, construction support), and 6 5-year reviews **(Site 27 only)**	$857,302.53	Not applicable
4/5. Subsurface Removal to depth, Selected LUCs, and 6 5-year reviews	$943,177.72	$946,182.90

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7.0 RECOMMENDED RESPONSE ALTERNATIVES

This chapter presents the recommendations for reducing MEC risk for each of the MRS locations at the LHAAP. The OERIA risk evaluation areas developed in Chapter 5 to evaluate the level of MEC hazard were used in Chapter 6 to compare the effectiveness, implementability, and cost of the four OE response action alternatives identified in this EE/CA Report. The OE hazard level (determined in Chapter 5) and the best ranking OE response action alternatives (Chapter 6) for each OERIA evaluation area were used to help develop and recommend the most appropriate OE response actions for the LHAAP site.

7.1 Site 27 – LHAAP-001-R (South Test Area/Bomb Test Area)

The presence of MPPEH items was confirmed during the field investigation; therefore, Alternative 4 from Tables 6-4 and 6-5 is recommended. This alternative includes surface removal with LUCs to reduce risk inside the area of Site 27, and because there is a likelihood of encountering MEC during subsurface activities at the former OB/OD area, subsurface removal for the approximately 11-acre area of the OB/OD area. After evaluating the site characteristics, OE factors, human factors, and projected future land use, the level of risk reduction gained at this site by a subsurface removal action across the entire site may not warrant the additional cost. The Surface Clearance with Partial Subsurface Clearance to Depth (OB/OD area only) and LUCs are evaluated to be the most cost-effective alternative considering the evaluation criteria, the level of risk, and the future land use.

Estimated costs associated with surface removal and subsurface removal in the OB/OD area and LUCs are presented in Table 7-1. LUCs recommended for the Site 27 are dig restrictions, hazard warning signs, a display case, and informational pamphlets with MEC safety awareness training for site workers and site visitors. In addition, this alternative should provide OE construction support when future construction is planned.

7.2 Site 53 – LHAAP-002-R (Static Test Area)

No removal alternative was evaluated because no action (Alternative 1) is required due to an incomplete exposure pathway. However, preparation of an ESS would be required.

7.3 Site 54 – LHAAP-003-R (Ground Signal Test Area)

The presence of MPPEH items was confirmed during the field investigation; therefore, Alternative 3 from Tables 6-6 and 6-7 is recommended. This alternative includes surface removal with LUCs to reduce risk inside Site 54. After evaluating the site characteristics, OE factors, human factors, and projected future land use, the level of risk reduction gained at this site by a subsurface removal action across the entire site may not warrant the additional cost. The Surface Clearance and LUCs are evaluated to be the most cost-effective alternative considering the evaluation criteria, the level of risk, and the future land use.

Estimated costs with surface removal and LUCs are presented in Table 7-1. LUCs recommended for Site 54 are dig restrictions, hazard warning signs, a display case, and informational pamphlets with MEC safety awareness training for site workers and site visitors. In addition, this alternative should provide OE construction support when future construction is planned.

7.4 Implementing the Five-Year Review Plan

A CERCLA Five-Year Review is required to occur every 5 years after the response action has occurred. Reviews are required because hazards remain at the site above levels that allow for unlimited use and unrestricted exposure. The implementation and performance of the selected remedies should be reviewed every 5 years to ensure continued protection of human safety. Recurring reviews should be planned for a minimum of 30 years after the last response action is complete and should be included in each alternative as a recurring cost. The estimated cost to conduct a one-time 5-year review including a site visit (travel from San Antonio, Texas, to Marshall, Texas), conducting stakeholder interviews, and preparing a report is $35,000.

Table 7-1: Rough Order of Magnitude Cost Estimate

OOU	Acres	Surface Removal	Subsurface Removal to Depth	ESS	LUCs	Total Removal Action Costs	Remedial Design Costs[1]	Long-Term Monitoring (5-Year Review)[2]
SITE 27	79	$389,081.53	$221,855.81*	N/A	$36,365.19	$647,302.53	TBD	$210,000
SITE 53	27	N/A	N/A	$8,586.86	N/A	$8,586.86	N/A	N/A
SITE 54	80	$392,317.98	N/A	N/A	$34,228.63	$426,546.61	TBD	$210,000
					Total	$1,082,436	TBD	$420,000

1. The remedial design will be performed by the USACE Design Center. CAPE does not have data to estimate the government's cost to design.
2. Cost is for six 5-year reviews (estimated at $35,000 each) to cover a period of 30 years.

* Subsurface clearance cost is for the OB/OD area only.

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8.0 QUALITY CONTROL

8.1 Quality Control Procedures

A variety of QC measures were implemented during the field activities. Daily Quality Control Reports were completed by CAPE's QC Officer, and copies are included in Appendix G. A test grid was established for the geophysical prove-out by burying inert ordnance items with a similar size and mass of common ordnance items that could reasonably be expected to be found during the survey based on the HRR.

The Project Geophysicist was responsible for final data interpretations and anomaly selection. A separate QC Geophysicist was responsible for instrument QC results from the geophysical survey. A Site Geophysicist, in consultation with the Project Geophysicist, was responsible for data collection methods, downloads, data processing, and interpretation. The Site Geophysicist was responsible for the daily QC instrumentation prove-outs and responsible for the initial layout of the project perimeter and transects identification assignments.

Following the review of the data, transect data anomalies were selected directly from the profiles. Once the Site and Project geophysicists completed the analysis of a given data set, 25 percent of the raw data sets were submitted to the QC Geophysicist. The QC Geophysicist overlaid the anomaly selections made by the Site Geophysicist and evaluated the preliminary analyses. The QC Geophysicist then added to the anomaly list at their discretion.

The test grid was retained and used during the anomaly investigation and excavation. The EM-61 instrument deployed to the field was tested on the grid following the same QC procedures used during the geophysical prove-out. The instrument was tested against the grid each day to verify its operating conditions. Additionally, the UXO Technicians checked their handheld detectors against the test plot each day to verify the instruments were in good working order and were generating the proper response to the inert ordnance buried in the test plot.

The UXO QC/Safety Officer reviewed the dig sheets produced by the geophysical investigation and conducted an independent investigation of 10 percent of the investigation areas after the UXO Technicians completed field activities to locate and investigate anomalies. Additionally, the OESS conducted QA checks of selected areas. All QC and QA checks performed during the field investigation passed, with the exception of two areas. At Site 53, Scarred Area #1, the geophysical investigation also included a mag and flag survey using handheld instruments to work an area where problems with the DGM mapping equipment were encountered. The EM-61 failed to pass daily QC checks during mapping of Suspect Area #1. The instrument was replaced with a different instrument shipped to the site. The area investigated before the QC test failure was reinvestigated using handheld detectors using mag and flag techniques. The other QC exception was the 91.2 percent reacquisition rate, which is explained in Section 3.5.6 of this document.

A total of 35 MPPEH items were received during the field investigation and two explosive demolition activities were performed. The MPPEH items recovered up to the date of the planned demolition activity were consolidated into a demolition area located within the suspected OB/OD area of Site 27. Notification of the planned demolition activities was coordinated with the DA

and USFWS points of contact. In turn, these agencies coordinated with their employees and other contractor personnel working within the LHAAP property.

Appropriate safety controls were implemented including physically blocking roadways and posting road guards at potential access points. The SUXOS and the UXO QC Officer toured the perimeter of the demolition site to verify all safety controls were in place before authorization to proceed with the demolition shot was granted. After the demolition shot was completed, the area remained closed to access until after the SUXOS had investigated the demo area to verify that no kick-outs had occurred and that the demolition shot had consumed all of the MPPEH items.

More than 1,470 pounds of MD were collected during the field investigation. The UXO Technician III Team Leader inspected the MD to ensure there was no residual reactive material present and to determine if additional demilitarization was required. Items requiring additional demilitarization were cut or crushed to comply with DOD Manual 4160.21 requirements.

After the initial inspection, and completion of demilitarization as required, the MD was inspected again by either the SUXOS or the UXO QC/Safety Officer. Finally, the MD was verified by the OESS as the MD was placed into 55-gallon containers for shipment to a recycler. The drums containing the MD were closed and lead seals were placed on the containers. A shipping label was prepared and attached to each individual drum. A DD Form 1348-1 was prepared along with a chain-of-custody form. Both documents were signed by the SUXOS and verified by the OESS.

A SAP was prepared and the applicable procedures were followed for collection and handling of field samples. The analyses were performed according to standard protocols and CAPE Chemists performed the data evaluation and validation. Laboratory analyses were performed acceptably, but the data reporting required qualifying statements in accordance with U.S. EPA protocols due to surrogate, LCS, and MS/MSD recoveries marginally outside the laboratories acceptance criteria. The data are deemed useable for the purposes of this EE/CA and have not been rejected.

QA samples were also collected during the soil sampling activities. QA samples consisted of samples split in the field and shipped to a USACE-designated laboratory to obtain independent analysis of the sample.

8.2 Lessons Learned

The use of controlled burns should be considered for future activities at the site. However, if possible, the timing of the work should be scheduled such that the burns occur during the later part of the summer months, as this will result in more complete brush removal by burning and reduce the cost of the supplemental mechanical brush removal required.

9.0 REFERENCES

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APPENDIX A

STATEMENT OF WORK

STATEMENT OF WORK
FOR
ENGINEERING EVALUATION/
COST ANALYSIS (EE/CA)
AT THE
LONGHORN ARMY AMMUNITION
PLANT
KARNAK, TEXAS

STATEMENT OF WORK
MUNITIONS AND EXPLOSIVE OF CONCERN (MEC)
ENGINEERING EVALUATION AND COST ANALYSIS (EE/CA)
LONGHORN ARMY AMMUNITION PLANT, TEXAS
March 2005

1.0 OBJECTIVE: The objective of this task order is to investigate and characterize the extent of MEC for three munitions response sites (MRS) located at Longhorn Army Ammunition Plant, Texas (LHAAP) including MEC located beyond presumed MRS boundaries and prepare an EE/CA Report. The United States Army Corps of Engineers Fort Worth District (CESWF) will concur with all actions concerning this statement of work. For the purpose of this SOW, the term "geophysical investigation" shall refer to either digital geophysical mapping (DGM) or analog/digital Mag & Dig operations.

2.0 BACKGROUND:

2.0.1 Work Standard MEC is a potential safety hazard and may constitute an imminent and substantial endangerment to site personnel and the local populace. All personnel on site shall adhere to the applicable provisions of 29 CFR 1910.120. During this EE/CA it is the government's intent that the contractor destroy all MEC encountered on-site. The contractor's work is to be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 104 and the National Contingency Plan (NCP), Sections 300.120(d) and 300.400(e).

2.0.2 Work Week UXO personnel performing MEC procedures shall be limited to a 40 hour work week, either four 10 hour days or five eight hour days. Two consecutive workweeks shall be separated by at least 48 continuous hours of rest.

2.0.3 Chemical Warfare Material The site is not suspected to contain Chemical Warfare Materiel (CWM). However, if suspect CWM is encountered during any phase of site activities the contractor shall immediately withdraw upwind from the work area, secure the site and contact the Corps of Engineers on site Military Munitions Safety Specialist (MMSS). Work Plan shall include process and procedures outlined in Interim Guidance Document CEMP-CE (200.1a) dated 23 Apr 2004, Notification Procedures for Discovery of Recovered Chemical Weapons Material during USACE Projects.

2.1 Location LHAAP is located in central east Texas in the northeast corner of Harrison County, approximately 14 miles northeast of Marshall, Texas and approximately 40 miles west of Shreveport, Louisiana. Mixed pine and hardwood forests that cover gently rolling to hilly terrain characterize LHAAP. LHAAP is also forested with loblolly and shortleaf pine, a variety of oaks, sweet gum, black tupelo, ash, bald cypress, and a few scattered willows.

2.2 History LHAAP was established in October 1942 with the primary mission of producing trinitrotoluene (TNT) flake. Production of TNT continued until August 1945, when the plant went on standby status. Pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40 mm ammunition were manufactured at LHAAP from 1952 until 1956.

The LHAAP rocket motor facility began operation in November 1955. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established. Prior to 1994, operations consisted of compounding pyrotechnic and propellant mixtures; loading, assembling and packing activities; accommodating receipt and shipment of containerized cargo; and maintenance and/or layaway of standby facilities and equipment as they applied to mobilization planning. LHAAP was also responsible for static firing and elimination of Pershing I ands II rockets. In 1996, approximately 1,435 of the 8,433 acres were leased to the Caddo Lake Institute for biological and ecological studies by local schools and universities. LHAAP became inactive and excess to the U. S. Army's needs in July 1997. A 2002 Memorandum of Agreement exists between the U. S. Army and the Fish and Wildlife Service (USFWS) for the future transfer of certain portions of LHAAP. On May 5, 2004, 5032 acres were transferred to USFWS. Subsequent transfers have increased the total acreage transferred to USFWS to almost 6000 acres. A 2005 conceptual site model (CSM) for the Military Munitions Response Program identified the following MRS at LHAAP: South Test Area/Bomb Test Area (LHAAP-001-R), Static Test Area (LHAAP-002-R) and Ground Signal Test Area (LHAAP-003-R). This SOW includes tasks to characterize LHAAP-001-R, LHAAP-002-R, and LHAAP-003-R for the presence of MEC and also to determine if MEC extends beyond the presumed boundaries of these sites.

2.3 Sites and Potential MEC The three sites encompass approximately 169 acres.

2.3.1 Site LHAAP-001-R, South Test area/Bomb Test Area, approximately 76 acres, is in the south central portion of LHAAP and was used for testing photoflash bombs and demilitarization of illuminating devices and leaking production items. The site was constructed in 1954 and used until the early 1980s. The original site boundary has been modified to include approximately 4 acres adjacent to the site, which will be included in the site characterization. According to the historical record review (HRR), the following MEC are associated with this site:

- M120A1 photoflash bombs
- Pyrotechnic illuminating devices
- XM 40E5 Anti-intrusion Mines
- Leaking white phosphorus munitions
- Photoflash cartridges (1/2 lb and 1 lb)

2.3.2 Site LHAAP–002-R, Static Test Area, approximately 13 acres, is located in the east-central portion of LHAAP and was previously used for static test firing of rocket motors, red phosphorus smoke wedge testing, and illuminating candle testing. The site may have been active until 1998. According to the HRR, the following MEC are associated with this site:

- Illuminating candles
- Red phosphorus smoke wedges
- Nike rocket motors
- Sergeant rocket motors
- Pershing missile rocket motors
- XM-10 Lacrosse rocket motors
- M7A1 JATO rocket motors

2.3.3 Site LHAAP-003-R, Ground Signal Test Area, approximately 80 acres, is located in the southeastern portion of LHAAP and served as a test area for pyrotechnic munitions, test and demilitarization area for rocket motors, and possibly a demolition area for XM40E5 Anti-intrusion Mines. According to the HRR, the MEC associated with this site include:

- Red phosphorus smoke wedges
- Infrared flares
- Pyrotechnic signal devices
- 60 MM illuminating mortars
- 81 MM illuminating mortars
- 4.2 inch illuminating mortars
- Illuminating munitions ranging from 40 to 155 MM
- Leaking white phosphorus munitions
- XM40E5 Anti-intrusion Mines
- Nike rocket motors
- Sergeant rocket motors
- Pershing missile rocket motors

3.0 SPECIFIC REQUIREMENTS:

3.1 (TASK 1) PRE-BID SITE VISIT A pre-bid site visit will be conducted by the government. The contractor may choose to attend at their expense. CESWF will establish the date of the site visit. The date will be provided to the contractor at least five calendar days in advance of the visit. The contractor shall determine the makeup of its visit team at its own discretion. The objectives of the site visit are for the contractor's team to gain familiarization with the site in general, to gain information required to put together a proposal, and if awarded this Task Order to prepare an acceptable and executable Work Plan. No UXO related activities will be performed during the site visit. CESWF will prepare an Abbreviated Site Safety and Health Plan (ASSHP) and provide a MMSS for this visit. The contractor shall provide the site visit team's names, positions and dates of 40-hour and/or refresher OSHA HAZWOPER training to the CESWF for inclusion into the ASSHP. Site visit team shall be under the contractors Medical Surveillance Program.

3.2 (TASK 2) TECHNICAL PROJECT PLANNING (TPP) This task is Firm Fixed Price. The contractor will not be required to implement the TPP process but shall be prepared to participate in at least 1 TPP meeting (8 hour duration) conducted by the government at a location to be determined. The government expects the TPP meeting to take place prior to final work plan submittal. The contractor shall prepare and submit a summary report of the TPP meeting discussions in accordance with (IAW) Data Item Description (DID) MR-045.

3.3 (TASK 3) GEOPHYSICAL PROVE-OUT (GPO) This task is Firm Fixed Price Contractor should anticipate ferrous and non-ferrous MEC with a signature of a 40mm signal cartridge and larger at all MRS. Regardless of approach (DGM or Mag & Dig), the contractor shall develop a plan to perform a Geophysical Prove-Out (GPO) IAW DID MR-005-05A. The contractor shall prepare and submit a draft and final version of the following: GPO Plan, Site Safety and Health Plan (SSHP), and GPO Report. The contractor shall not begin field operations

on the GPO plot(s) until the government has accepted the GPO Plan and SSHP. The final GPO Plan and GPO Report shall be included in the EE/CA work plan per DID MR-001.

3.4 (TASK 4) EE/CA WORK PLAN This task is Firm Fixed Price. The contractor shall prepare a Type I EE/CA Work Plan (hereinafter referred to as the Work Plan) IAW DID MR-001. The contractor shall submit a Draft and Final version of the Work Plan. The contractor shall submit an Explosive Siting Plan (ESP) draft within seven days of award and coordinate with CESWF Mr. Harmon Slappy (817-886-1885) for approval.

3.5 (TASK 5) BRUSH CLEARING This task is Firm Fixed Price. Based on the methodology proposed, the contractor shall perform brush clearing necessary to perform project activities. Information on the type and extent of brush clearing requirements and/or restrictions can be obtained during the site visit. Procedures and equipment requirements shall to be approved by the MMSS prior to execution.

3.6 (TASK 6) LOCATION SURVEYS AND MAPPING This task is Firm Fixed Price. Location surveying and mapping shall be IAW DID MR-005-07 and the accepted Work Plan. All data submitted, shall be in the State Plane (North Texas Central) coordinate system, in feet. Contractor may use established control monuments, however, should the contractor select to set any property boundaries or monuments this work shall be performed by a Professional Land Surveyor licensed in the State of Texas. Existing monument locations will be provided to the successful contractor. Contractor personnel who are knowledgeable and competent in land surveying and use of surveying equipment may perform grid and/or transect location and layout. MEC locations shall be measured to the nearest 1-foot. Contractor shall prepare survey data and submit data with each Project Status Report following completion of the work. Survey data shall include a drawing and spreadsheets of survey information. For each site, the drawing shall cover the entire site and include grids or transects, MEC locations, and other pertinent features. Contractor shall prepare a map and spreadsheet, which includes list of coordinates for corners, starting, ending, turning locations, reference monuments used in survey, and other pertinent features of grids or transects, to include but not limited to MEC location data including grid number where found, item number assigned, type of item, location coordinates to nearest foot, and depth below ground surface.

3.7 (TASK 7) GEOPHYSICAL INVESTIGATION AND EVALUATION This task is Firm Fixed Price. The contractor shall implement geophysical investigations, in the sites outlined in the table below, as described in the accepted Work Plan and IAW DID MR-005-05. All geophysical teams shall be established from personnel who have successfully demonstrated their qualifications on the geophysical prove-out plot for skill, ability, technique and procedure.

SITE	APPROXIMATE ACREAGE	MINIMUM INVESTIGATION ACREAGE
LHAAP-001-R, South Test Area/Bomb Test Area	76	2

LHAAP-002-R, Static Test Area	13	1
LHAAP-003-R, Ground Signal Test Area	80	2
Total	169	5

3.7.1 Investigation The contractor shall propose and discuss the methodology used to conduct the geophysical investigation. The methodology proposed shall describe the procedures necessary to investigate and characterize the extent of MEC and MD including MEC and MD located beyond the presumed boundaries of the three sites. To properly characterize MEC at the sites the contractor shall use geophysical instrumentation to aid in the location and investigation of anomalies in the soil. The contractor may use transect/meandering path, grid-based geophysical mapping, or a combination of the two methods. The sites for this investigation are shown in the table above along with the approximate acreage and minimum investigation acreage. Actual number and size of grids and/or transects may increase or decrease slightly based upon conditions encountered in the field.

If DGM is proposed, the contractor shall produce maps of the site that show major geophysical features. A GIS map layer generated in Arcview/Arcinfo (ESRI format) that includes physical (human-made) features overlaid onto the geophysical data results shall also be included. Items to be annotated on this map include but are not limited to, all known or visible pipes & power lines, manhole covers, buildings, inaccessible areas such as brush piles, fence lines, areas of bare rock, etc. All geophysical data shall be sent to CESWF, on a CD, for verification and Quality Assurance check, IAW DID MR 005-05. When a USACE geophysicist is on site the geophysical data shall be available to the geophysicist on a daily basis. This task is meant to solicit proposals for the best technical geophysical detection strategy.

If Mag & Dig is proposed, survey points shall be taken at start, stop and all turn points for transects. For grid investigation, the grid shall be surveyed IAW the Location Surveys and Mapping plan.

3.7.2 Evaluation and Anomaly Selection Anomalies shall be excavated in order to characterize the site and to provide information necessary to estimate location, concentration (number of items/acre) and nature of MEC present at the site.

If DGM is proposed, a strategy for selecting anomalies shall be proposed by the contractor, which can best document the procedure and provide the best characterization of the site. The selection of anomalies for excavation shall be based on geophysical detection techniques chosen for the site. A specific number of excavations, anomaly size, signature pattern, statistical approaches such as UXO calculator, or a combination of approaches may be used. As soon as a grid and/or transect is complete, a qualified geophysicist shall check and evaluate the geophysical data collected. The geophysicist shall select anomalies, clearly mark the selections on the geophysical maps, and provide a “dig-sheet” showing predicted location and character of all suspected anomalies to the CESWF Project Manager. The contractor shall resubmit the dig sheets to CESWF with the weekly status report after excavation results become available and are recorded on the dig sheets. In addition, the contractor shall continually compare predicted results with actual results so that the contractor's geophysical evaluation methodology is constantly refined over the life of the project.

If Mag & Dig is proposed, the location of MEC excavated shall be surveyed IAW the Locations Surveys and Mapping plan. In addition, other appropriate data shall be gathered and reported that best characterizes the site as described in 3.7.1.

3.8 (TASK 8) GEOGRAPHICAL INFORMATION SYSTEM (GIS) This task is Firm Fixed Price. Except as stated below, Contractor shall comply with DID MR 005-07 for all GIS work. For EE/CA activities, the contractor shall incorporate data from the project for inclusion in the existing LHAAP GIS. The contractor shall submit the GIS data in a format compatible to the ESRI (Arcview/Arcinfo) system. Project (ArcGIS.mxd) files should be saved with relative path names to data source to allow the viewing and operation of the ArcView files in the format provided with the final deliverables. All data submitted shall be in the State Plane (North Texas Central) coordinate system in feet. The GIS shall be used to direct daily geophysical investigative activities, and to compile and analyze the daily digital data and incorporate it into the GIS. The contractor shall incorporate layers that overlay on maps of the site that identify physical, cultural, biological and ordnance related items found during the investigation. Examples include: real estate parcel boundaries, streets, highways, MEC positively identified, positively identified archeological sites, environmental samples, and community structures. All changes from the standard shall be fully documented into a manual specifically tailored for this project.

3.9 (TASK 9) INTRUSIVE INVESTIGATION This task is Time and Material. The contractor shall, utilizing UXO qualified personnel as outlined in DID MR-025, implement site MEC intrusive sampling as specified in the accepted Work Plan. For estimating and planning purposes, the contractor is to assume 20 subsurface anomalies per 100 feet of transect. The contractor shall propose in the Work Plan a criteria for stopping the excavation of anomalies along a transect (once enough data is obtained to characterize that section of transect), then advancing along the transect a distance to where site characteristics appears to change so excavations can resume (i.e. move out of MEC burial sites, move out of heavy concentrations of MEC or MD). These advances shall only occur after consultation between the Senior Unexploded Ordnance Site Supervisor and the MMSS.

3.9.1 Anomaly Reacquisition If DGM investigation is selected, the contractor shall reacquire all selected geophysical target anomalies identified on the dig sheet. The contractor's proposal shall detail the technical approach that will be implemented to reacquire target anomalies.

3.9.2 MEC Destruction The contractor shall be responsible for the destruction of all MEC encountered during site activities utilizing UXO qualified personnel and IAW the accepted Work Plan.

3.9.3 Backfilling Excavation All access/excavation/detonation holes shall be backfilled by the contractor. The contractor shall restore such areas to their prior condition. The contractor shall take the necessary precautions to prevent erosion on the site resulting from intrusive activities which may include, but is not limited to, reseeding, sodding, installing erosion control matting or other means to prevent erosion. Erosion control methods shall be specified in the Work Plan.

3.9.4 MEC Accountability The contractor shall maintain a detailed accounting of all MEC items/components encountered and destroyed. This accounting shall include the amounts of MEC, nomenclature and condition, location and depth of MEC, and disposition. The accounting system shall also account for all demolition materials utilized to detonate MEC on site. This accounting shall be a part of an appendix to the EE/CA Report. The contractor shall take digital photographs of identifiable MEC found during the investigation, which shall be attached to the MEC locations displayed in the GIS model.

3.9.5 Disposal of MEC Scrap All MEC scrap shall be handled in accordance with Attachment A of this SOW. In the event that a USACE MMSS is not on site to sign as the verifier then the contractor's UXOQCS or UXOSO shall verify the scrap in accordance with Attachment A of the SOW. For items requiring demilitarization, the on site MMSS must concur with the recommended procedures for each item.

3.9.6 Quality Control The contractor shall develop a Quality Control (QC) Plan, acceptable to the government, IAW DID MR-005-11 that shall ensure a quality product from all aspects of the project to include any work performed by a subcontractor on the project. The contractor shall develop QC procedures and submit those procedures, for all phases and types of work, in the project work plan(s). The contractor shall ensure that documentation is maintained and provided in the final report that supports the QC process. The individual performing the UXOQC shall not be involved in the performance of other MEC field tasks. In addition to the QC process by the contractor, the government may perform Quality Assurance (QA) on all phases and types of work performed. All work completed by the contractor is subject to a 100% inspection by the government. Any work that fails the government QA process shall be re-done by the contractor at no cost to the government. The government will perform Quality Assurance based upon a Quality Assurance Surveillance Plan (QASP). The government's final QASP will be developed based upon the contractor's Quality Control Plan (QCP). The contractor shall provide full documentation to the USACE detailing what failed the QA process, why it failed, and how the problem was corrected.

3.10 (TASK 10) EE/CA REPORT This task is Firm Fixed Price. The contractor shall prepare an EE/CA Report IAW DID MR-010. The contractor shall use Interim Guidance Document 01-01, Ordnance and Explosive Risk Impact Assessment, for EE/CA evaluations. The contractor shall submit a Draft, Draft Final, and Final version of the EE/CA Report. The contractor shall prepare the draft public notice and submit with the Draft EE/CA Report.

3.11 (TASK 11) ACTION MEMORANDUM This task is Firm Fixed Price. The contractor shall prepare a Draft and Final Action Memorandum IAW EP 1110-1-18, Ordnance and Explosives Response and the accepted recommended alternative.

3.12 (TASK 12) PROJECT MANAGEMENT This task is Time and Material. The contractor shall perform project management activities necessary to maintain project control and to meet reporting requirements, which include but not limited to the following.

3.12.1 Schedule The contractor shall prepare and submit a proposed Project Schedule in Microsoft Project format. The schedule shall be adjusted and refined during the duration of the project. The contractor shall update the schedule IAW DID MR-085.

3.12.2 Public Meeting The contractor will not attend or participate in public meetings other than the two Restoration Advisory Board meetings discussed in 3.13.

3**.12.3 Reports/Minutes, Record of Meeting** Not required, except for TPP meeting report.

3.12.4 Telephone Conversations/Correspondence Record The contractor shall keep a record of each phone conversation and written correspondence concerning this Task Order IAW DID MR-055. A copy of this record shall be attached to the Project Status Report.

3.12.5 Project Status Report The contractor shall prepare a Project Status Report IAW DID MR-085 and include any other items required in the SOW. Project Status Reports shall be submitted by email to CESWF.

3.12.6 Project Website The contractor will not create or maintain a password secured website for this project.

3.12.6 Project Access The contractor shall provide USFWS (P.O. Box 1306, Albuquerque, NM 87103-1306 Attention: Refuge Supervisor, Texas NWRS) written notice regarding contractor's plans to access LHAAP before EE/CA fieldwork commences.

3.13 (TASK 13) COMMUNITY RELATIONS PLAN This task is Firm Fixed Price. A Restoration Advisory Board for the facility has already been formed. The contractor shall participate in two Restoration Advisory Board meetings.

3.13.1 Contractor Liaison The contractor shall designate a liaison for both the public and the media. Liaison shall perform duties IAW section 4.6 of this SOW.

3.13.2 Mailing List Not required.

3.13.3 Baseline Community Survey Not required.

3.14 (TASK 14) ADMINISTRATIVE RECORD The contractor shall not establish or maintain an Administrative Record, however, all deliverables will be prepared and submitted in a manner which supports and complements inclusion in the project's Administrative Record.

3.15 (TASK 15) MUNITIONS CONSTITUTENTS SAMPLING AND ANALYSIS This task is Firm Fixed Price Per Unit with a unit being a sample and analyses. Analytical data will be used to assist in determining the suitability for transfer of three MRS to USFWS. Extensive sampling has taken place at the three sites but data gaps exist, particularly for white phosphorus. Representative sample results will be used to assist with data gaps and inform any necessary follow-on investigation. Pre-detonation and post-detonation sample results will be used to evaluate potential impact of EE/CA field activities

3.15.1 General The contractor shall collect, using ordnance avoidance procedures, surface soil samples. Surface soil samples will be taken from a depth of 0 to 6 inches. For estimating and planning purposes, the contractor should expect to collect a total of 30 surface soil samples (including quality control and assurance samples). The contractor should not expect to collect subsurface or groundwater samples. The laboratories shall provide analytical results within 30 days of sample receipt. In accordance with DID MR-005-10, the contractor shall be responsible for quality assurance planning and implementation, performing data validation, electronic data deliverable, and preparing Daily Quality Control Reports, Sampling and Analysis Plan (including Field Sampling Plan and Quality Assurance Project Plan), Chemistry Data Package and Chemical Data Final Report. Previously prepared sampling plans for the facility shall be used as much as possible in the preparation of the Sampling and Analysis Plan. The contractor shall provide an electronic data deliverable (EDD) of the laboratory data in accordance with Fort Worth District's EDD format. This EDD will be in addition to the ADR data submittal required by the DID. The contractor will contact CESWF in advance of the data submittal for clarification of the format.

3.15.2 Quality Control and Quality Assurance At 10% of the sample locations, quality assurance (QA) and quality control (QC) samples will be collected. The duplicate QA and QC samples shall be analyzed for the same parameters as the field samples. The contractor shall submit QC samples to a laboratory used for field samples. The QA samples will be submitted to a laboratory selected by CESWF. Payment for QA analytical work shall not be the responsibility of the contractor. Contractor shall coordinate with QA sample laboratory and CESWF concerning sample submission. Each sample collected for QA shall be homogenized thoroughly, and then divided equally, with one portion sent to the laboratory designated for QA samples and the remainder sent to the other laboratory used for field and QC samples. Duplicative QA analysis will not be required for white phosphorous since laboratories capable of performing analysis are limited.

3.15.3 Sample Location Selection The contractor shall collect a before and after sample at the location of each specific type of MEC destroyed on site. Pre-detonation samples shall be discrete samples located as near to the item to be detonated as is safe and feasible. Post-detonation samples shall be composite samples based on the Cold Regions Research Engineering Laboratory (CRREL) 7-sample wheel approach (as described in Engineering Research and Development Center (ERDC) SR96-15).

Two representative soil samples shall be taken at each of the two sites (LHAAP-001-R, and LHAAP-003-R). One representative soil sample shall be taken at the LHAAP-002-R site. Representative samples shall be collected in the vicinity of instances of heavy MEC contamination or visible evidence of historical detonation or impact.

3.15.4 Analytical Methods Samples shall be analyzed in accordance with the current edition of U.S. EPA Publication SW-846, Test Methods for Evaluating Solid Waste, American Society for Testing and Materials (ASTM), Standard Test Methods or any other method accepted by the Texas Commission of Environmental Quality. The requirement for the laboratory to provide quantitative second column confirmation for explosives per USACE EM 200-1-3/SW8000B

(i.e., five-point calibrations must be performed for each target analyte for the primary and confirmatory columns and quantitative results for each column must be reported) will not be waived. Based upon project requirements, exceptions will be considered for the following co eluting pairs: 2-A-DNT/4-A-DNT, 2-NT/4-NT, and 2,4-DNT/2,6-DNT. For all samples where perchlorate is detected using method E314, the contractor shall perform confirmatory analyses using the SW-846 8321 analytical method.

3.15.5 Analytical Parameters Samples shall be analyzed for explosives (SW 8330), metals (SW 6010B), perchlorate (EPA 314.0), and white phosphorous compounds. If contractor selects to use USACE Waterways Experimentation Station (WES) laboratory in Vicksburg, Mississippi for white phosphorous analyses, then the contractor shall be responsible for all associated fees and coordination.

3.15.6 Laboratory Qualifications Laboratories performing sample and QC sample analyses must be compliant with the most recently published version of the Department of Defense Quality Systems Manual (QSM) and must hold a current National Environmental Laboratory Accreditation Conference (NELAC) accreditation for all appropriate fields-of-testing. This accreditation replaces the U.S. Army Corps of Engineers (USACE) Environmental Laboratory Validation requirement; however, a laboratory holding an unexpired USACE Environmental Laboratory Validation will be grandfathered as meeting the new policy, until such time as their validation term expires. The contractor shall provide documentation that the laboratories are accredited or validated. Laboratory methods shall be capable of measuring the concentration of each constituent at a concentration equal to or less than levels specified under the applicable Texas Commission of Environmental Quality program requirement, except when matrix interference prevents achievement by that level.

3**.15.7 Sample Location Data** Contractor shall determine sample location using Global Positions Satellite System (GPS) with a horizontal accuracy of 10 feet. Contractor shall prepare a drawing and spreadsheet of sample location information (name, coordinates), and submit as part of the Chemistry Data Package.

3.16 CULTURAL RESOURCES SURVEY A Cultural Resources Survey will not be required. All areas have been surveyed and are classified as “disturbed” and do not require archeological monitoring. Neither the contractor nor any personnel hired by the contractor will remove artifacts under penalty of law. If human remains are encountered, work shall halt immediately and CESWF and local Coroner’s office will be contacted.

3.17 BIOLOGICAL ASSESSMENT A biological assessment will not be required. There has not been a formal biological assessment conducted covering the entire LHAAP. However, based on field investigations conducted by the USFWS in the MRS, no federally listed endangered species are known to occur within these sites.

4.0 SUBMITTALS AND CORRESPONDENCE

4.1 Format of Reports All reports and/or plans not covered by a specific DID shall be prepared according to the following guidelines. The front cover of the report or plan shall be

prepared in accordance with Attachment 1 of DID MR-030 and shall bear the following statement in addition to other requirements. *"The views, opinions, and/or findings contained in the report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentations."* The cover shall also denote which version of the report/plan presented (e.g. Draft, Draft Final or Final). When drawings are required, data may be combined to reduce the number of drawings. All drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features. The contents and format of the engineering reports shall be arranged in accordance with all pertinent guidance documents. The report/plan shall be typed on standard size of 8-1/2 inch by 11-inch white paper, with drawings other than the construction drawings folded, if necessary, to this size. Chapters shall be numbered sequentially. Within each chapter the paragraphs shall be numbered sequentially starting with the chapter number. Within each chapter any figures, tables, and charts shall be numbered sequentially starting with the chapter number. Appendices shall be lettered alphabetically and shall be identified and referenced in the text of the report/plan. Within each appendix, each page shall be numbered sequentially starting with the appendix letter. Every page of the report/plan shall contain a date footer, contract number, task order number and version (e.g. draft, final, original, change 1, etc). Draft and draft final versions shall have line numbers on all pages for easy reference during comment phase. The report/plan shall be legible and suitable for reproduction. The final version of the report/plan shall also be submitted on CD in accordance with the other paragraphs of section 4.0. All data, including raw analytical and electronic data, generated under this task order are the property of the DoD and the government has unlimited rights regarding its use.

4.2 Computer Files All final text files generated by the contractor under this Task Order shall be furnished in Microsoft Word 6.0 or higher software. Spreadsheets shall be in Microsoft Excel Spreadsheet version 98 or higher format. All DGM data will be delivered in a format compatible with ESRI (Arcview/Arcinfo) system

4.3 PDF Deliverables In addition to the paper and digital copies of submittals, the final version of all reports and plans shall be submitted, uncompressed in PDF format along with a linked table of contents, linked tables, linked photographs, linked graphs and linked figures, all of which shall be suitable for viewing on the Internet.

4.4 Review Comments Various reviewers will have the opportunity to review contractor submittals. The contractor shall review all comments received through CESWF and evaluate their appropriateness based upon their merit and the requirements of the SOW. The contractor shall develop a formal, annotated response to each comment. If the contractor does not concur with a comment, the issue shall be discussed and resolved with CESWF. The contractor shall prepare and submit a draft Comment Responsiveness Summaries that, when finalized by CESWF, will be included as an Appendix in the Final EE/CA Report IAW DID MR-010.

4.5 Responsible Personnel Reports shall identify the title of contractor staff and subcontractors that had significant and specific input into the reports' preparation or review.

4.6 Public Affairs The contractor shall not publicly disclose any data generated or reviewed under this contract. The contractor shall refer all requests for information concerning site

conditions to US Army Corps of Engineers District, Tulsa (CESWT) with a copy to CESWF. Reports and data generated under this contract are the property of the government and distribution to any other source, unless authorized, is prohibited.

4.7 Submittals The contractor shall furnish copies of the documents identified in paragraph 4.8, or as specified in this SOW, to each addressee listed below in the quantities indicated. When Final documents are submitted, the contractor shall provide to each addressee listed below 1 copy on CD of the Final computer file versions of all submittals, and 1 copy on CD of the Final PDF versions of all submittals. For purposes of the SOW, all days are considered calendar days.

ADDRESSEE	COPIES
US Army Corps of Engineers District, Fort Worth ATTN: CESWF-PER-DI (Mr. Eric Kirwan) 819 Taylor Street, Room 3A12 Fort Worth, Texas 76102	5
US Army Corps of Engineers District, Tulsa ATTN: CESWT-PP-M (Richard Smith) 1645 South 101st East Ave Tulsa, OK 74128	2
US Army Corps of Engineers District, Sacramento ATTN: CESPK-ED-GE (Roger Henderson) 1325 J Street 12th floor Sacramento, CA 95814-2922	2
Commander (Final Report only) 52nd Ordnance Group (EOD) ATTN: 761 Ordnance Company (EOD) 5011 N. 26th Street Fort Gillem, Forest Park, GA 30297	1

4.8 Submittals and Due Dates

SUBMITTAL	DUE DATES
Proposed Project Schedule	5 days after award
Draft ESP	7 days after award
Final ESP	7 days after receipt of draft comments
TPP Meeting Report	5 days after meeting
Draft GPO Plan	7 days after award
Final GPO Plan	7 days after receipt of comments
Draft GPO Report	7 days after completion of fieldwork
Final GPO Report	7 days after receipt of comments

Draft Work Plan	7 days following TPP
Final Work Plan	7 days after receipt of comments
Draft EE/CA Report	30 days after completion of fieldwork
Draft Final EE/CA Report	14 days after receipt of comments
Final EE/CA Report	14 days after receipt of comments
Comment Responsiveness Summary	14 days after receipt of comments
Draft Action Memorandum	14 days after acceptance of EE/CA
Final Action Memorandum	7 days after receipt of comments
Daily Quality Control Report for Environmental Sampling	Daily during Environmental Sampling Activities
Chemistry Data Package	45 days after completion of fieldwork
Electronic Laboratory Data Submittal	60 days after completion of fieldwork

5.0 REFERENCES

5.1 Basic Contract
5.2 Federal Acquisition Regulation (FAR) Clause 52.236.13, Accident Prevention
5.3 Data Item Descriptions - The Data Item Descriptions are part of this contract and are available at: URL: http://www.hnd.usace.army.mil/oew/MRxxxDIDs2.aspx
5.4 EM 200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans*, 01 February 2001
5.5 ER 1110-1-263, *U.S. Army Corps of Engineers Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities,* 30 April 1998

6.0 ITEMS AND DATA TO BE FURNISHED BY THE GOVERNMENT The government shall make the following available to the contractor: Electronic copy of example Sampling and Analysis Plan, Conceptual Site Model, GIS files, prior TPP meeting report and information on existing monuments.

END of SOW.

APPENDIX B

MUNITIONS DEBRIS DISPOSITION FORMS

00049131

CHAIN OF CUSTODY

Shipped From: CAPE Environmental Mgmt. Inc. Longhorn Army Ammunition Plant Karnack, TX RHA: Richard Norton 702-528-0491	Shipped To. Waste Transport Company % Mike Carl 4205 Hwy 75 N. Melissa, TX 75474 Telephone (469) 952-2300

PROJECT # 42018.004.009

Seals

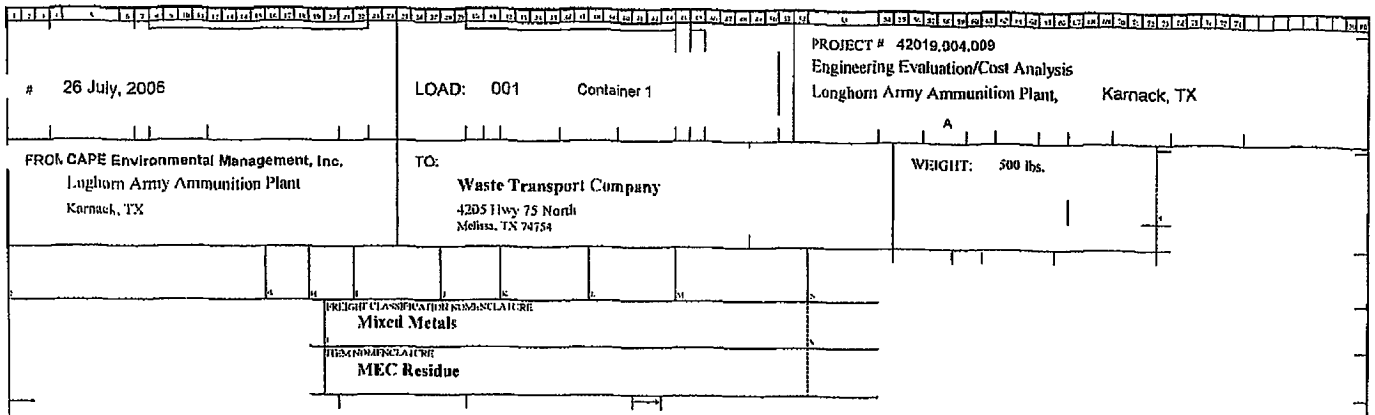
Load Number	Type of Container or Transport	Container #	Net Weight	Description of Material
001	6 each 55 gallon drums	1,2,3,4,5,6	3000 lbs	Mixed Metals MEC Scrap

SUXOS Cape Environmental (Signature) Richard Norton	USACE, Ft. Worth District (Signature) Harmon Slappy

Relinquished By: (Print/Signature) Richard H. Norton	Date 27 July, 2006	Time 1146
Received By: (Print/Signature) James Pope	Date 27 July, 2006	Time 11-46
Reason For Transfer: Final Disposition	Company Transfer To: Waste Transport Company	Position in Company: Driver

Relinquished By: (Print/Signature)	Date 26 July, 2006	Time
Received By: (Print/Signature)	Date	Time
Reason For Transfer:	Company Transfer To:	Position in Company:

Relinquished By: (Print/Signature)	Date	Time
Received By: (Print/Signature)	Date	Time
Reason For Transfer:	Company Transfer To:	Position in Company:



26 July, 2006

LOAD: 001 Container 1

PROJECT # 42019.004.009
Engineering Evaluation/Cost Analysis
Longhorn Army Ammunition Plant, Karnack, TX

FROM: CAPE Environmental Management, Inc.
Lughorn Army Ammunition Plant
Karnack, TX

TO:
Waste Transport Company
4205 Hwy 75 North
Melissa, TX 74754

WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

7-26-06

SIGNATURE:

Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL

PRINT NAME, TITLE & ORGANIZATION

SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District.

PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) | JUN 86 EDITION MAY BE USED | FORM APPROVED. OMB NO. 0704-0188 | DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

00049132

# 26 July, 2006	LOAD: 001 Container 2	PROJECT # 42019.004.009 Engineering Evaluation/Cost Analysis Longhorn Army Ammunition Plant, Karnack, TX
FROM CAPE Environmental Management, Inc. Longhorn Army Ammunition Plant Karnack, TX.	TO: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754	WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION/NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

7-26-06

SIGNATURE:

Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL

PRINT NAME, TITLE & ORGANIZATION

SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District

PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) — PREVIOUS EDITION MAY BE USED. — FORM APPROVED. OMB NO 0704-0188 — DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

00049133

# 26 July, 2006	LOAD: 001 Container 3	PROJECT # 42019.004.009 Engineering Evaluation/Cost Analysis Longhorn Army Ammunition Plant, Karnack, TX
FROM CAPE Environmental Management, Inc: Longhorn Army Ammunition Plant Karnack, TX.	TO: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754	WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

SIGNATURE: 7-26-06

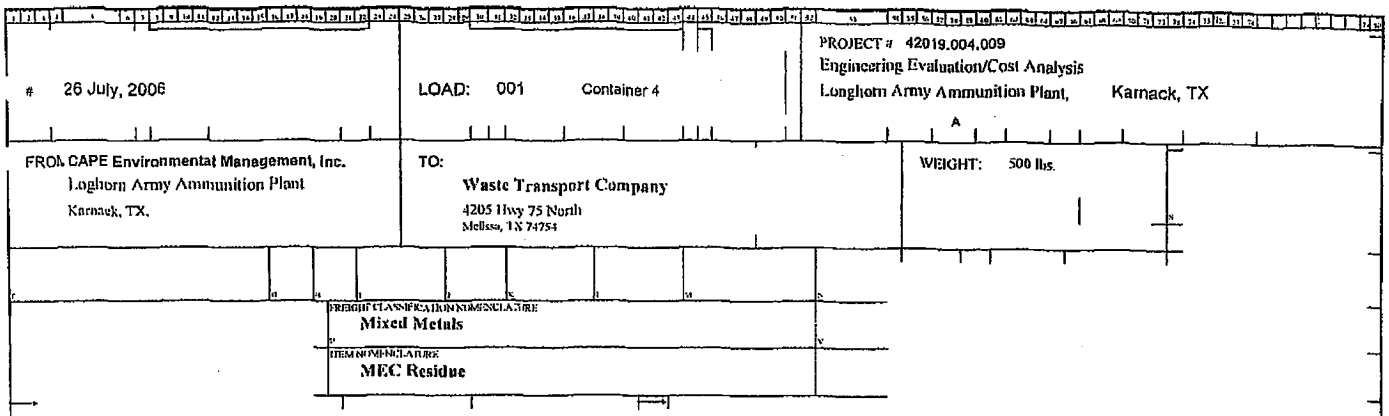
Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL
PRINT NAME, TITLE & ORGANIZATION

SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District.
PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) JUN 86 EDITION MAY BE USED FORM APPROVED. OMB NO. 0704-0188 DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

00049134



26 July, 2006

LOAD: 001 Container 4

PROJECT # 42019.004.009
Engineering Evaluation/Cost Analysis
Longhorn Army Ammunition Plant, Karnack, TX

FROM: CAPE Environmental Management, Inc.
Longhorn Army Ammunition Plant
Karnack, TX.

TO:
Waste Transport Company
4205 Hwy 75 North
Melissa, TX 74754

WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

7-26-06

SIGNATURE:

Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL.

PRINT NAME, TITLE & ORGANIZATION

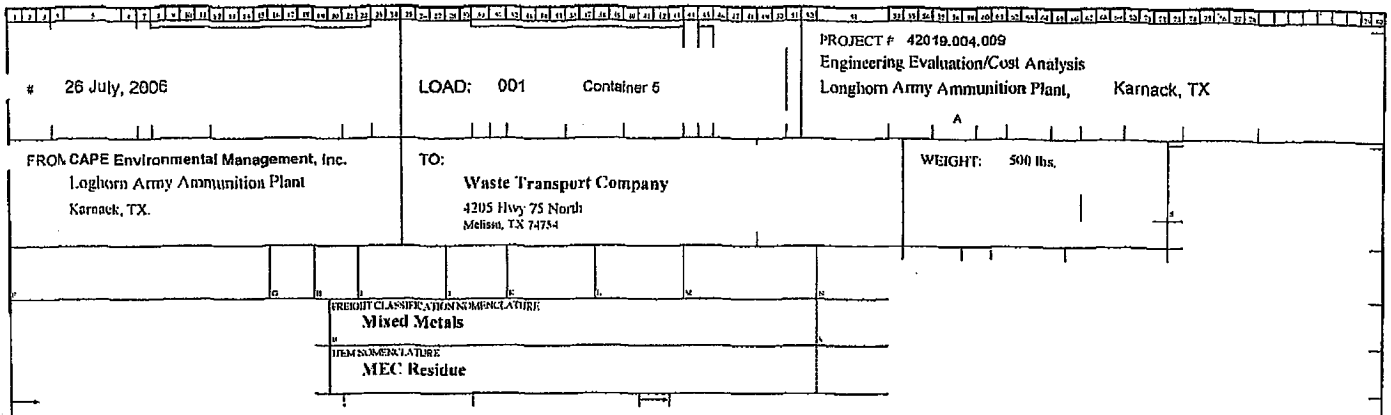
SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District.

PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) IRAN'S EDITION MAY BE USED. FORM APPROVED. OMB NO. 0704-0188 DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

00049135



26 July, 2006

LOAD: 001 Container 6

PROJECT # 42019.004.009
Engineering Evaluation/Cost Analysis
Longhorn Army Ammunition Plant, Karnack, TX

FROM CAPE Environmental Management, Inc.
Longhorn Army Ammunition Plant
Karnack, TX.

TO:
Waste Transport Company
4205 Hwy 75 North
Melissa, TX 74754

WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

7-26-06

SIGNATURE:

Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL

PRINT NAME, TITLE & ORGANIZATION

SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District.

PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) PREVIOUS EDITION MAY BE USED FORM APPROVED. OMB NO. 0704-0188 DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

00049136

26 July, 2006

LOAD: 001 Container 6

PROJECT # 42019.004.009
Engineering Evaluation/Cost Analysis
Longhorn Army Ammunition Plant, Karnack, TX

FROM CAPE Environmental Management, Inc.
Longhorn Army Ammunition Plant
Karnack, TX.

TO:
Waste Transport Company
4205 Hwy 75 North
Melissa, TX 74754

WEIGHT: 500 lbs.

FREIGHT CLASSIFICATION NOMENCLATURE
Mixed Metals

ITEM NOMENCLATURE
MEC Residue

I CERTIFY that the item or items hereon have been inspected by me and, that to the best of my knowledge and belief, contain NO items of a DANGEROUS OR HAZARDOUS nature

To the best of my knowledge, all materials have been processed by various methods, ie. CUTTING, GRINDING, CRUSHING or SHREDDING as necessary and meet the standards specified in DOD Manual 4160.21-W-1, Appendix 4.

7-26-2006

SIGNATURE:

Richard H. Norton, SUXOS, CAPE ENVIRONMENTAL

PRINT NAME, TITLE & ORGANIZATION

SIGNATURE:

Harmon Slappy, Munitions Site Safety Rep, USACE, Ft. Worth District.

PRINT NAME, TITLE & ORGANIZATION

DD FORM 1348-1A, SEP 87 (BROWN) — PREVIOUS EDITION MAY BE USED. — FORM APPROVED. OMB NO. 0704-0188 — DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

Location Longhorn Army Ammunition Plant Karnack, Texas	Date mm/dd/yy 7-25-06	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04	
Contractor Cape Environmenal Management, Inc	Address 12037 Starcrest Drive San Antonio, TX 78247		
Location Obtained Site 27 Longhorn Army Ammunition Plant Karnack, Texas	Container Number 01	Type 55 Gallon Drum	
Contents: Mixed Metals	Type: MEC Scrap		
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491	Certified By Signature Richard H. Norton	Date mm/dd/yy 7-25-06	
Serial # 246646	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management	Weight LBS/KG 500 lbs.
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300	
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300	Verified By. Signature Harmon Slappy	Date mm/dd/yy 7-25-06	

Location Longhorn Army Ammunition Plant Karnack, Texas		Date mm/dd/yy 7-25-06	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04
Contractor Cape Environmenal Management, Inc		Address 12037 Starcrest Drive San Antonio, TX 78247	
Location Obtained Site 27 Longhorn Army Ammunition Plant Karnack, Texas		Container Number 02	Type 55 Gallon Drum
Contents: Mixed Metals		Type: MEC Scrap	
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491		Certified By Signature	Date mm/dd/yy 7-25-06
Serial # 246647	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management	Weight LBS/KG 500 lbs.
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300	
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300		Verified By. Signature	Date mm/dd/yy 7-25-06

Location Longhorn Army Ammunition Plant Karnack, Texas		Date mm/dd/yy	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04
Contractor Cape Environmenal Management, Inc		Address 12037 Starcrest Drive San Antonio, TX 78247	
Location Obtained Site 27 Longhorn Army Ammunition Plant Karnack, Texas		Container Number 03	Type 55 Gallon Drum
Contents: Mixed Metals		Type: MEC Scrap	
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491		Certified By Signature Richard H. Norton	Date mm/dd/yy 7-25-06
Serial # 246650	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management	Weight LBS/KG 500 lbs.
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300	
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300		Verified By. Signature Harmon Slappy	Date mm/dd/yy 7-25-06

00049140

Location Longhorn Army Ammunition Plant Karnack, Texas		Date mm/dd/yy 7-25-06	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04
Contractor Cape Environmenal Management, Inc		Address 12037 Starcrest Drive San Antonio, TX 78247	
Location Obtained Site 53 Longhorn Army Ammunition Plant Karnack, Texas		Container Number 04	Type 55 Gallon Drum
Contents: Mixed Metals		Type: MEC Scrap	
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491		Certified By Signature Richard H. Norton	Date mm/dd/yy 7-25-06
Serial # 246906	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management	Weight LBS/KG 500 lbs.
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300	
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300		Verified By. Signature Harmon Slappy	Date mm/dd/yy 7-25-06

00049141

Location Longhorn Army Ammunition Plant Karnack, Texas	Date mm/dd/yy 7-25-06	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04
Contractor Cape Environmenal Management, Inc	Address 12037 Starcrest Drive San Antonio, TX 78247	
Location Obtained Site 54 Longhorn Army Ammunition Plant Karnack, Texas	Container Number 05	Type 55 Gallon Drum
Contents: Mixed Metals	Type: MEC Scrap	
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491	Certified By Signature [signature]	Date mm/dd/yy 7-25-06
Serial # 246907	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300
		Weight LBS/KG 500 lbs.
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300	Verified By. Signature [signature]	Date mm/dd/yy 7-25-06

00049142

Location Longhorn Army Ammunition Plant Karnack, Texas		Date mm/dd/yy 7/25/06	Engineering Evaluation/Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas Contract # W912BV-04-D2019 Delivery Order # DY04
Contractor Cape Environmenal Management, Inc		Address 12037 Starcrest Drive San Antonio, TX 78247	
Location Obtained Site 54 Longhorn Army Ammunition Plant Karnack, Texas		Container Number 06	Type 55 Gallon Drum
Contents: Mixed Metals		Type: MEC Scrap	
Certified BY Printed Richard H. Norton, SUXOS Cape Environmental Management, Inc. Tel: (702) 528-0491		Certified By Signature Richard H. Norton	Date mm/dd/yy 7-25-06
Serial # 246908	Type of Container 55 Gal. Drum	Shipper Cape Environmental Management	Weight LBS/KG 500 lbs.
	Date mm/dd/yy 7/26/2006	Delivery Destination: Waste Transport Company 4205 Hwy 75 North Melissa, TX 74754 Tel: (469) 952-2300	
Verified By Printed Harmon Slappy, USACE, Ft. Worth District 819 Taylor Street, Rm 3A12 Ft. Worth, TX 76102-0300		Verified By. Signature Harmon Slappy	Date mm/dd/yy 7-26-06

APPENDIX C

MPPEH DEMOLITION ACTIVITY

CAPE

00049145

SUSPECT MEC DISCOVERY LOG SHEET 001

Item Description/Number: M-123 A-1, Photoflash Cartridge

Fuze Information Electrically initiated Primer with Black Powder Expelling Charge

Filler Composition: 700 Grams of Photoflash mixture .

Found Where: Site 27, Lane 6, Fiducial Flag 50, South 10 feet, .

GPS Location: North 32' 38' 50.5" West 094' 07' 52.3" .

Found When: 6/28/2006

Found By Whom: Team 1

Condition Verified By: Richard Norton, Jim Vance

Date/Time MMSS Notified: 6/30/2006, 13:15 Hours

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/2006 .

Signature of Individual Receiving or Destroying the Item:

CAPE SM

00049146

SUSPECT MEC DISCOVERY LOG SHEET 002

Item Description/Number: M-123 A-1, Photoflash Cartridge

Fuze Information Electrically initiated Primer with Black Powder Expelling Charge

Filler Composition: 700 Grams of Photoflash Mixture .

Found Where: Site 27, Lane 6, Target Flag 40 .

GPS Location: North 32' 38' 58.5" West 094' 08' 02.5" .

Found When: 6/28/2006

Found By Whom: Team 1

Condition Verified By: Richard Norton, Jim Vance

Date/Time MMSS Notified: 6/30/2006, 14:15 Hours

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/2006 .

Signature of Individual Receiving or Destroying the Item:

CAPE[SM]

00049147

SUSPECT MEC DISCOVERY LOG SHEET 003

Item Description/Number: M-112 A-1, Photoflash Cartridge

Fuze Information Electrically initiated Primer with Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, Lane 10, Target Flag 27 .

GPS Location: North 32' 38' 56.2" West 094' 07' 54.1" .

Found When: 6/29/2006

Found By Whom: Team 1

Condition Verified By: Richard Norton, Jim Vance

Date/Time MMSS Notified: 6/29/2006, 14:00 Hours

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/2006 .

Signature of Individual Receiving or Destroying the Item:

CAPE SM

00049148

SUSPECT MEC DISCOVERY LOG SHEET 004

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 13, Flag 53, 5 ft. South of Flag

GPS Location: N 32' 39' 02.5" W 094' 07' 56.6"

Found When: 6/30/2006, 08:45 hours

Found By Whom: Team 2: Poindexter & Clifford

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 6-30-2006, 13:15

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049149

SUSPECT MEC DISCOVERY LOG SHEET 005

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 4, Flag 800 ft., 40 ft. West of Flag

GPS Location: N 32' 38' 57.6" W 094' 08' 04.7"

Found When: 7/3/2006, 13:50

Found By Whom: Team 2: Poindexter & Clifford

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-3-2006,

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049150

SUSPECT MEC DISCOVERY LOG SHEET 006

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, Lane 4, Flag 250 ft., 40 ft. East of Flag .

GPS Location: N 32' 38' 50.0" W 094' 07' 54.1" .

Found When: 7/3/2006, 13:50 .

Found By Whom: Team 2: Poindexter & Clifford

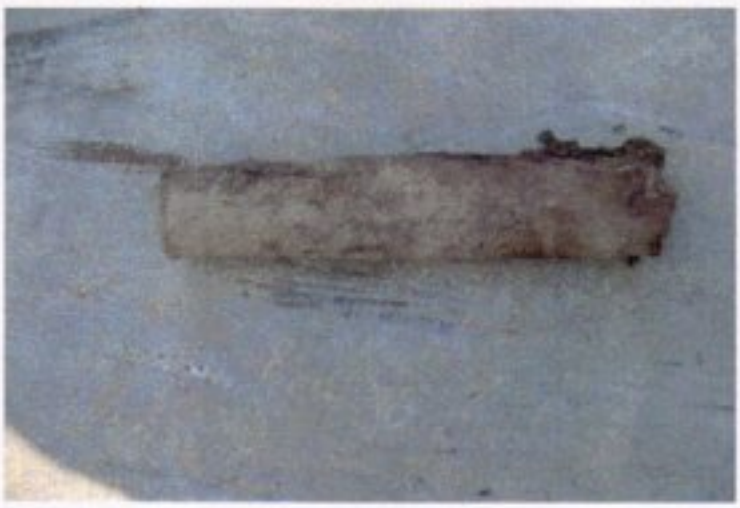
Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-3-2006,

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:



00049151

SUSPECT MEC DISCOVERY LOG SHEET 007

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 11, Fiducial Flag 750, 30 ft. West of Flag

GPS Location: N 32' 38' 55.3" W 094' 07' 50.3"

Found When: 7/5/2006, 09:00 hours

Found By Whom: Team 1: Thomas & Gibbons

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-5-2006, 09:50

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049152

SUSPECT MEC DISCOVERY LOG SHEET 008

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 6, Flag 10, 30 ft. West of Flag

GPS Location: N 32' 38' 50.9" W 094' 07' 53.6"

Found When: 7/5/2006, 09:00 hours

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-5-2006, 09:00

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049153

SUSPECT MEC DISCOVERY LOG SHEET 009

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 6, Fiducial Flag 1,000, 30 ft. West of Flag

GPS Location: N 32' 38' 54.5" W 094' 07' 58.1"

Found When: 7/6/2006, 09:00 hours

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006, 09:00

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049154

SUSPECT MEC DISCOVERY LOG SHEET 010

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 7, Flag 29, 50ft. East of Flag

GPS Location: N 32' 38' 55.8" W 094' 07' 57.5"

Found When: 7/6/2006, 09:20 hours

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006, 09:20

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049155

SUSPECT MEC DISCOVERY LOG SHEET 011

Item Description: M-112 A-1 Photoflash Cartridge

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture

Found Where: Site 27, Lane 6, Flag 800, 30ft. East of Flag

GPS Location: N 32' 38' 55.8" W 094' 07' 50.9"

Found When: 7/6/2006,

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

00049156

SUSPECT MEC DISCOVERY LOG SHEET 012

Item Description: M-112 A-1 Photoflash Cartridge.

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture.

Found Where: Site 27, Lane 6, Fiducial Flag 50, 10ft. West of Flag.

GPS Location: N 32' 38' 50.5" W 094' 07' 52.3".

Found When: 7/6/2006,.

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

M-112 A-1 Photoflash Cartridge Center

00049157

SUSPECT MEC DISCOVERY LOG SHEET 013

Item Description: M-112 A-1 Photoflash Cartridge.

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture.

Found Where: Site 27, L6, Flag 50', South 10, East 20'.

GPS Location: N 32' 38' 50.5" W 094' 07' 52.3".

Found When: 7/6/2006,.

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

M-112 A-1 Photoflash Cartridge
Bottom of photo

CAPE SM

00049158

SUSPECT MEC DISCOVERY LOG SHEET 014

Item Description: M-112 A-1 Photoflash Cartridge.

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture.

Found Where: Site 27, L6, Flag 50', South 10, East 20'.

GPS Location: N 32' 38' 50.5" W 094' 07' 52.3".

Found When: 7/6/2006,.

Found By Whom: Harmon Slappy

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

M-112 A-1 Photoflash Cartridge
Top of photo

CAPE SM

00049159

SUSPECT MEC DISCOVERY LOG SHEET 015

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L7, Flag 38', East 30, .

GPS Location: N 32' 38' 55.7" W 094' 07' 58.7" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Norton, Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049160

SUSPECT MEC DISCOVERY LOG SHEET 016

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L7, Flag 38', East 50, .

GPS Location: N 32' 38' 55.7" W 094' 07' 58.7" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Norton, Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049161

SUSPECT MEC DISCOVERY LOG SHEET 017

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L7, Flag 38', East 35, .

GPS Location: N 32' 38' 55.7" W 094' 07' 58.7" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Norton, Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049162

SUSPECT MEC DISCOVERY LOG SHEET 018

Item Description: M-112 A-1 Photoflash Cartridge.

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture.

Found Where: Site 27, L7, Fiducial Flag 700', West 30,.

GPS Location: N 32' 38' 54.1" W 094' 07' 55.4".

Found When: 7/6/2006,.

Found By Whom: Slappy

Condition Verified By: Norton

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049163

SUSPECT MEC DISCOVERY LOG SHEET 019

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L8, Fiducial Flag 66, West 10 ft., .

GPS Location: N 32' 39' 55.7" W 094' 07' 57.8" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049164

SUSPECT MEC DISCOVERY LOG SHEET 020

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L11, Fiducial Flag 61, West 10 ft.,

GPS Location: N 32' 38' 57.8" W 094' 07' 53.8" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item: Richard A. Norton

CAPE SM

00049165

SUSPECT MEC DISCOVERY LOG SHEET 021

Item Description: M-112 A-1 Photoflash Cartridge .

Fuze Information: Electrical initiated primer and a Black Powder Expelling Charge

Filler Composition: 7 ounces of Photoflash Mixture .

Found Where: Site 27, L12, Fiducial Flag 73, West 50 ft., .

GPS Location: N 32' 38' 00.5" W 094' 07' 55.4" .

Found When: 7/6/2006, .

Found By Whom: Norton

Condition Verified By: Slappy

Date/Time MMSS Notified: 7-6-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/7/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049166

SUSPECT MEC DISCOVERY LOG SHEET 022

Item Description: CDU 10 Components/Detonator

Fuze Information: Electrical instantiated Detonator

Filler Composition: Primary Explosive Filler, Lead Asides

Found Where: Site 54, L14

GPS Location: N 32' 39' 27.9" W 094' 06' 52.9"

Found When: 7/10/2006,

Found By Whom: Team 1

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-10-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/20/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049167

SUSPECT MEC DISCOVERY LOG SHEET 023

Item Description: 60 mm. Illumination Mortar

Fuze Information: No fuze

Filler Composition: Flare Mixture compound, Pyrotechnics

Found Where: Site 54, L4B

GPS Location: N 32' 39' 24.5" W 094' 07' 10.6"

Found When: 7/18/2006,

Found By Whom: Team 3

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-18-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/20/06

Signature of Individual Receiving or Destroying Item:

CAPE SIM

00049168

SUSPECT MEC DISCOVERY LOG SHEET 024

Item Description: 60 mm. Illumination Mortar Candles 4.2" Mortar Candle

Fuze Information: No fuze

Filler Composition: Flare Mixture compound, Pyrotechnics

Found Where: Site 54, L4B

GPS Location: N 32' 39' 23.5" W 094' 07' 09.8"

Found When: 7/18/2006,

Found By Whom: Team 3

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-18-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/20/06

Signature of Individual Receiving or Destroying Item:

CAPE SIV

00049169

SUSPECT MEC DISCOVERY LOG SHEET 025

Item Description: 81 mm. Illumination Mortar

Fuze Information: No fuze

Filler Composition: Flare Mixture compound, Pyrotechnics

Found Where: Site 54, L4B

GPS Location: N 32' 39' 24.1" W 094' 07' 10.3"

Found When: 7/18/2006,

Found By Whom: Team 3

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-18-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/20/06

Signature of Individual Receiving or Destroying Item:

CAPE SM

00049170

SUSPECT MEC DISCOVERY LOG SHEET 026

Item Description: 7 each misc. items & Mortar Fuzes

Fuze Information: Expended

Filler Composition: Expended .

Found Where: Site 54, L4B

GPS Location: N 32' 39' 23.5" W 094' 07' 09.8"

Found When: 7/18/2006,

Found By Whom: Team 3

Condition Verified By: Norton, Vance

Date/Time MMSS Notified: 7-18-2006

MMSS Individual Contacted: Harmon Slappy

Date Item Transferred to Storage or Destroyed: 7/20/06

Signature of Individual Receiving or Destroying Item:

APPENDIX D

MC SAMPLING AND ANALYSIS RESULTS

CAPE SM

Quality Assurance Review Memorandum

Longhorn Army Ammunition Depot, Karnack, Texas

PREPARED FOR:	Pre- and Post-Detonation Soil Samples and Characterization Soil Samples
COMPLIANCE REVIEW BY:	Michael Houck / Project Chemist
PROGRAM REVIEW BY:	Denise McGuire / Senior Project Chemist
COPIES:	Rob Vinson / Program Manager
DATE:	October 6, 2006
SUBJECT:	Quality Assessment for Pre- and Post-Detonation Soil Samples and Characterization Soil Samples Collected in July and September 2006

On behalf of U.S. Army Corps of Engineers (USACE) this quality assurance review memorandum for pre- and post-detonation soil samples and characterization soil samples collected during July and September 2006 at Longhorn Army Ammunition Depot has been prepared. This quality assurance review addresses the analytical results from three pre-detonation samples, six post detonation samples, six characterization soil samples, and associated quality control samples collected at the Longhorn Army Ammunition Plant. The pre- and post-detonation soil samples were collected to ensure areas were not contaminated with munitions constituents before and after detonation operations. Two characterization samples were collected from each of the three sites (Site 27, Site 53, and Site 54) to fill data gaps from a previous investigation. The chains-of-custody provided in Attachment I present a summary of the CAPE sample identification numbers, dates of collection, sample matrices, and the analyses requested.

Gulf Coast Analytical Laboratories (GCAL) of Baton Rouge, Louisiana served as the laboratory for the explosives analyses. GCAL subcontracted the characterization sample analyses for white phosphorus to Data Chem Laboratories, Inc. of Salt Lake City, Utah. Samples were analyzed in accordance with U.S. Environmental Protection Agency (EPA), *Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Final Update III*, (SW846) and the Department of Defense *Quality Systems Manual*, Version 3.0, January 2006 for the following analyses:

Pre- and Post Detonation Soil Samples

- Explosives – by SW-846 Method 8330.

Characterization Soil Samples

- Explosives – by SW-846 Method 8330,
- White Phosphorus – by SW-846 Method 7580

In addition quality assurance (QA) duplicate samples were collected for the six characterization samples and for one pre- and one post-detonation sample. The QA duplicate samples were submitted to DHL Analytical of Round Rock, Texas for explosives analysis by SW-846 8330. The QA sample results were reported directly to USACE Ft. Worth for review and were not available for review as part of this report.

The analyses were reviewed and validated for adherence to the specified analytical protocols as specified in the CAPE Quality Assurance Project Plan *Engineering Evaluation / Cost Analysis at the Longhorn Army Ammunition Plant, Karnack, Texas*, March 2006. Subjects not addressed in the QAPP have been evaluated and qualified according to general guidance provided in the U.S. EPA Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review*, EPA 540/R-99/008, October 1999.

The findings of this quality assurance memorandum are based upon the evaluation of 100% of the following result summaries reported according to the CAPE Level C data deliverables format: custody documentation, holding times, trip blank, laboratory method blank analysis results, surrogate spike recoveries, laboratory control spike recoveries, and matrix spike and matrix spike duplicate recoveries and reproducibility.

In addition a comprehensive review was performed on ten percent of the soil samples that included the following samples:

- GT-SO-PD-01-02 analyzed for explosives
- BTA-27-LHAAP-001-RS-01A analyzed for explosives and white phosphorus.

In addition to the quality control and quality assurance items evaluated as part of the data evaluation process, the result summaries for these samples were reviewed for initial and continuing calibration data, second source initial calibration results, retention time shift analysis, and the quantitation of positive results.

The analyses were performed acceptably, but required qualifying statements. It is recommended that the analytical data only be used with the consideration of the qualifying statements provided. Any aspects of the data not discussed in this report should be considered qualitatively and quantitatively valid as reported based on the deliverables reviewed. Annotated summary reports presenting the validated and evaluated results are presented in Attachment II.

GENERAL DATA QUALIFIERS

As required by EPA protocols, all compounds that were qualitatively identified at concentrations below their respective reporting limit, but above the method detection limit, have been appended with the "J" qualifier on the result summary forms to indicate that the results are quantitative estimates.

ORGANIC DATA QUALIFIERS

The quantitation limits reported for all explosive compounds in sample BTA-53-LHAAP-001-RS-01B should be considered quantitative estimates due to a surrogate recovery marginally outside the laboratory lower acceptance criteria. Low surrogate recoveries are indicative of matrix interference or poor laboratory performance. The quantitation limits for all explosive compounds in the aforementioned sample have been appended with a "J" qualifier code to indicate they are quantitative estimates.

The quantitation limits and results reported for the following compounds in the samples listed below should be considered quantitative estimates due to laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) recoveries outside the laborarotory's internal acceptance criteria. Low LCS recoveries are typically indicative of poor laboratory method performance. The quantitation limits and results for the compounds and samples listed below have been appended with a "J" qualifier code to indicate they are quantitative estimates due to low LCS recoveries.

Parameter	Samples Affected	LCS/LCSD %Recovery Limits	%Recovery
Tetryl	LHAAP-2-1, LHAAP-2-3, LHAAP-2-5, LHAAP-2-7, LHAAP-2-9, LHAAP 1-1, LHAAP 1-2	(25-142)	22%
2,6-Dinitrotoluene	LHAAP-2-1, LHAAP-2-3, LHAAP-2-5, LHAAP-2-7, LHAAP-2-9, LHAAP 1-1, LHAAP 1-2	(77-122)	36%, 51%
2,6-Dinitrotoluene	GT-SO-PD-01-02, GT-SO-PT-01-02	(77-122)	36%
2,6-Dinitrotoluene	BTA-27-LHAAP-001-RS-01A, BTA-27-LHAAP-001-RS-01B, BTA-53-LHAAP-001-RS-01A,, BTA-54-LHAAP-001-RS-01A, BTA-54-LHAAP-001-RS-01B	(77-122)	28%
2,4,6-Trinitrotoluene	GT-SO-PD-01-02, GT-SO-PT-01-02	(55-142)	47%
4-Amino-2,6-dinitrotoluene	BTA-27-LHAAP-001-RS-01A, BTA-27-LHAAP-001-RS-01B, BTA-53-LHAAP-001-RS-01A, BTA-54-LHAAP-001-RS-01A, BTA-54-LHAAP-001-RS-01B	(40-140)	32%

The following compounds for sample BTA-27-LHAAP-001-RS-01A should be considered quantitative estimates. The matrix spike and/or matrix spike duplicate recoveries were outside the laboratory's internal acceptance criteria. The quantitation limits for the compounds listed below for the aforementioned sample listed have been appended with a "J" qualifier code to indicate they are quantitative estimates.

Parameter	Samples Affected	MS/MSD % Recovery Limits	% Recovery

Parameter	Samples Affected	MS/MSD % Recovery Limits	% Recovery
HMX	BTA-27-LHAAP-001-RS-01A	(72-134)	68
2,4,6-Trinitrotoluene	BTA-27-LHAAP-001-RS-01A	(55-142)	49, 48
2-Nitrotoluene	BTA-27-LHAAP-001-RS-01A	(59-136)	38
4-Nitrotoluene	BTA-27-LHAAP-001-RS-01A	(77-124)	45

The quantitation limits for the compounds in the samples listed below should be considered quantitative estimates. The percent difference exceeded the method less than 15% criterion for continuing calibrations. Poor relative response factor precision was observed for these compounds in a continuing calibration standard associated with these samples. Poor initial continuing calibration standard percent difference indicates instrument instability in the analysis of these compounds in associated samples. The quantitation limits for these compounds in the samples listed below have been appended with a "J" qualifier code to indicate they are quantitative estimates.

Parameter	Sample Affected	%RSD
RDX	GT-SO-PD-01-02	17.1
Tetryl	GT-SO-PD-01-02	15.5
4-Nitrotoluene	GT-SO-PD-01-02	17.3
1,3-Dinitrobenzene	BTA-27-LHAAP-001-RS-01B	19, 22
2,4-Dinitrotoluene	BTA-27-LHAAP-001-RS-01B	16.1, 18
4-Nitrotoluene	BTA-27-LHAAP-001-RS-01B	17.2, 18.5
Tetryl	BTA-27-LHAAP-001-RS-01B	20.1

SUMMARY

The analyses were performed acceptably, but required qualifying statements. This analytical quality assurance report has identified aspects of the data that required qualification. It is recommended that the analytical data only be used in conjunction with the qualifying statements and data qualifiers noted on the data summary reports included in Attachment II. A support documentation package has been prepared for this quality assurance review and is filed with the Longhorn Army Ammunition Plant project file.

Attachment I

Chains of Custody

Cape/4404/20070813/7-1506

CAPE

CAPE INC
BLOSSOM BUSINESS CENTER
12037 STARCREST DRIVE
SAN ANTONIO, TX 78247

CHAIN-OF-CUSTODY RECORD

(If no box checked use routine)
☑ Routine
☐ Urgent
☐ EMERGENCY

Chain of Custody Number LHAAP-070706	**Client's Project Manager (Print)** Erick Kirwan	**CAPE Project Manager (Print)** Rob Vinson	**Laboratory**
Contractor CAPE Inc.	**Project Name** LHAAP-EECA	**Sampler's Name (Print)** KENNETH HOOSIER	**Laboratory Contract Number**
ERPIMS/ERIS ☐ Yes ☐ No	**Project Site(s)** LHAAP	**Sampler's Signature** Kenneth J Hoos	**ANALYSES REQUESTED**

Sample Number	Location Designator	Sample Type	Sample Matrix	Sample Method	Begin Depth NN.N	End Depth NN.N	Date dd mmm yy	Time 24 HR NNNN	Longtitute	Latitude	Elev.	Munitions Constituents	White
LHAAP-2-1	BTA-SO-PT01	SO	SO	GRAB	00.0	06.0	07-07-06	1320	W. 32.38.58	W.094.08.025	275'	✓	1
LHAAP-2-3	BTA-SO-PT03	SO	SO	GRAB	00.0	06.0	07-07-06	1320	W. 32.38.58	W.094.08.025	275'	✓	2
LHAAP-2-5	BTA-SO-PT05	SO	SO	GRAB	00.0	06.0	07-07-06	1335	W. 32.38.58	W.094.08.025	275'	✓	3
LHAAP-2-7	BTASOPT07	SO	SO	GRAB	00.0	06.0	07-07-06	1340	W 32.38.58	W.094.08.025	275	✓	4
LHAAP-2-9	BTASOPT09	SO	SO	GRAB	00.0	06.0	07-07-06	1340	W.32.38.58	W.094.08.025	275	✓	5

Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Kenneth J Hoos	07-07-06 1800		
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Kyle Fooley	7/7/06 1802		
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Fedex	7806 1000		7806 1000

Sample Shipped Via (circle one):
UPS FED-EX AIRBORNE BUS HAND OTHER

Waybill Number:

PROTOCOL (circle one)
HAZWRAP (EPA) OTHER

QC LEVEL (circle one)
1 2 (3) 4 5

FOR LABORATORY USE ONLY
CONDITIONS OF SAMPLES UPON RECEIPT

CHAIN OF CUSTODY	(Y) N	ICE	
REQUEST FOR ANAL	(Y) N	TEMP 2	
CUSTODY SEAL	(Y) N	pH	
SAMPLE CONDITION			

REMARKS: Munition Constituents by (SW-846 Method 8330), White Phosphorus (SW-846 Method 7580)

MATRIX SPIKE / MATRIX SPIKE DUPLICATE on

0001115

00049177

Cape/4484/20060708,13/2-16-06

CAPE INC
BLOSSOM BUSINESS CENTER
12037 STARCREST DRIVE
SAN ANTONIO, TX 78247

CHAIN-OF-CUSTODY RECORD

(If no box checked use routine)
☑ Routine
☐ Urgent
☐ EMERGENCY

Chain of Custody Number: LHAAP070706	Client's Project Manager (Print): Erick Kirwan	CAPE Project Manager (Print): Rob Vinson	Laboratory
Contractor: CAPE Inc.	Project Name: LHAAP-EECA	Sampler's Name (Print): Richard Norton	Laboratory Contract Number
ERPIMS/ERIS ☐ Yes ☐ No	Project Site(s): LHAAP	Sampler's Signature	ANALYSES REQUESTED

Sample Number	Location Designator	Sample Type	Sample Matrix	Sample Method	Begin Depth NN.N	End Depth NN.N	Date dd mmm yy	Time 24 HR NNNN	Longtitute	Latitude	Elev.	Munitions Constituents	White
LHAAP 1-1	BTA-SO-PD01	SO	SO	GRAB	00.0	06.0'	07-07-06	0835	N. 32.38.58	W.094.08.025	275'	✓	6
LHAAP 1-2	BTA SO-PD02	SO	SO	GRAB	00.0	06.0	07-07-06	0835	N. 32.38.58	W.094.08025	275	✓	7

Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Kenneth J. Harris	07.07.06 1800		
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Kenneth J. Harris	07-07-06 1800		
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Rob Vinson	7/7/06 1802		

Sample Shipped Via (circle one):
UPS (FED-EX) AIRBORNE BUS HAND OTHER

Waybill Number:

PROTOCOL (circle one)
HAZWRAP (EPA) OTHER
QC LEVEL (circle one)
1 2 (3) 4 5

FOR LABORATORY USE ONLY
CONDITIONS OF SAMPLES UPON RECEIPT

CHAIN OF CUSTODY	(Y)	N	ICE
REQUEST FOR ANAL	(Y)	N	TEMP 2°
CUSTODY SEAL	(Y)	N	pH
SAMPLE CONDITION			

FedEx 7806 000 MK 7706 1000

REMARKS: Munition Constituents by (SW-846 Method 8330), White Phosphorus (SW-846 Method 7580)

MATRIX SPIKE / MATRIX SPIKE DUPLICATE on

000116

000491178

Cape/4484/20607210 / 7-2806

CAPE INC
BLOSSOM BUSINESS CENTER
12037 STARCREST DRIVE
SAN ANTONIO, TX 78247

CHAIN-OF-CUSTODY RECORD

(If no box checked use routine)
☒ Routine
☐ Urgent
☐ EMERGENCY

Chain of Custody Number	Client's Project Manager (Print) Erick Kirwan	CAPE Project Manager (Print) Rob Vinson	Laboratory
Contractor CAPE Inc.	Project Name LHAAP-EECA	Sampler's Name (Print) KENNETH J. HOOSIER	Laboratory Contract Number
ERPIMS/ERIS ☐ Yes ☒ No	Project Site(s) LHAAP	Sampler's Signature	ANALYSES REQUESTED

Sample Number	Location Designator	Sample Type	Sample Matrix	Sample Method	Begin Depth NN.N	End Depth NN.N	Date dd mmm yy	Time 24 HR NNNN	Longtitute	Latitude	Elev.	Munitions Constituents	White Phosphorus
GTA-SO-PD-01-02	GTA	GRAB	Soil	Scoop	00.0	06.0	7/20/06	0830				X	1
GTA-SO-PT-01-02	GTA	GRAB	Soil	Scoop	00.0	06.0	7/20/06	0930				X	2

Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
[signature]	1235 7/20/06	[signature]	12:37
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time
Fedex 8578 5167 4280	7-21-06 945	[signature]	7-21-06 945
Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time

Sample Shipped Via (circle one):
UPS FED-EX AIRBORNE BUS HAND OTHER

Waybill Number:

PROTOCOL (circle one)
HAZWRAP EPA OTHER
QC LEVEL (circle one)
1 2 3 4 5

FOR LABORATORY USE ONLY
CONDITIONS OF SAMPLES UPON RECEIPT

CHAIN OF CUSTODY	Y	N	ICE
REQUEST FOR ANAL	Y	N	TEMP 3
CUSTODY SEAL	Y	N	pH
SAMPLE CONDITION			

REMARKS: Munition Constituents by (SW-846 Method 8330), White Phosphorus (SW-846 Method 7580)

MATRIX SPIKE / MATRIX SPIKE DUPLICATE on NONE

00048179

00048179

GCAL

GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

GCAL

Lab use only			
Cape	4484	206091107	9-15-06
Client Name	Client #	Workorder #	Due Date

Report to:
Client: CAPE ENV/GOV
Address: 12037 STARCREST
SAN ANTONIO TX 78247
Contact: ROB VINSON
Phone: (210) 377-2008
Fax: (210) 377-2111

Bill to:
Client: CAPE ENV.
Address: 12037 STARCREST
SAN ANTONIO TX 78247
Contact: ROB VINSON
Phone: (210) 377-2008
Fax: (210) 377-2111

P.O. Number

Project Name/Number: LHAAP- 42019.004.006

Sampled By: KEN HOOSIER

Analytical Requests & Method

Lab use only:
Custody Seal used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 3

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	TIME 10, '05		8330	TM, DW							Remarks:	Lab ID
SO	9/7/06	1005		✓	BTA-27-LHAAP-001-RS.01A	NONE	1			X	X						1	N 32° 38' .488" W 094° 08' .036"	* 27-1-1
SO	9/7/06	1010		✓	BTA-27-LHAAP-001-RS-01B	NONE	1			X	X						2	N 32° 38' .[illegible]" W 094° 07' .976"	* 27-2-1
SO	9/7/06	1310		✓	BTA-53-LHAAP-001-RS.01A	NONE	1			X	X						3	N 32° 40' 548" W 094° 07' 321"	53-1-1
SO	9/7/06	1300		✓	BTA-53-LHAAP-001-RS-01B	NONE	1			X	X						4	N 32° 40' 619" W 094 07' 059"	53-2-1
SO	9/7/06	11:00		✓	BTA-54-LHAAP-001-RS-01A	NONE	1			X	X						5	N 32° 39' 407" W 094° 07' 177"	54-1-1
SO	9/7/06	1210		✓	BTA-54-LHAAP-001-RS-01B	NONE	1			X	X						6	N 32° 39' 472" W 094 06' 966"	54-2-1

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☑ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	09/07/06	4:10P
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	9-8-06	930 9:40 AM
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: Added A + B to sample ID's per Mike Houck see attached copy of amended chain. dls 9/11/06

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98

000109

0004918000

GCAL

GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

WP - DATA CHEM

Lab use only

Client Name	Client #	Workorder #	Due Date

Report to:
Client: CAPE ENV./ROV
Address: 12027 STARCREST
SAN ANTONIO TX 78247
Contact: ROB WINSON
Phone: (210) 377-2008
Fax: (210) 377-2111

Bill to:
Client: CAPE ENV.
Address: 12027 STARCREST
SAN ANTONIO TX 78247
Contact: ROB WINSON
Phone: (210) 377-2008
Fax: (210) 377-2111

P.O. Number:

Project Name/Number: LHAAP - 42019.004.006

Sampled By: KEN HOOSIER

Analytical Requests & Method: White Phosphorus

Lab use only:
Custody Seal used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	Remarks:	Lab ID
SO	9/1/06	1005		✓	BTA-27-LHAAP-001-RS-01A	NONE	1	N32° 38' 988" W094° 08' 036"	27-5-1
SO	9/1/06	1010		✓	BTA-27-LHAAP-001-RS-01B	NONE	1	N32° 38' 972" W094° 07' 976"	27-6-1
SO	9/1/06	1310		✓	BTA-53-LHAAP-001-RS-01A	NONE	1	N32° 40' .548" W094° 07' .311"	53-5-1
SO	9/1/06	1250		✓	BTA-53-LHAAP-001-RS-01B	NONE	1	N032° 40' .619" W094° 07' .059"	53-6-1
SO	9/1/06	11:00		✓	BTA-54-LHAAP-001-RS-01A	NONE	1	N032° 39' 407" W094° 07' 172"	54-5-1
SO	9/1/06	1210		✓	BTA-54-LHAAP-001-RS-01B	NONE	1	N032° 39' 472" W094° 16' 966"	54-6-1

COC revised by MM 9/11/06

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☑ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	Ellen Neely	09/07/06	4:10
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	Shannon Wiley	9/8/06	1000
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: Report Samples on Dry Weight basis
CAPE Level C (EPA Level IV) Deliverable.
Standard 14 Day TAT.

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11-98

0004918

Attachment II

Data Summary Reports

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.3 Units: g
Level: (low/med)
% Moisture: 3.3 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 327495 Analytical Batch: 328443
CONCENTRATION UNITS: *ug/kg*

Sample ID: LHAAP-2-1
Contract:
SAS No.: SDG No.: 206070813
Lab Sample ID: 20607081301
Date Collected: 07/07/06 Time: 1320
Date Received: 07/08/06
Date Extracted:
Date Analyzed: 07/20/06 Time: 1641
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060720P/H0004347

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	72.7	U	72.7	225
99-65-0	1,3-Dinitrobenzene	72.7	U	72.7	225
118-96-7	2,4,6-Trinitrotoluene	67.6	U	67.6	225
121-14-2	2,4-Dinitrotoluene	47.2	U	47.2	135
606-20-2	2,6-Dinitrotoluene	63.0	U J	63.0	135
355-72-78-	2-Amino-4,6-dinitrotoluene	71.9	U	71.9	135
88-72-2	2-Nitrotoluene	71.4	U	71.4	225
99-08-1	3-Nitrotoluene	57.6	U	57.6	135
1946-51-0	4-Amino-2,6-dinitrotoluene	62.9	U	62.9	135
99-99-0	4-Nitrotoluene	54.6	U	54.6	135
2691-41-0	HMX	64.9	U	64.9	135
98-95-3	Nitrobenzene	53.3	U	53.3	135
121-82-4	RDX	77.2	U	77.2	135
479-45-8	Tetryl	65.9	U J	65.9	135

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ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.3 Units: g
Level: (low/med)
% Moisture: 2.7 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 327495 Analytical Batch: 328443
CONCENTRATION UNITS: *ug/kg*

Sample ID: LHAAP-2-3
Contract:
SAS No.: SDG No.: 206070813
Lab Sample ID: 20607081302
Date Collected: 07/07/06 Time: 1320
Date Received: 07/08/06
Date Extracted:
Date Analyzed: 07/20/06 Time: 1855
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060720P/H0004356

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	72.2	U	72.2	223
99-65-0	1,3-Dinitrobenzene	72.2	U	72.2	223
118-96-7	2,4,6-Trinitrotoluene	67.1	U	67.1	223
121-14-2	2,4-Dinitrotoluene	46.9	U	46.9	134
606-20-2	2,6-Dinitrotoluene	62.5	U J	62.5	134
355-72-78-	2-Amino-4,6-dinitrotoluene	71.4	U	71.4	134
88-72-2	2-Nitrotoluene	70.9	U	70.9	223
99-08-1	3-Nitrotoluene	57.2	U	57.2	134
1946-51-0	4-Amino-2,6-dinitrotoluene	62.4	U	62.4	134
99-99-0	4-Nitrotoluene	54.2	U	54.2	134
2691-41-0	HMX	64.4	U	64.4	134
98-95-3	Nitrobenzene	53.0	U	53.0	134
121-82-4	RDX	76.6	U	76.6	134
479-45-8	Tetryl	65.5	U J	65.5	134

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ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.3 Units: g
Level: (low/med)
% Moisture: 4.6 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 327495 Analytical Batch: 328443

CONCENTRATION UNITS: *ug/kg*

Sample ID: LHAAP-2-5
Contract:
SAS No.: SDG No.: 206070813
Lab Sample ID: 20607081303
Date Collected: 07/07/06 Time: 1335
Date Received: 07/08/06
Date Extracted:
Date Analyzed: 07/20/06 Time: 1910
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060720P/H0004357

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	73.7	U	73.7	228
99-65-0	1,3-Dinitrobenzene	73.7	U	73.7	228
118-96-7	2,4,6-Trinitrotoluene	68.5	U	68.5	228
121-14-2	2,4-Dinitrotoluene	47.9	U	47.9	137
606-20-2	2,6-Dinitrotoluene	63.8	U J	63.8	137
355-72-78-	2-Amino-4,6-dinitrotoluene	72.9	U	72.9	137
88-72-2	2-Nitrotoluene	72.4	U	72.4	228
99-08-1	3-Nitrotoluene	58.4	U	58.4	137
1946-51-0	4-Amino-2,6-dinitrotoluene	63.7	U	63.7	137
99-99-0	4-Nitrotoluene	55.3	U	55.3	137
2691-41-0	HMX	65.7	U	65.7	137
98-95-3	Nitrobenzene	54.1	U	54.1	137
121-82-4	RDX	78.2	U	78.2	137
479-45-8	Tetryl	66.8	U J	66.8	137

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1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.2 Units: g
Level: (low/med)
% Moisture: 2.6 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 327495 Analytical Batch: 328443

Sample ID: LHAAP-2-7
Contract:
SAS No.: SDG No.: 206070813
Lab Sample ID: 20607081304
Date Collected: 07/07/06 Time: 1340
Date Received: 07/08/06
Date Extracted:
Date Analyzed: 07/20/06 Time: 1925
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060720P/H0004358

CONCENTRATION UNITS: *ug/kg*

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	75.4	U	75.4	233
99-65-0	1,3-Dinitrobenzene	75.4	U	75.4	233
118-96-7	2,4,6-Trinitrotoluene	70.1	U	70.1	233
121-14-2	2,4-Dinitrotoluene	49.0	U	49.0	140
606-20-2	2,6-Dinitrotoluene	65.3	U~~J~~	65.3	140
355-72-78-	2-Amino-4,6-dinitrotoluene	74.6	U	74.6	140
88-72-2	2-Nitrotoluene	74.1	U	74.1	233
99-08-1	3-Nitrotoluene	59.7	U	59.7	140
1946-51-0	4-Amino-2,6-dinitrotoluene	65.2	U	65.2	140
99-99-0	4-Nitrotoluene	56.6	U	56.6	140
2691-41-0	HMX	67.3	U	67.3	140
98-95-3	Nitrobenzene	55.3	U	55.3	140
121-82-4	RDX	80.1	U	80.1	140
479-45-8	Tetryl	68.4	U~~J~~	68.4	140

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ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.2 Units: g
Level: (low/med)
% Moisture: 1.9 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 327495 Analytical Batch: 328443

Sample ID: LHAAP-2-9
Contract:
SAS No.: SDG No.: 206070813
Lab Sample ID: 20607081305
Date Collected: 07/07/06 Time: 1340
Date Received: 07/08/06
Date Extracted:
Date Analyzed: 07/20/06 Time: 1940
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060720P/H0004359

CONCENTRATION UNITS: *ug/kg*

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	74.9	U	74.9	232
99-65-0	1,3-Dinitrobenzene	74.9	U	74.9	232
118-96-7	2,4,6-Trinitrotoluene	69.6	U	69.6	232
121-14-2	2,4-Dinitrotoluene	48.6	U	48.6	139
606-20-2	2,6-Dinitrotoluene	64.9	U UJ	64.9	139
355-72-78-	2-Amino-4,6-dinitrotoluene	74.0	U	74.0	139
88-72-2	2-Nitrotoluene	73.6	U	73.6	232
99-08-1	3-Nitrotoluene	59.3	U	59.3	139
1946-51-0	4-Amino-2,6-dinitrotoluene	64.8	U	64.8	139
99-99-0	4-Nitrotoluene	56.2	U	56.2	139
2691-41-0	HMX	66.8	U	66.8	139
98-95-3	Nitrobenzene	54.9	U	54.9	139
121-82-4	RDX	79.5	U	79.5	139
479-45-8	Tetryl	67.9	U UJ	67.9	139

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ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL | Sample ID: LHAAP 1-1

Lab Code: LA024 | Case No.: | Contract:

Matrix: Soil | SAS No.: | SDG No.: 206070813

Sample wt/vol: 2 | Units: g | Lab Sample ID: 20607081306

Level: (low/med) | Date Collected: 07/07/06 | Time: 0835

% Moisture: 4.4 | decanted: (Y/N) | Date Received: 07/08/06

GC Column: | ID: | (mm) | Date Extracted:

Concentrated Extract Volume: 10000 | (µL) | Date Analyzed: 07/20/06 | Time: 1955

Soil Aliquot Volume: | (µL) | Dilution Factor: 1 | Analyst: RFS

Injection Volume: 1 | (µL) | Prep Method:

GPC Cleanup: (Y/N) N | pH: | Analytical Method: SW846 8330

Prep Batch: 327495 | Analytical Batch: 328443 | Sulfur Cleanup: (Y/N) N | Instrument ID: HPLC 1

CONCENTRATION UNITS: *ug/kg* | Lab File ID: 060720P/H0004360

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	84.5	U	84.5	262
99-65-0	1,3-Dinitrobenzene	84.5	U	84.5	262
118-96-7	2,4,6-Trinitrotoluene	78.6	U	78.6	262
121-14-2	2,4-Dinitrotoluene	54.9	U	54.9	157
606-20-2	2,6-Dinitrotoluene	73.2	U ~~J~~	73.2	157
355-72-78-	2-Amino-4,6-dinitrotoluene	83.6	U	83.6	157
88-72-2	2-Nitrotoluene	83.1	U	83.1	262
99-08-1	3-Nitrotoluene	67.0	U	67.0	157
1946-51-0	4-Amino-2,6-dinitrotoluene	73.1	U	73.1	157
99-99-0	4-Nitrotoluene	63.5	U	63.5	157
2691-41-0	HMX	75.4	U	75.4	157
98-95-3	Nitrobenzene	62.1	U	62.1	157
121-82-4	RDX	89.8	U	89.8	157
479-45-8	Tetryl	76.7	U ~~J~~	76.7	157

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ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL | Sample ID: LHAAP 1-2

Lab Code: LA024 | Case No.: | Contract:

Matrix: Soil | SAS No.: | SDG No.: 206070813

Sample wt/vol: 2.5 | Units: g | Lab Sample ID: 20607081307

Level: (low/med) | Date Collected: 07/07/06 | Time: 0835

% Moisture: 4.4 | decanted: (Y/N) | Date Received: 07/08/06

GC Column: | ID: | (mm) | Date Extracted:

Concentrated Extract Volume: 10000 | (µL) | Date Analyzed: 07/20/06 | Time: 2010

Soil Aliquot Volume: | (µL) | Dilution Factor: 1 | Analyst: RFS

Injection Volume: 1 | (µL) | Prep Method:

GPC Cleanup: (Y/N) N | pH: | Analytical Method: SW846 8330

Prep Batch: 327495 | Analytical Batch: 328443 | Sulfur Cleanup: (Y/N) N | Instrument ID: HPLC 1

CONCENTRATION UNITS: ug/kg | Lab File ID: 060720P/H0004361

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	67.6	U	67.6	209
99-65-0	1,3-Dinitrobenzene	67.6	U	67.6	209
118-96-7	2,4,6-Trinitrotoluene	62.8	U	62.8	209
121-14-2	2,4-Dinitrotoluene	43.9	U	43.9	125
606-20-2	2,6-Dinitrotoluene	58.6	U J	58.6	125
355-72-78-	2-Amino-4,6-dinitrotoluene	66.8	U	66.8	125
88-72-2	2-Nitrotoluene	66.4	U	66.4	209
99-08-1	3-Nitrotoluene	53.5	U	53.5	125
1946-51-0	4-Amino-2,6-dinitrotoluene	58.5	U	58.5	125
99-99-0	4-Nitrotoluene	50.8	U	50.8	125
2691-41-0	HMX	60.3	U	60.3	125
98-95-3	Nitrobenzene	49.6	U	49.6	125
121-82-4	RDX	71.8	U	71.8	125
479-45-8	Tetryl	61.3	U J	61.3	125

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1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.1 Units: g
Level: (low/med)
% Moisture: 3.2 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 328713 Analytical Batch: 329521

Sample ID: GT-SO-PD-01-02
Contract:
SAS No.: SDG No.: 206072104
Lab Sample ID: 20607210401
Date Collected: 07/20/06 Time: 0830
Date Received: 07/21/06
Date Extracted: 07/26/06
Date Analyzed: 08/03/06 Time: 1545
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1

CONCENTRATION UNITS: ug/kg

Lab File ID: 060803/H0004502

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	79.5	U	79.5	246
99-65-0	1,3-Dinitrobenzene	79.5	U	79.5	246
118-96-7	2,4,6-Trinitrotoluene	73.9	U UJ	73.9	246
121-14-2	2,4-Dinitrotoluene	51.6	U	51.6	148
606-20-2	2,6-Dinitrotoluene	68.9	U UJ	68.9	148
355-72-78-	2-Amino-4,6-dinitrotoluene	78.6	U	78.6	148
88-72-2	2-Nitrotoluene	78.1	U	78.1	246
99-08-1	3-Nitrotoluene	63.0	U	63.0	148
1946-51-0	4-Amino-2,6-dinitrotoluene	68.8	U	68.8	148
99-99-0	4-Nitrotoluene	59.7	U UJ	59.7	148
2691-41-0	HMX	70.9	U	70.9	148
98-95-3	Nitrobenzene	58.3	U	58.3	148
121-82-4	RDX	84.4	U UJ	84.4	148
479-45-8	Tetryl	72.1	U UJ	72.1	148

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1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.1 Units: g
Level: (low/med)
% Moisture: 2.4 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 328713 Analytical Batch: 329521

Sample ID: GT-SO-PT-01-02
Contract:
SAS No.: SDG No.: 206072104
Lab Sample ID: 20607210402
Date Collected: 07/20/06 Time: 0930
Date Received: 07/21/06
Date Extracted: 07/26/06
Date Analyzed: 08/03/06 Time: 1600
Dilution Factor: 1 Analyst: RFS
Prep Method:
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1

CONCENTRATION UNITS: *ug/kg*

Lab File ID: 060803/H0004503

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	78.9	U	78.9	244
99-65-0	1,3-Dinitrobenzene	78.9	U	78.9	244
118-96-7	2,4,6-Trinitrotoluene	73.3	U J	73.3	244
121-14-2	2,4-Dinitrotoluene	51.2	U	51.2	146
606-20-2	2,6-Dinitrotoluene	68.3	U J	68.3	146
355-72-78-	2-Amino-4,6-dinitrotoluene	78.0	U	78.0	146
88-72-2	2-Nitrotoluene	77.5	U	77.5	244
99-08-1	3-Nitrotoluene	62.5	U	62.5	146
1946-51-0	4-Amino-2,6-dinitrotoluene	68.2	U	68.2	146
99-99-0	4-Nitrotoluene	59.2	U	59.2	146
2691-41-0	HMX	70.4	U	70.4	146
98-95-3	Nitrobenzene	57.9	U	57.9	146
121-82-4	RDX	83.8	U	83.8	146
479-45-8	Tetryl	71.5	U	71.5	146

MM 10/6/06

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.1 Units: g
Level: (low/med) LOW
% Moisture: 3.2 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899

Sample ID: BTA-27-LHAAP-001-RS-01A
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110701
Date Collected: 09/07/06 Time: 1005
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1223
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060919p/h0004911

CONCENTRATION UNITS: *ug/kg*

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	79.5	U	79.5	246
99-65-0	1,3-Dinitrobenzene	79.5	U	79.5	246
118-96-7	2,4,6-Trinitrotoluene	73.9	U J	73.9	246
121-14-2	2,4-Dinitrotoluene	51.7	U	51.7	148
606-20-2	2,6-Dinitrotoluene	68.9	U J	68.9	148
355-72-78-	2-Amino-4,6-dinitrotoluene	78.6	U	78.6	148
88-72-2	2-Nitrotoluene	78.1	U J	78.1	246
99-08-1	3-Nitrotoluene	63.0	U	63.0	148
1946-51-0	4-Amino-2,6-dinitrotoluene	68.8	U J	68.8	148
99-99-0	4-Nitrotoluene	59.7	U J	59.7	148
2691-41-0	HMX	70.9	U J	70.9	148
98-95-3	Nitrobenzene	58.3	U	58.3	148
121-82-4	RDX	84.4	U	84.4	148
479-45-8	Tetryl	72.1	U	72.1	148

pm 10/6/06

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2 Units: g
Level: (low/med) LOW
% Moisture: 6.0 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899

Sample ID: BTA-27-LHAAP-001-RS-01B
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110702
Date Collected: 09/07/06 Time: 1010
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1456
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1

CONCENTRATION UNITS: *ug/kg*

Lab File ID: 060919p/h0004921

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	86.0	U	86.0	266
99-65-0	1,3-Dinitrobenzene	86.0	U J	86.0	266
118-96-7	2,4,6-Trinitrotoluene	79.9	U	79.9	266
121-14-2	2,4-Dinitrotoluene	55.9	U J	55.9	160
606-20-2	2,6-Dinitrotoluene	74.5	U J	74.5	160
355-72-78-	2-Amino-4,6-dinitrotoluene	85.0	U	85.0	160
88-72-2	2-Nitrotoluene	84.5	U	84.5	266
99-08-1	3-Nitrotoluene	68.1	U	68.1	160
1946-51-0	4-Amino-2,6-dinitrotoluene	74.4	U J	74.4	160
99-99-0	4-Nitrotoluene	64.6	U J	64.6	160
2691-41-0	HMX	76.7	U	76.7	160
98-95-3	Nitrobenzene	63.1	U	63.1	160
121-82-4	RDX	91.3	U	91.3	160
479-45-8	Tetryl	78.0	U J	78.0	160

pm 10/6/06

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.1 Units: g
Level: (low/med) LOW
% Moisture: 2.9 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899

CONCENTRATION UNITS: *ug/kg*

Sample ID: BTA-53-LHAAP-001-RS-01A
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110703
Date Collected: 09/07/06 Time: 1310
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1511
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060919p/h0004922

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	79.3	U	79.3	245
99-65-0	1,3-Dinitrobenzene	79.3	U	79.3	245
118-96-7	2,4,6-Trinitrotoluene	73.7	U	73.7	245
121-14-2	2,4-Dinitrotoluene	51.5	U	51.5	147
606-20-2	2,6-Dinitrotoluene	68.7	U Ø J	68.7	147
355-72-78-	2-Amino-4,6-dinitrotoluene	78.4	U	78.4	147
88-72-2	2-Nitrotoluene	77.9	U	77.9	245
99-08-1	3-Nitrotoluene	62.8	U	62.8	147
1946-51-0	4-Amino-2,6-dinitrotoluene	68.6	U Ø J	68.6	147
99-99-0	4-Nitrotoluene	59.5	U	59.5	147
2691-41-0	HMX	70.7	U	70.7	147
98-95-3	Nitrobenzene	58.2	U	58.2	147
121-82-4	RDX	84.2	U	84.2	147
479-45-8	Tetryl	71.9	U	71.9	147

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1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.2 Units: g
Level: (low/med) LOW
% Moisture: 11.9 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899
CONCENTRATION UNITS: *ug/kg*

Sample ID: BTA-53-LHAAP-001-RS-01B
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110704
Date Collected: 09/07/06 Time: 1250
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1526
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060919p/h0004923

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	83.3	UJ	83.3	258
99-65-0	1,3-Dinitrobenzene	83.3	UJ	83.3	258
118-96-7	2,4,6-Trinitrotoluene	77.5	UJ	77.5	258
121-14-2	2,4-Dinitrotoluene	54.2	UJ	54.2	155
606-20-2	2,6-Dinitrotoluene	72.2	UJ	72.2	155
355-72-78-	2-Amino-4,6-dinitrotoluene	82.4	UJ	82.4	155
88-72-2	2-Nitrotoluene	81.9	UJ	81.9	258
99-08-1	3-Nitrotoluene	66.0	UJ	66.0	155
1946-51-0	4-Amino-2,6-dinitrotoluene	72.1	UJ	72.1	155
99-99-0	4-Nitrotoluene	62.6	UJ	62.6	155
2691-41-0	HMX	74.4	UJ	74.4	155
98-95-3	Nitrobenzene	61.2	UJ	61.2	155
121-82-4	RDX	88.5	UJ	88.5	155
479-45-8	Tetryl	75.6	UJ	75.6	155

MM 10/6/06

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.3 Units: g
Level: (low/med) LOW
% Moisture: 5.3 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899
CONCENTRATION UNITS: *ug/kg*

Sample ID: BTA-54-LHAAP-001-RS-01A
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110705
Date Collected: 09/07/06 Time: 1100
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1541
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060919p/h0004924

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	74.2	U	74.2	229
99-65-0	1,3-Dinitrobenzene	74.2	U	74.2	229
118-96-7	2,4,6-Trinitrotoluene	68.9	U	68.9	229
121-14-2	2,4-Dinitrotoluene	48.2	U	48.2	138
606-20-2	2,6-Dinitrotoluene	64.2	U J	64.2	138
355-72-78-	2-Amino-4,6-dinitrotoluene	73.3	U	73.3	138
88-72-2	2-Nitrotoluene	72.9	U	72.9	229
99-08-1	3-Nitrotoluene	58.7	U	58.7	138
1946-51-0	4-Amino-2,6-dinitrotoluene	64.2	U J	64.2	138
99-99-0	4-Nitrotoluene	55.7	U	55.7	138
2691-41-0	HMX	66.2	U	66.2	138
98-95-3	Nitrobenzene	54.4	U	54.4	138
121-82-4	RDX	78.7	U	78.7	138
479-45-8	Tetryl	67.3	U	67.3	138

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1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 2.1 Units: g
Level: (low/med) LOW
% Moisture: 1.7 decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 332390 Analytical Batch: 332899

Sample ID: BTA-54-LHAAP-001-RS-01B
Contract:
SAS No.: SDG No.: 206091107
Lab Sample ID: 20609110706
Date Collected: 09/07/06 Time: 1210
Date Received: 09/08/06
Date Extracted: 09/11/06
Date Analyzed: 09/19/06 Time: 1556
Dilution Factor: 1 Analyst: RFS
Prep Method: 8330
Analytical Method: SW846 8330
Sulfur Cleanup: (Y/N) N Instrument ID: HPLC 1
Lab File ID: 060919p/h0004925

CONCENTRATION UNITS: *ug/kg*

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
99-35-4	1,3,5-Trinitrobenzene	78.3	U	78.3	242
99-65-0	1,3-Dinitrobenzene	78.3	U	78.3	242
118-96-7	2,4,6-Trinitrotoluene	72.8	U	72.8	242
121-14-2	2,4-Dinitrotoluene	50.9	U	50.9	145
606-20-2	2,6-Dinitrotoluene	67.8	U J	67.8	145
355-72-78-	2-Amino-4,6-dinitrotoluene	77.4	U	77.4	145
88-72-2	2-Nitrotoluene	76.9	U	76.9	242
99-08-1	3-Nitrotoluene	62.0	U	62.0	145
1946-51-0	4-Amino-2,6-dinitrotoluene	67.7	U J	67.7	145
99-99-0	4-Nitrotoluene	58.8	U	58.8	145
2691-41-0	HMX	69.9	U	69.9	145
98-95-3	Nitrobenzene	57.5	U	57.5	145
121-82-4	RDX	83.1	U	83.1	145
479-45-8	Tetryl	71.0	U	71.0	145

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

S068C00T

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: **BTA27LHAAP|001RS01A**
DCL Sample Name...: **06E04177**
DCL Report Group..: **06E-0579-01**

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 10:05
Reporting Units...: ug/Kg
Report Basis.....: ☐ As Received ☒ Dried
Percent Solids....: 96.4

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒ Primary
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 17:18	0.0518	ND		U	1	0.519

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

S068C00V

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: BTA27LHAAP|001RS01B
DCL Sample Name...: 06E04178
DCL Report Group..: 06E-0579-01

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 10:10
Reporting Units...: ug/Kg
Report Basis.....: ☐As Received ☒Dried
Percent Solids....: 93.5

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒Primary
☐Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 17:26	0.0534	ND		U	1	0.535

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: **BTA53LHAAP|001RS01** A
DCL Sample Name...: **06E04179**
DCL Report Group..: **06E-0579-01**

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 13:10
Reporting Units...: ug/Kg
Report Basis.....: ☐ As Received ☒ Dried
Percent Solids....: 87.6

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒ Primary
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 17:35	0.0570	ND		U	1	0.571

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05

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

S068C00X

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: **BTA53LHAAP|001RS01B**
DCL Sample Name...: **06E04180**
DCL Report Group..: **06E-0579-01**

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 12:50
Reporting Units...: ug/Kg
Report Basis.....: ☐ As Received ☒ Dried
Percent Solids....: 96.2

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒ Primary
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 17:44	0.0519	ND		U	1	0.520

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

S068C00Y

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: **BTA54LHAAP|001RS01A**
DCL Sample Name...: **06E04181**
DCL Report Group..: **06E-0579-01**

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 11:00
Reporting Units...: ug/Kg
Report Basis.....: ☐ As Received ☒ Dried
Percent Solids....: 91.7

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒ Primary
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 17:53	0.0544	ND		U	1	0.545

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FORM A (TYPE I)
SINGLE METHOD ANALYSES

SAMPLE ANALYSIS DATA SHEET

S068C00Z

Date Printed.....: 21-SEP-06 10:01

Client Name.....: Gulf Coast Analytical Laboratories,
Client Ref Number....: LHAAP-42019.004.006
Sampling Site.....: Cape Env.
Release Number.....: LHAAP-42019.004.006

Date Received.....: 08-SEP-06 00:00

DCL Preparation Group: Not Applicable
Date Prepared.....: 19-SEP-06 00:00
Preparation Method...: Not Applicable
Aliquot Weight/Volume: 40 g.
Net Weight/Volume....: Not Required

Client Sample Name: BTA54LHAAP|001RS01 B
DCL Sample Name...: 06E04182
DCL Report Group..: 06E-0579-01

Matrix.....: SOILS
Date Sampled.....: 07-SEP-06 12:10
Reporting Units...: ug/Kg
Report Basis.....: ☐ As Received ☒ Dried
Percent Solids....: 98.0

DCL Analysis Group: G068L015
Analysis Method...: 7580
Instrument Type...: GC/FPD
Instrument ID.....: GC24
Column Type.....: DB-1
☒ Primary
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	CRDL
White Phosphorus	19-SEP-06 18:02	0.0509	ND		U	1	0.510

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APPENDIX E

COST DETAILS AND ASSUMPTIONS

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	60	$ 5,319.60
Project Manager Oversight	Man-hour	$ 105.75	4	$ 423.00
Contracting Activities	Man-hour	$ 65.40	4	$ 261.60
Project Controls & Invoicing	Man-hour	$ 47.25	4	$ 189.00
Sr. UXO Supervisor	Man-hour	$ 87.88	20	$ 1,757.60
Subtotal				$ 7,950.80
G&A on non-labor costs @ 10%				$ -
Subtotal				$ 7,950.80
Fee @ 8%				$ 636.06
Total				**$ 8,586.86**

Site 27 - South Bomb Test Area
Alternative 2 - Land Use Controls

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	40	$ 3,546.40
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	24	$ 2,538.00
Contracting Activities	Man-hour	$ 65.40	16	$ 1,046.40
Project Controls & Invoicing	Man-hour	$ 47.25	16	$ 756.00
Gen. Maintenance Laborer	Man-hour	$ 21.51	80	$ 1,720.80
UXO Technician II	Man-hour	$ 60.20	56	$ 3,371.20
Mobilization Travel	Round Trip	$ 1,230.00	1	$ 1,230.00
M&IE Per Diem	Day	$ 39.00	6.5	$ 253.50
Lodging Per Diem	Day	$ 60.00	6	$ 360.00
Rental Vehicle	Week	$ 350.00	1	$ 350.00
Miscellaneous Field Supplies	Lump Sum	$ 500.00	1	$ 500.00
Magnetometer/All Metal Detectors (2 req)	Week	$ 80.00	1	$ 80.00
Vehicle Fuel	Gallon	$ 2.50	50	$ 125.00
Signs	Each	$ 35.00	78	$ 2,730.00
Pamphlets	Each	$ 2.00	2000	$ 4,000.00
Display Case	Each	$ 1,500.00	1	$ 1,500.00
Public Safety Class/Seminar	Each	$ 6,323.49	1	$ 6,323.49
Subtotal				$ 32,558.63
G&A on non-labor costs @ 10%				$ 1,112.85
Subtotal				$ 33,671.48
Fee @ 8%				$ 2,693.72
Total				**$ 36,365.19**

Notes and Assumptions

1. Field Duration estiamted at 5 days based on average installation rate of 16 signs per day. Assumes (2) local laborers for sign installation and (1) UXO Tech for construction Support.
2. Per Diem rates based on Standard CONUS FY 2007 rates
3. Tech II labor includes one 8 hr travel day both ways
4. Assumes 1 sign per 100 linear feet of public access

Site 27 - South Bomb Test Area
Alternative 3 - Surface Removal

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	80	$ 7,092.80
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	48	$ 5,076.00
Contracting Activities	Man-hour	$ 65.40	16	$ 1,046.40
Project Controls & Invoicing	Man-hour	$ 47.25	16	$ 756.00
Project Activities Reprot	Man-hour	$ 88.66	240	$ 21,278.40
ESS	Lump Sum	$ 8,586.86	1	$ 8,586.86
Sr. UXO Supervisor	Man-hour	$ 87.88	322	$ 28,297.36
UXO QC/Safety Officer - Base Rate	Man-hour	$ 77.74	32	$ 2,487.68
UXO QC/Safety Officer - 8% Hazard Rate	Man-hour	$ 84.39	250	$ 21,097.50
UXO Technician III - Base Rate	Man-hour	$ 75.74	64	$ 4,847.36
UXO Technician III - 8% Hazard Rate	Man-hour	$ 77.99	500	$ 38,995.00
UXO Technician II - Base Rate	Man-hour	$ 9.82	96	$ 942.72
UXO Technician II - 8% Hazard Rate	Man-hour	$ 43.04	1540	$ 66,281.60
Mobilization Travel (POV mileage or airfare)	Round Trip	$ 1,530.00	10	$ 15,300.00
M&IE Per Diem - 75% Rate	Day	$ 29.25	16.5	$ 482.63
M&IE Per Diem - Full Rate	Day	$ 39.00	456	$ 17,784.00
Lodging Per Diem	Day	$ 68.10	457	$ 31,121.70
Rental Vehicles	Week	$ 400.00	22	$ 8,800.00
MEC Scrap Containers	Ea	$ 75.00	25	$ 1,875.00
Miscellaneous Field Supplies	Lump Sum	$ 2,500.00	1	$ 2,500.00
Magnetometer/All Metal Detectors (8 req)	Week	$ 80.00	50	$ 4,000.00
Vehicle Fuel	Gallon	$ 2.50	1050	$ 2,625.00
Brush Clearing Subcontractor	Lump Sum	$ 51,600.00	1	$ 51,600.00
Donor Explosives	Lump Sum	$ 1,500.00	1	$ 1,500.00
Subtotal				$ 346,501.85
G&A on non-labor costs @ 10%				$ 13,758.83
Subtotal				$ 360,260.68
Fee @ 8%				$ 28,820.85
Total				**$ 389,081.53**

Notes and Assumptions

1. Manpower assumes SUXOS, QC Officer and 2 clearance teams. Each clearance team consists of a UXO Tech III Team Leader and 3 UXO Tech II. Assume 10 hr/day, 40 hr/week. Assume each team can clear 4 grids per day on average
2. Project Duration estimated at 25 working days (6.5 weeks) weeks based on an average clearance of 4 grids/day per team. Approximately 200 grids (200 x 100) contained in area
3. Per Diem rates based on Standard CONUS FY 2007 rates. Applicable taxes (13.5%) added to lodging
4. Mobilization/demobilization of 8 hr travel time both ways included in labor hours
5. SUXOS and one Tech II mobilize a week early to provide UXO avoidance support for brush clearing sub
6. Assume three crew vehicles, one for each clearance team and one shared by SUXOS/UXO QC Safety
7. Project Manager makes one 3-day site visit at startup and one 3-day site visit during field operations

Site 27 - South Bomb Test Area
Alternative 3 - Fencing at OB/OD

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	40	$ 3,546.40
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	24	$ 2,538.00
Contracting Activities	Man-hour	$ 65.40	16	$ 1,046.40
Project Controls & Invoicing	Man-hour	$ 47.25	16	$ 756.00
Gen. Maintenance Laborer	Man-hour	$ 21.51	0	$ -
UXO Technician II	Man-hour	$ 60.20	66	$ 3,973.20
Mobilization Travel	Round Trip	$ 1,230.00	1	$ 1,230.00
M&IE Per Diem	Day	$ 39.00	6.5	$ 253.50
Lodging Per Diem	Day	$ 60.00	6	$ 360.00
Rental Vehicle	Week	$ 350.00	1	$ 350.00
Miscellaneous Field Supplies	Lump Sum	$ 500.00	1	$ 500.00
Magnetometer/All Metal Detectors (2 req)	Week	$ 80.00	1	$ 80.00
Vehicle Fuel	Gallon	$ 2.50	50	$ 125.00
Fencing	Linear Foot	$ 38.00	2800	$ 106,400.00
Signs	Each	$ 35.00	28	$ 980.00
Pamphlets	Each	$ 2.00	0	$ -
Display Case	Each	$ 1,500.00	1	$ 1,500.00
Public Safety Class/Seminar	Each	$ 6,323.49	0	$ -
Subtotal				$ 125,766.34
G&A on non-labor costs @ 10%				$ 11,177.85
Subtotal				$ 136,944.19
Fee @ 8%				$ 10,955.54
Total				**$ 147,899.73**

Notes and Assumptions

1. Field Duration estiamted at 5 days based on average installation rate of 560 linear feet a day installed. Assumes (1) UXO Tech for construction Support.
2. Per Diem rates based on Standard CONUS FY 2007 rates
3. Tech II labor includes one 8 hr travel day both ways
4. Assumes 1 sign per 100 linear feet of public access

Site 27 - South Bomb Test Area
Alternative 3 - Subsurface Removal at OB/OD

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	80	$ 7,092.80
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	24	$ 2,538.00
Contracting Activities	Man-hour	$ 65.40	24	$ 1,569.60
Project Controls & Invoicing	Man-hour	$ 47.25	24	$ 1,134.00
Project Activities Report	Man-hour	$ 88.66	240	$ 21,278.40
ESS	Lump Sum	$ 8,586.86	1	$ 8,586.86
Sr. UXO Supervisor	Man-hour	$ 87.88	176	$ 15,466.88
UXO QC/Safety Officer - Base Rate	Man-hour	$ 77.74	16	$ 1,243.84
UXO QC/Safety Officer - 8% Hazard Rate	Man-hour	$ 84.39	120	$ 10,126.80
UXO Technician III - Base Rate	Man-hour	$ 75.74	32	$ 2,423.68
UXO Technician III - 8% Hazard Rate	Man-hour	$ 77.99	240	$ 18,717.60
UXO Technician II - Base Rate	Man-hour	$ 59.82	96	$ 5,742.72
UXO Technician II - 8% Hazard Rate	Man-hour	$ 64.04	760	$ 48,670.40
Mobilization Travel (POV mileage or airfare)	Round Trip	$ 1,530.00	10	$ 15,300.00
M&IE Per Diem - 75% Rate	Day	$ 29.25	16.5	$ 482.63
M&IE Per Diem - Full Rate	Day	$ 39.00	193	$ 7,527.00
Lodging Per Diem	Day	$ 68.10	194	$ 13,211.40
Rental Vehicles	Week	$ 400.00	12	$ 4,800.00
MEC Scrap Containers	Ea	$ 75.00	25	$ 1,875.00
Miscellaneous Field Supplies	Lump Sum	$ 4,500.00	1	$ 4,500.00
Magnetometer/All Metal Detectors (8 req)	Week	$ 80.00	24	$ 1,920.00
Vehicle Fuel	Gallon	$ 2.50	$ 500.00	$ 1,250.00
Brush Clearing Subcontractor	Lump Sum	$ 51,200.00	0	$ -
Donor Explosives	Lump Sum	$ 2,500.00	1	$ 2,500.00
Subtotal				$ 200,085.45
G&A on non-labor costs @ 10%				$ 5,336.60
Subtotal				$ 205,422.05
Fee @ 8%				$ 16,433.76
Total				**$ 221,855.81**

Notes and Assumptions

1. Manpower assumes SUXOS, QC Officer and 2 clearance teams. Each clearance team consists of a UXO Tech III Team Leader and 3 UXO Tech II. Assume 10 hr/day, 40 hr/week. Assume each team can clear 1 grids per day on average
2. Project Duration estimated at 12 working days (3 weeks) weeks based on an average clearance of 2 grids/day per team. Approximately 11 acres or 24 grids (200 x 100) contained in area
3. Per Diem rates based on Standard CONUS FY 2007 rates. Applicable taxes (13.5%) added to lodging
4. Mobilization/demobilization of 8 hr travel time both ways included in labor hours
5. SUXOS and one Tech II mobilize a week early to conduct brush clearing
6. Assume three crew vehicles, one for each clearance team and one shared by SUXOS/UXO QC Safety
7. Project Manager makes one 3-day site visit at startup and one 3-day site visit during field operations

Site 27 - South Bomb Test Area
Alternative 4 - Subsurface Removal

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	80	$ 7,092.80
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	60	$ 6,345.00
Contracting Activities	Man-hour	$ 65.40	24	$ 1,569.60
Project Controls & Invoicing	Man-hour	$ 47.25	24	$ 1,134.00
Project Activities Report	Man-hour	$ 88.66	240	$ 21,278.40
ESS	Lump Sum	$ 8,586.86	1	$ 8,586.86
Sr. UXO Supervisor	Man-hour	$ 87.88	556	$ 48,861.28
UXO QC/Safety Officer - Base Rate	Man-hour	$ 77.74	16	$ 1,243.84
UXO QC/Safety Officer - 8% Hazard Rate	Man-hour	$ 84.39	500	$ 42,195.00
UXO Technician III - Base Rate	Man-hour	$ 75.74	32	$ 2,423.68
UXO Technician III - 8% Hazard Rate	Man-hour	$ 77.99	1000	$ 77,990.00
UXO Technician II - Base Rate	Man-hour	$ 59.82	96	$ 5,742.72
UXO Technician II - 8% Hazard Rate	Man-hour	$ 64.04	3040	$ 194,681.60
Mobilization Travel (POV mileage or airfare)	Round Trip	$ 1,530.00	10	$ 15,300.00
M&IE Per Diem - 75% Rate	Day	$ 29.25	16.5	$ 482.63
M&IE Per Diem - Full Rate	Day	$ 39.00	927	$ 36,153.00
Lodging Per Diem	Day	$ 68.10	928	$ 63,196.80
Rental Vehicles	Week	$ 400.00	40	$ 16,000.00
MEC Scrap Containers	Ea	$ 75.00	25	$ 1,875.00
Miscellaneous Field Supplies	Lump Sum	$ 4,500.00	1	$ 4,500.00
Magnetometer/All Metal Detectors (8 req)	Week	$ 80.00	92	$ 7,360.00
Vehicle Fuel	Gallon	$ 2.50	2000	$ 5,000.00
Brush Clearing Subcontractor	Lump Sum	$ 51,200.00	1	$ 51,200.00
Donor Explosives	Lump Sum	$ 2,500.00	1	$ 2,500.00
Subtotal				$ 624,840.05
G&A on non-labor costs @ 10%				$ 20,356.74
Subtotal				$ 645,196.79
Fee @ 8%				$ 51,615.74
Total				**$ 696,812.53**

Notes and Assumptions

1. Manpower assumes SUXOS, QC Officer and 2 clearance teams. Each clearance team consists of a UXO Tech III Team Leader and 3 UXO Tech II. Assume 10 hr/day, 40 hr/week. Assume each team can clear 2 grids per day on average
2. Project Duration estimated at 50 working days (13 weeks) weeks based on an average clearance of 2 grids/day per team. Approximately 200 grids (200 x 100) contained in area
3. Per Diem rates based on Standard CONUS FY 2007 rates. Applicable taxes (13.5%) added to lodging
4. Mobilization/demobilization of 8 hr travel time both ways included in labor hours
5. SUXOS and one Tech II mobilize a week early to provide UXO avoidance support for brush clearing sub
6. Assume three crew vehicles, one for each clearance team and one shared by SUXOS/UXO QC Safety
7. Project Manager makes one 3-day site visit at startup and one 3-day site visit during field operations

Site 54 - Gound Signal Test Area
Alternative 2 - Land Use Controls

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	40	$ 3,546.40
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	24	$ 2,538.00
Contracting Activities	Man-hour	$ 65.40	16	$ 1,046.40
Project Controls & Invoicing	Man-hour	$ 47.25	16	$ 756.00
Gen. Maintenance Laborer	Man-hour	$ 21.51	80	$ 1,720.80
UXO Technician II	Man-hour	$ 60.20	32	$ 1,926.40
Mobilization Travel	Round Trip	$ 1,230.00	1	$ 1,230.00
M&IE Per Diem	Day	$ 39.00	6.5	$ 253.50
Lodging Per Diem	Day	$ 60.00	6	$ 360.00
Rental Vehicle	Week	$ 350.00	0.5	$ 175.00
Miscellaneous Field Supplies	Lump Sum	$ 500.00	1	$ 500.00
Magnetometer/All Metal Detectors (2 req)	Week	$ 80.00	1	$ 80.00
Vehicle Fuel	Gallon	$ 2.50	10	$ 25.00
Signs	Each	$ 35.00	72	$ 2,520.00
Pamphlets	Each	$ 2.00	2000	$ 4,000.00
Display Case	Each	$ 1,500.00	1	$ 1,500.00
Public Safety Class/Seminar	Each	$ 6,323.49	1	$ 6,323.49
Subtotal				$ 30,628.83
G&A on non-labor costs @ 10%				$ 1,064.35
Subtotal				$ 31,693.18
Fee @ 8%				$ 2,535.45
Total				**$ 34,228.63**

Notes and Assumptions

1. Field Duration estiamted at 5 days based on average installation rate of 16 signs per day. Assumes (2) local laborers for sign installation and (1) UXO Tech for construction Support.
2. Per Diem rates based on Standard CONUS FY 2007 rates
3. Tech II labor includes one 8 hr travel day both ways
4. Assumes 1 sign per 100 linear feet of public access

Site 54 - Ground Signal Test Area
Alternative 3 - Surface Removal

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	80	$ 7,092.80
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	48	$ 5,076.00
Contracting Activities	Man-hour	$ 65.40	16	$ 1,046.40
Project Controls & Invoicing	Man-hour	$ 47.25	16	$ 756.00
ESS	Lump Sum	$ 8,586.86	1	$ 8,586.86
Sr. UXO Supervisor	Man-hour	$ 86.88	336	$ 29,191.68
UXO QC/Safety Officer - Base Rate	Man-hour	$ 76.74	16	$ 1,227.84
UXO QC/Safety Officer - 8% Hazard Rate	Man-hour	$ 83.39	280	$ 23,349.20
UXO Technician III - Base Rate	Man-hour	$ 74.74	32	$ 2,391.68
UXO Technician III - 8% Hazard Rate	Man-hour	$ 76.99	560	$ 43,114.40
UXO Technician II - Base Rate	Man-hour	$ 58.82	96	$ 5,646.72
UXO Technician II - 8% Hazard Rate	Man-hour	$ 63.04	1720	$ 108,428.80
Mobilization Travel (POV mileage or airfare)	Round Trip	$ 1,530.00	10	$ 15,300.00
M&IE Per Diem - 75% Rate	Day	$ 29.25	16.5	$ 482.63
M&IE Per Diem - Full Rate	Day	$ 39.00	477	$ 18,603.00
Lodging Per Diem	Day	$ 68.10	478	$ 32,551.80
Rental Vehicles	Week	$ 400.00	22	$ 8,800.00
MEC Scrap Containers	Ea	$ 75.00	25	$ 1,875.00
Miscellaneous Field Supplies	Lump Sum	$ 2,500.00	1	$ 2,500.00
Magnetometer/All Metal Detectors (8 req)	Week	$ 80.00	50	$ 4,000.00
Vehicle Fuel	Gallon	$ 2.50	1050	$ 2,625.00
Brush Clearing Subcontractor	Lump Sum	$ 25,600.00	1	$ 25,600.00
Donor Explosives	Lump Sum	$ 1,500.00	1	$ 1,500.00
Subtotal				$ 351,873.65
G&A on non-labor costs @ 10%				$ 11,383.74
Subtotal				$ 363,257.39
Fee @ 8%				$ 29,060.59
Total				**$ 392,317.98**

Notes and Assumptions

1. Manpower assumes SUXOS, QC Officer and 2 clearance teams. Each clearance team consists of a UXO Tech III Team Leader and 3 UXO Tech II. Assume 10 hr/day, 40 hr/week. Assume each team can clear 4 grids per day on average
2. Project Duration estimated at 28 working days (7 weeks) weeks based on an average clearance of 4 grids/day per team. Approximately 220 grids (200 x 100) contained in area
3. Per Diem rates based on Standard CONUS FY 2007 rates. Applicable taxes (13.5%) added to lodging
4. Mobilization/demobilization of 8 hr travel time both ways included in labor hours
5. SUXOS and one Tech II mobilize a week early to provide UXO avoidance support for brush clearing sub
6. Assume three crew vehicles, one for each clearance team and one shared by SUXOS/UXO QC Safety
7. Project Manager makes one 3-day site visit at startup and one 3-day site visit during field operations

Site 54 - Ground Signal Test Area
Alternative 4 - Subsurface Removal

Task Identification	Unit	Unit Rate	Quantity	Cost
Design & Plan Development	Man-hour	$ 88.66	80	$ 7,092.80
Project Implementation	Man-hour	$ 88.66	24	$ 2,127.84
Project Manager Oversight	Man-hour	$ 105.75	60	$ 6,345.00
Contracting Activities	Man-hour	$ 65.40	24	$ 1,569.60
Project Controls & Invoicing	Man-hour	$ 47.25	24	$ 1,134.00
Project Activiteis Reprot	Man-hour	$ 88.66	240	$ 21,278.40
ESS	Lump Sum	$ 8,586.86	1	$ 8,586.86
Sr. UXO Supervisor	Man-hour	$ 86.88	606	$ 52,649.28
UXO QC/Safety Officer - Base Rate	Man-hour	$ 76.74	16	$ 1,227.84
UXO QC/Safety Officer - 8% Hazard Rate	Man-hour	$ 83.39	550	$ 45,864.50
UXO Technician III - Base Rate	Man-hour	$ 74.74	32	$ 2,391.68
UXO Technician III - 8% Hazard Rate	Man-hour	$ 76.99	1100	$ 84,689.00
UXO Technician II - Base Rate	Man-hour	$ 58.82	96	$ 5,646.72
UXO Technician II - 8% Hazard Rate	Man-hour	$ 63.04	3300	$ 208,032.00
Mobilization Travel (POV mileage or airfare)	Round Trip	$ 1,530.00	10	$ 15,300.00
M&IE Per Diem - 75% Rate	Day	$ 29.25	16.5	$ 482.63
M&IE Per Diem - Full Rate	Day	$ 39.00	964	$ 37,596.00
Lodging Per Diem	Day	$ 68.10	965	$ 65,716.50
Rental Vehicles	Week	$ 400.00	43	$ 17,200.00
MEC Scrap Containers	Ea	$ 75.00	25	$ 1,875.00
Miscellaneous Field Supplies	Lump Sum	$ 4,500.00	1	$ 4,500.00
Magnetometer/All Metal Detectors (8 req)	Week	$ 80.00	100	$ 8,000.00
Vehicle Fuel	Gallon	$ 2.50	2100	$ 5,250.00
Brush Clearing Subcontractor	Lump Sum	$ 25,600.00	1	$ 25,600.00
Donor Explosives	Lump Sum	$ 1,500.00	1	$ 1,500.00
Subtotal				$ 631,655.65
G&A on non-labor costs @ 10%				$ 18,302.01
Subtotal				$ 649,957.66
Fee @ 8%				$ 51,996.61
Total				**$ 701,954.27**

Notes and Assumptions

1. Manpower assumes SUXOS, QC Officer and 2 clearance teams. Each clearance team consists of a UXO Tech III Team Leader and 3 UXO Tech II. Assume 10 hr/day, 40 hr/week. Assume each team can clear 2 grids per day on average
2. Project Duration estimated at 55 working days (14 weeks) weeks based on an average clearance of 2 grids/day per team. Approximately 220 grids (200 x 100) contained in area
3. Per Diem rates based on Standard CONUS FY 2007 rates. Applicable taxes (13.5%) added to lodging
4. Mobilization/demobilization of 8 hr travel time both ways included in labor hours
5. SUXOS and one Tech II mobilize a week early to provide UXO avoidance support for brush clearing sub
6. Assume three crew vehicles, one for each clearance team and one shared by SUXOS/UXO QC Safety
7. Project Manager makes one 3-day site visit at startup and one 3-day site visit during field operations

APPENDIX F

RESPONSIVENESS SUMMARY

APPENDIX F

RESPONSIVENESS SUMMARY

The Draft Final version of this document will be made available for public review for a period of 30 days. Comments received from the public will be reviewed and answers will be provided to the questions and/or comments received during the review period. Changes may be made to the document depending on the extent of the questions and the nature of the response required, e.g., additional information may be added or revisions made based on the public input.

The questions received and the responses generated will be included in this appendix of the final version of the documents.

APPENDIX G

QUALITY CONTROL REPORTS

00049217

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 001-06 **Date: 3/6/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation: N/A** **Temp.: 80** **Min. 50** **Max. 80**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
0	UXO TECH III	0		UXO Supervisor
0	UXO TECH II	0		UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck	3/6/06		3/6/06	2	3	0
Crew Truck	3/6/06		3/6/06	2	3	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
CAPE INC. General Orientation with crew. Locate sources of equipment and supplies. Establish site office and establish communications. Receive rental vehicles.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Initial Receipt Inspection for rental vehicles.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. Reviewed Work plan and Safety and Health Plan

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered).

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 3/6/06**
UXO QC/Safety Officer

00049219

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 002-06 **Date: 3/7/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation: N/A** **Temp.: 78** **Min. 55** **Max. 78**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
0	UXO TECH III	0		UXO Supervisor
0	UXO TECH II	0		UXO Technician
2	LABORER	16	CAPE	Support
1	CLERK	8	CAPE	Field Office Administrator

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	0	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
CAPE INC. Continue General Orientation with crew. Locate sources of equipment and supplies. Establish site office and establish communications..

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Walk through of area designated for Explosives Storage Magazine. Equipment Inventory. Identify Short Falls in Equipment and supplies.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered).

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/7/06

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 003-06 **Date: 3/8/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation: N/A** **Temp.: 79** **Min. 60** **Max. 79**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
0	UXO TECH III	0		UXO Supervisor
0	UXO TECH II	0		UXO Technician
2	LABORER	16	CAPE	Support
1	CLERK	8	CAPE	Field Office Administrator

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	0	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
CAPE INC. Continue General Orientation with crew. Locate sources of equipment and supplies. Establish site office and establish communications.. Meet with Jeff Baird for discussion regarding Survey and Geo Physics.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Equipment Inventory. Identify Short Falls in Equipment and supplies. Locate local equipment and services vendors.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered).

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/8/06

00049223

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 004-06 **Date: 3/9/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: AM Thunder Storms **Precipitation: ½ Inch** **Temp.: Min. 62 Max. 82**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
0	UXO TECH III	0		UXO Supervisor
0	UXO TECH II	0		UXO Technician
2	LABORER	16	CAPE	Support
1	CLERK	8	CAPE	Field Office Administrator
1	Geophysicist	7	RRR	Survey / Geophysics
1	GPS/Geo Operator	7	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	6	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Continue General Orientation with crew. Locate sources of equipment and supplies. Establish site office and establish communications.. Meet with Jeff Baird for discussion regarding Survey and Geo Physics and Transect Lay Out.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Identify Short Falls in Equipment and supplies. Locate local equipment and services vendors.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops. Severe Weather and Lightning.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Thunder Storms with Heavy Rain, Wind and Lightning started early morning. Admin Ops at hotel until storm passed approx 0930. Difficulty in locating a local Fence Company willing to take on such a small job with fence for explosives magazine.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __3/9/06__

00049225

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 005-06 **Date: 3/13/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: AM Thunder Storms **Precipitation: 1/4 Inch** **Temp.: Min. 60 Max. 75**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
~~1~~ 2	UXO TECH III	~~10~~ 20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	6	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Site Specific Training.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Site Training Requirements are being met in accordance with Work, Safety and Accident Prevention Plans.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops. Severe Weather and Lightning early morning. Site Specific Training.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Project Manager, Rob Vinson, on site. Corporate Safety and Health Officer, Glen Mayekawa, on site.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 3/13/06**
UXO QC/Safety Officer

00049227

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 006-06 **Date: 3/14/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 48 Max. 72**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	6	2	0
Crew Truck, Ford	3/14/06		3/14/06	1	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Continue Site Specific Training. Op Check Magnetometers in the GPO. Chain Saw and Brush Removal Training. Work Site and Transect Lay Out.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Site Training Requirements are being met in accordance with Work, Safety and Accident Prevention Plans. ***Initial Receipt Inspection on New Site Rental Vehicle.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. Material Received: (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. Submittals Reviewed:

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops. Site Specific Training Continues. Hands On Training for Magnetometers. Hands on Training for Chain Saws and Brush Removal Ops.

10. Remarks: (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Project Manager, Rob Vinson, on site. Attended Site Kick Off Meeting.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/14/06

00049229

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 007-06 **Date: 3/15/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	6	2	0
Crew Truck, Chev	3/6/06		3/6/06	6	2	0
Crew Truck, Ford	3/14/06		3/14/06	1	2	0
248B Cat Skid Steer	3/15/06		3/15/06	1	3	2

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).

Continue Site Specific Training. Op Check Magnetometers in the GPO. Chain Saw and Brush Removal Training. Work Site and Transect Lay Out. Initial Receipt inspection and Training with Operator for 248B Cat Skid Steer with Brush Head. Assembly and Inspection of ECHO Brush Saws

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Site Training Requirements are being met in accordance with Work, Safety and Accident Prevention Plans. ***Initial Receipt Inspection on 248B Cat Skid Steer.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops. Site Specific Training Continues. Hands On Training for Magnetometers. Hands on Training for Chain Saws and Brush Removal Ops. Training with Operator for 248B Cat Skid Steer with Brush Cutter Head. Observed Brush Removal activities.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). .

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: 3/15/06**
UXO QC/Safety Officer

00049231

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 008-06 **Date: 3/16/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	8	2	0
Crew Truck, Chev	3/6/06		3/6/06	8	2	0
Crew Truck, Ford	3/14/06		3/14/06	8	2	0
248B Cat Skid Steer	3/15/06		3/15/06	7	3	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).

Brush Removal Completed at Magazine Site Location. Transect Lay Out Area/ Site 27. Brush Ops Area/Site 53. Brush Removal Completed at Suspect Area 3 and Suspect Area 1. Approx. 75% complete with Suspect Area 2.

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. Material Received: (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. Submittals Reviewed:

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops Brief. General Safety and Vehicle Ops. Hands On Training for Magnetometers. Brush Removal activities. Survey / MEC Avoidance Activities.

10. Remarks: (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). .

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: 3/16/06**
UXO QC/Safety Officer

00049233

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 009-06 **Date: 3/17/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
	UXO TECH III	0	CAPE	UXO Supervisor
	UXO TECH II	0	CAPE	UXO Technician
	LABORER	0	CAPE	Support
	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	0	10	0
Crew Truck, Chev	3/6/06		3/6/06	0	10	0
Crew Truck, Ford	3/14/06		3/14/06	5	5	0
248B Cat Skid Steer	3/15/06		3/15/06	0	10	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 27. Equipment Maintenance and Repair. SOP Review.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). .

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: __3/17/06__**
UXO QC/Safety Officer

CAPE℠

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 010-06 **Date: 3/18/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: PM Thunder Storms Precipitation: ½ Inch **Temp.: Min. 45 Max. 72**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
	UXO TECH III	0	CAPE	UXO Supervisor
	UXO TECH II	0	CAPE	UXO Technician
	LABORER	0	CAPE	Support
	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	0	10	0
Crew Truck, Chev	3/6/06		3/6/06	0	10	0
Crew Truck, Ford	3/14/06		3/14/06	0	10	0
248B Cat Skid Steer	3/15/06		3/15/06	0	10	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 27 and Site 54.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered)..

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: __3/18/06__**
UXO QC/Safety Officer

00049237

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 011-06 **Date: 3/20/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Thunder Storms **Precipitation: 2 Inch** **Temp.: Min. 45 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	11	CAPE	UXO Supervisor
2	UXO TECH II	16	CAPE	UXO Technician
2	LABORER	11	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	0	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	3	7	0
Crew Truck, Chev	3/6/06		3/6/06	3	7	0
Crew Truck, Ford	3/14/06		3/14/06	3	7	0
248B Cat Skid Steer	3/15/06		3/15/06	0	10	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).

Planned Work: ***Transect Lay Out Area/ Site 27 and Site 54.Thunderstorms with heavy rain and lightning precluded field work. Completed a Standard Operating Procedures review for tasks pertaining to the Receipt, Storage, Transportation and Use of Explosives. General MEC Operations SOP and Intrusive / Excavation SOP Reviewed by all team personnel. 8 Hour Refresher On Line Course taken by personnel requiring updated training.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Severe Weather. Training / Admin Activities.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). .

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/20/06

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 012-06 **Date: 3/21/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool Precipitation: 2 – 4 " Last 48 Hours Temp.: Min. 40 Max. 63

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	8	2	0
Crew Truck, Chev	3/6/06		3/6/06	8	2	0
Crew Truck, Ford	3/14/06		3/14/06	8	2	0
248B Cat Skid Steer	3/15/06		3/15/06	6	4	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 27. Completed Brush Ops Site 53 Suspect Area # 2.. Brush Team began Transect Brush Ops Site 27 Transects 5 and 6.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Chain Saw and Brush Saw Safety. Briefed the M49A1 Trip Flare.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Area/ Site 27 moving slower than expected. Portion of the SW section of site flooded from recent heavy rains. Brush Ops at Site 53 Scarred Area # 1 Delayed due to approximately 12 inches of standing water covering the majority of the Grid. Place back into Brush Work when water recedes. Brush Team to Site 27. Site far too wet for effective use of Skid Steer with Brush Cutter Head. Proceeded with Transect Brush Ops by hand.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/21/06

CAPE℠

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 013-06 **Date: 3/22/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 55**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/6/06	8	2	0
Crew Truck, Chev	3/6/06		3/6/06	8	2	0
Crew Truck, Ford	3/14/06		3/14/06	8	2	0
248B Cat Skid Steer	3/15/06		3/15/06	6	4	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 27. Transect Brush Ops Site 27 Transects 1 and 2.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Initial Ops Inspection on new Brush Equipment on site. (2) Stihl MS 250 C Chain Saws and (1) FS 130 Brush Saw. All Passed Initial Inspection and Placed in Service.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Chain Saw and Brush Saw Safety. Vehicle Parking at Work Site. Park all vehicles pointed outward toward site exit. Keys will remain in vehicle at all times and immediately accessible to driver.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Area/ Site 27 moving slower than expected. Portion of the SW section of site flooded from recent heavy rains. Site far too wet for effective use of Skid Steer with Brush Cutter Head. Skid Steer Operator out sick today. Proceeded with Transect Brush Ops by hand. Production has been adversely effected by reduced number of personnel available to the project. Received additional brush equipment today that will reduce equipment shortages. Survey moved to Site 54 mid afternoon.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 3/22/06

00049243

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 014-06 **Date: 3/23/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 50**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/16/06	8	2	0
Crew Truck, Chev	3/6/06		3/16/06	8	2	0
Crew Truck, Ford	3/14/06		3/16/06	8	2	0
248B Cat Skid Steer	3/15/06		3/15/06	0	10	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
*Survey / **Transect Lay Out Area/ Site 54. Transect Brush Ops Site 27 Transects 2 and 3. Fence Contractor on site. Completed installation of Explosives Storage Magazine Security Fence.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Inspection of Explosives Storage Magazine Security Fence. Attached appropriate signage to fence which included: Fire Symbol, Class and Division Placard and No Smoking Sign. Signs are positioned to be immediately visible upon entry to the storage area. Fire Extinguisher available but not yet in place.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Chain Saw and Brush Saw Safety. Vehicle Parking at Work Site. Water Tankers are moving about the LHAAP area. Cape vehicles will give extra caution and attention to intersection on the installation. Some roads and intersections have limited visibility. Give water tankers the right of way.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Area/ Site 54 moving slower than expected. Some difficulty was experienced with Verification of the GPS Location Accuracy. Corrections were made in the afternoon. Portion of the SW section of site flooded from recent heavy rains. Site far too wet for effective use of Skid Steer with Brush Cutter Head. Skid Steer Operator out sick today. Proceeded with Transect Brush Ops by hand. Production has been adversely effected by reduced number of personnel available to the project.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: 3/23/06**
UXO QC/Safety Officer

00049245

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 015-06 **Date: 3/24/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Cool **Precipitation: None** **Temp.: Min. 40 Max. 50**

1. **Contract/Subcontractors and Area of Responsibility:**

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
2	LABORER	20	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. **Equipment.** **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Chev	3/6/06		3/24/06	8	2	0
Crew Truck, Ford	3/14/06		3/24/06	8	2	0
248B Cat Skid Steer	3/15/06		3/24/06	8	2	0

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Survey / Transect Lay Out Area/ Site 54. Transect Brush Ops Site 27 Transects 4 and 8. Brush Contractor on site. Site Visit for Bid Proposal.

4. **Control Activities Performed:**
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Fire Extinguisher placed at Explosives Storage Area to complete storage requirements.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Chain Saw and Brush Saw Safety. Weekly Vehicle Safety Inspections. Reviewed MV-37A2 Signal and M142 Atomic Simulator. Site Visitor Safety Brief and Escort.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Area/ Site 54 moving slower than expected but should be finished 3/27/06. Some difficulty was experienced with Verification of the GPS Location Accuracy. Electronic Transit used for Survey. Portion of the SW section of Site 27 flooded from recent heavy rains. Trying to use Skid Steer with Brush Cutter Head. Skid Steer Operator returned to work today. Team 1 Proceeded with Transect Brush Ops by hand. Production has been adversely effected by reduced number of personnel available to the project. Received word from PM this afternoon that we will Demob all but (4) Personnel from the site at the end of the work day.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be ~~noted~~ above.

James H. Vance
UXO QC/Safety Officer

Date: 3/24/06

00049247

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 016-06 **Date: 3/27/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation: ¼ Inch** **Temp.: Min. 50 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
1	UXO TECH III	8	CAPE	UXO Supervisor
1	UXO TECH II	8	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	8	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Chev	3/6/06	3/27/06	3/24/06	3	0	0
Crew Truck, Ford	3/14/06		3/24/06	8	2	0
248B Cat Skid Steer	3/15/06	3/24/06	3/24/06	0	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Survey / Transect Lay Out Area/ Site 54 and 27. Mark Transects Site 54 and 27 for future brush ops.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).
Remarked and placed guide stakes at transect start points to assist in maintaining direction of brush cut at 125 Degrees in Site 27 and 148 Degrees in Site 54.

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted). ***Survey Completed with placement of Transect End Points and Guide Stake Angle being applied. Survey is adequate to allow transect line placement and brush cutting.***

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Survey /MEC Avoidance Activities. Chain Saw and Brush Saw Safety.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). *Completed* ***Transect End Point Location Lay Out Site 54. Completed Same at Site 27. Skid Steer not yet picked up by Holt Equipment. Turned in (1) Rental Vehicle. (4) UXO Personnel remain on site. Jeff Baird will demob 3/28/06.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 3/27/06**
UXO QC/Safety Officer

00049249

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 017-06 **Date: 3/28/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation: ½ to 1 Inch** **Temp.: Min. 50 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
1	UXO TECH III	8	CAPE	UXO Supervisor
1	UXO TECH II	8	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	0	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Chev	3/6/06	3/27/06	3/24/06	3	0	0
Crew Truck, Ford	3/14/06		3/24/06	8	2	0
248B Cat Skid Steer	3/15/06	3/24/06	3/24/06	0	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 54. Brush Cut Transect # 7 Site 54.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

CAPE SM

00049250

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Chain Saw and Brush Saw Safety.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Site 54. Brush Cutting Transect # 7 Site 54. Will use Transect # 7 as a Boundary Lane for the Mortar Test Area at the South and West Quadrant of the Site. Skid Steer picked up by Holt Equipment Jeff Baird (RRR) Geophysicist Demob. (4) UXO Personnel remain on site. Fort Worth COE Safety Rep. departed area approx. 1200 with no return date.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 3/28/06**
UXO QC/Safety Officer

00049251

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 018-06 **Date: 3/29/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation:** **Temp.: Min. 50 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
1	UXO TECH III	8	CAPE	UXO Supervisor
1	UXO TECH II	8	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	0	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Ford	3/14/06		3/24/06	8	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 54. Completed Brush Cut Transect # 7 Site 54.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Chain Saw and Brush Saw Safety.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Site 54. Completed Brush Cutting Transect # 7 Site 54. (4) UXO Personnel remain on site. Brush Timber Contractor on site this afternoon for site visit.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance
UXO QC/Safety Officer

Date: 3/29/06

00049253

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 019-06 **Date: 3/30/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation:** **Temp.: Min. 50 Max. 70**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
1	UXO TECH III	8	CAPE	UXO Supervisor
1	UXO TECH II	8	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	0	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Ford	3/14/06		3/24/06	8	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 54.

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Chain Saw and Brush Saw Safety.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Transect Lay Out Site 54. (4) UXO Personnel remain on site. Brush / Timber Contractor on site this afternoon for site visit.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance
UXO QC/Safety Officer

Date: __3/30/06__

00049255

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 020-06 **Date: 3/31/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation:** **Temp.: Min. 50 Max. 70**

1. **Contract/Subcontractors and Area of Responsibility:**

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	8	CAPE	Senior UXO Supervisor
1	QC / SAFETY	8	CAPE	Quality Control / Safety
1	UXO TECH III	8	CAPE	UXO Supervisor
1	UXO TECH II	8	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	0	RRR	Survey / Geophysics
	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. **Equipment.** **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	3/6/06		3/24/06	8	2	0
Crew Truck, Ford	3/14/06	3/31/06	3/31/06	8	2	0

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number).
Transect Lay Out Area/ Site 54. Prepare equipment for demob of remaining crew at end of work day. Turn in rental vehicles. Complete weekly paperwork and secure site office. Store equipment in trailers on site.

4. **Control Activities Performed:**
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. Material Received: (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. Submittals Reviewed:

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Chain Saw and Brush Saw Safety.

10. Remarks: (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***(4) UXO Personnel remain on site. Brush / Timber Contractor on site this afternoon for site visit. Turned in (1) rental vehicle. The other one will be turned in 4/1/06. Secured equipment in trailers. Office equipment and phone remains in place for our return. Demobilize site with return date at this time of 9 April 06..***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 3/31/06**
UXO QC/Safety Officer

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 021-06 **Date: 6/12/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear Hot **Precipitation: None** **Temp.: Min. 60 Max. 96**

1. **Contract/Subcontractors and Area of Responsibility:**

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
1	UXO TECH III	10	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. **Equipment.** **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/12/06	1	0	0
Crew Truck, Dodge	6/12/06		6/12/06	1	0	0
Crew Truck, Dodge	6/12/06		6/12/06	1	0	0

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Site Specific Training for New Personnel. Update Training for Returning Personnel. Transect Lay Out Area/ Site 54. Prep for Geophysics.***

4. **Control Activities Performed:**
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).
Initial Receipt Inspection for Rental Vehicles.

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

CAPE SM

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Site Specific Training for new personnel. Review for Returning Personnel. General Safety and Vehicle Ops. Brush Saw Safety. Slip, Trip, Fall. Insects, Snakes and Poison Plants.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Loran Poindexter MOB today for work 6/13/06. All other personnel present. RRR Geophysical Sub Contractor on site with 4 personnel.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: 6/12/06**
UXO QC/Safety Officer

00049259

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 022-06 **Date: 6/13/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear Hot **Precipitation: None** **Temp.: Min. 60 Max. 96**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/12/06	8	2	0
Crew Truck, Dodge	6/12/06		6/12/06	8	2	0
Crew Truck, Dodge	6/12/06		6/12/06	8	2	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Update Training for Returning Personnel. Transect Lay Out Area/ Site 54 and Site 27. Prep for Geophysics. Transect Surface Clearance Site 54. Gather materials and supplies.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

CAPE SM

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Review for Returning Personnel. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***All assigned personnel have arrived at the site.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/13/06

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 023-06 **Date: 6/14/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear Hot **Precipitation: None** **Temp.: Min. 60 Max. 96**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/12/06	10	0	0
Crew Truck, Dodge	6/12/06		6/12/06	10	0	0
Crew Truck, Dodge	6/12/06		6/12/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Transect Lay Out Area/ Site 27. Prep for Geophysics. Transect Surface Clearance Site 54. Limited Brush / Vegetation Removal Site 27. Completed 99% of transect lay out for areas 54 and 27. Limited Brush / Vegetation Removal remaining for Site 27. Test and Evaluate Geophysical Data Collection Instruments (EM-61).***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Experiencing some delay with Test and Verification of the EM-61 Geophysical Data Collection Instrument. Hardware problems were corrected. Software may be the source of present problems and delay in data collection efforts. Anticipate EM-61 to be on line with data collection at Site 54 on 6/15/06.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

_____

James H. Vance **Date: __6/14/06__**
UXO QC/Safety Officer

00049263

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 024-06 **Date: 6/15/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear Warm **Precipitation: None** **Temp.: Min. 60 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/12/06	10	0	0
Crew Truck, Dodge	6/12/06		6/12/06	10	0	0
Crew Truck, Dodge	6/12/06		6/12/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Geophysics Test and Calibration for Data Collection with EM-61. Transect Surface Clearance Site 54. Limited Brush / Vegetation Removal Site 27. Data collection Site 27. Received Explosives Magazine. Completed grounding and resistance test on magazine. Received Explosives.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***QCI-001-06, Storage of Explosives FAILED. Have More Quantity on hand than allowed by Work Plan. See Also NCR-001-06.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**
	2000 feet	**Det Cord**	**Magazine**	**X**		
	100 ea	**Cast Boosters**	**Magazine**	**X**		
	100 ea	**Electric Caps**	**Magazine**	**X**		

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Test and Verification of the EM-61 Geophysical Data Collection Instrument completed this morning with satisfactory results. Begin Geophysical Data Collection Site 27.Completedvegetation removal transect 18 of Site 27. Sam Thomas had a death in the family and departed the site approx. 0900***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance
UXO QC/Safety Officer

Date: 6/15/06

00049265

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 025-06 **Date: 6/16/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast Warm **Precipitation: Rain Afternoon** **Temp.: Min. 60 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Geophysics Test and Calibration for Data Collection with EM-61. Transect Surface Clearance Site 54. Data collection Site 27 and 54. Demo Ops for Training and to Reduce Quantity on hand. Vehicle Safety Inspections. Explosives Inventory. Weekly Admin and Maintenance.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***QCI-001-06 FAILED. See also NCR-001-06 (Non Conformance Report) Remedy / Corrective Action Taken 6/16/06. See QCI-002-06 (Re Inspection).***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***QCI-002-06. Follow Up / Re Inspection of Explosives Storage. In Compliance with Work Plan. See also NCR-001-06.***

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Storage, Transportation and Use of Explosives. Demolition Ops. Thunder Storms and Lightning Precautions.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Test and Verification of the EM-61 Geophysical Data Collection Instrument Number 2 completed with satisfactory results. Continued Geophysical Data Collection Site 27 and 54. Demo Ops Site 54 with Team 2. Loran Poindexter Demo Team Leader. Sam Thomas had a death in the family and departed the site approx. 0900 6/15/06 for Bereavement Leave.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance
UXO QC/Safety Officer

Date: 6/16/06

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 026-06 **Date: 6/19/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation: None** **Temp.: Min. 67 Max. 93**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
CAT 304CR Trackhoe	6/19/06		6/19/06	5	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Geophysics Test and Calibration for Data Collection with EM-61. Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 54 and 53. Completed Data Collection Site 54. Begin Data Collection Ops Site 53.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Initial Receipt Inspection of CAT 304CR Mini Track Hoe received from Holt Equipment.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Completed Data Collection in Site 54. Begin Ops in Site 53. Geo experiencing difficulty with Robotic Total Station. Sam Thomas had a death in the family and departed the site approx. 0900 6/15/06 for Bereavement Leave. Should return to work site 6/20/06.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/19/06

00049269

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 027-06 **Date: 6/20/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 66 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	~~20~~ 18	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/19/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Geophysics Test and Calibration for Data Collection with EM-61. Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 53 and 27. Data Collection Ops Site 53. Received Grid Sheets for 6 Transects in Site 27. Begin Anomaly Reacquisition Site 27 Transects 6,7,9,10,13 and 19.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Reviewed Cape Temperature Stress Program. Begin Physiological Monitoring Procedures.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Data Collection Ops in Site 53. Geo experiencing difficulty with Robotic Total Station. Geo Shifted to manual mode for data collection. Reacquiring Anomaly Locations in Site 27 by manual tape method. (LHAAP Work Plan Para. 3.2.6) Sam Thomas returned to site this morning.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __6/20/06__

00049271

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 028-06 **Date: 6/21/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 66 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
3	GPS/Geo Operator	30	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/19/06	10	0	0
Honda 4x4 ATV	6/12/06		6/16/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Geophysics Test and Calibration for Data Collection with EM-61. Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 53 and 27. Completed Data Collection Ops Site 53. Received Additional Grid Sheets for Site 27. Continue Anomaly Reacquisition Site 27. QC Surveillance Site 27 Transects 6, 7, 9 and 10. Intrusive Ops. Site 27 Transects 19 and 18.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***QC Surveillance Site 27 Transects 6, 7, 9 and 10. See QC Surveillance Report # 10.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Completed Data Collection Ops in Site 53 in manual mode. Continued Reacquiring Anomaly Locations in Site 27 by manual tape method. (LHAAP Work Plan Para. 3.2.6). (2) Members of Geo Team (RRR) will depart site this afternoon. Will receive (1) New member on 6/22/06. Will have (2) members of RRR on site.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/21/06

00049273

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 029-06 **Date: 6/22/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 70 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
2	GPS/Geo Operator	20	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
Crew Truck, Dodge	6/12/06		6/16/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/19/06	10	0	0
Honda 4x4 ATV	6/12/06		6/16/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 53 and 27. Survey Ops Site 53. Received Additional Grid Sheets for Site 27. Continue Anomaly Reacquisition Site 27. Intrusive Ops. Site 27. QC Surveillance Intrusive Investigation Dig Teams 1 and 2. QC Surveillance Anomaly Reacquisition Transect 18B of Site 27. QC Inspection Transect 18B and 17 North of Creek.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***QC Surveillance Site 27. See QC Surveillance Report # 11, 12 and 13.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed QC Inspection Site 27 Transect 18B and 17 North of Creek with satisfactory results. Ready for Government QA Inspection. See QC Inspection 003-06.***

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken). ***Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances.***

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Continued Reacquiring Anomaly Locations in Site 27 by manual tape method. (LHAAP Work Plan Para. 3.2.6). Received (1) New Geo Team member today. Have (2) members of RRR on site.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/22/06

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 030-06 **Date: 6/23/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 70 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
2	GPS/Geo Operator	20	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/23/06	10	0	0
Honda 4x4 ATV	6/12/06		6/23/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 53 and 27. Survey Ops Site 53. Received Additional Grid Sheets for Site 27. Continue Anomaly Reacquisition Site 27. Intrusive Ops. Site 27. Re Collected Data from 850' mark to end at Site 27 Transect # 2. QC Inspection Transect 19, 18A, and 17 Complete. Ready for QA.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed QC Inspection Site 27 Transect 19,18A and 17 with satisfactory results. Ready for Government QA Inspection. See QC Inspection 004-06.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Weekly Vehicle Safety Inspections. Explosives Storage Area Inspection. Weekly Explosives Inventory. No Discrepancies Noted.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Re Collected Geophysical Data on Site 27 Transect # 2 from the 850' mark to end. Suspended Intrusive Ops Site 27 Transect # 7. This transect passes within 100' of an old Open Detonation Area. It is what may be considered Saturated with anomalies just under the surface. Will discuss this and similar transects with SUXOS and on site COE Safety Specialist to determine appropriate course of action.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/23/06

00049277

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 031-06 **Date: 6/26/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 64 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
2	GPS/Geo Operator	20	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/23/06	10	0	0
Honda 4x4 ATV	6/12/06		6/23/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 27 and 54. Received Additional Grid Sheets for Site 27 and 54. Continue Anomaly Reacquisition Site 27. Intrusive Ops. Site 27. QC Inspection Site 27 Transect 15 and 16 Complete. Ready for QA.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed QC Inspection Site 27 Transect 15 and 16 with satisfactory results. Ready for Government QA Inspection. See QC Inspection 005-06.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Discussed Site 27 Transect 7 with SUXOS and COE Safety Specialist. to determine appropriate course of action. Completed Reacquisition of all anomalies in Site 27 except Transect # 8. Have not received this dig sheet.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance
UXO QC/Safety Officer

Date: 6/26/06

00049279

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 032-06 **Date: 6/27/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 65 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
2	UXO TECH III	20	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	9.5	CAPE	Support
1	CLERK	9.5	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
2	GPS/Geo Operator	20	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/23/06	10	0	0
Honda 4x4 ATV	6/12/06		6/23/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 27 and 54. Received Additional Grid Sheets for Site 54. Continue Anomaly Reacquisition Site 54. Intrusive Ops. Site 27. QC Inspection Site 27 Transect 20, 21 and 22 Complete. Ready for QA.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed QC Inspection Site 27 Transect 20, 21 and 22 with satisfactory results. Ready for Government QA Inspection. See QC Inspection 006-06.***

CAPE℠

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Anomaly reacquisition Site 54 and 53. Completed Reacquisition of all anomalies in Site 27 except Transect # 8. Have not received this dig sheet.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/27/06

00049281

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 033-06 **Date: 6/28/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 65 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
2	GPS/Geo Operator	20	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/23/06	10	0	0
Honda 4x4 ATV	6/12/06		6/23/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 27 and 54. Received Additional Grid Sheets for Site 54. Continue Anomaly Reacquisition Site 54. Intrusive Ops. Site 27. Completed Anomaly Reacquisition Site 53.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Authorized Visitor Safety Brief. Site Specific Training for new Team Member Jeff Yonuss.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Anomaly reacquisition Site 54 and 53. Completed Reacquisition of all anomalies in Site 27 except Transect # 8. Have not received this dig sheet. Geo Data Re Collected for Transect # 8 from 1000' mark to end. Authorized Site Visitor from BRAC office on site this afternoon. Visited Sites 53, 54 and 27. Walk through and orientation of Site 27. Observed Team Operations. Visitor Escorted by SUXOS and COE Safety. Cape UXO Program Manager also on Site for Public Meetings and Brief with Regulators. Was not authorized down range by COE Safety Specialist because he had not been included as an Authorized Visitor.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/28/06

00049283

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 034-06 **Date: 6/29/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 65 Max. 92**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
0	QC / SAFETY	0	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
1	GPS/Geo Operator	10	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
Crew Truck, Dodge	6/12/06		6/23/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/23/06	10	0	0
Honda 4x4 ATV	6/12/06		6/23/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 27 and 54. Received Additional Grid Sheets for Site 54. Continue Anomaly Reacquisition Site 54. Intrusive Ops. Site 27.Completed intrusive investigation of Transect 14.***

4. Control Activities Performed:

Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Authorized Visitor Safety Brief. Jeff Yonuss Temporary Site Safety for the day.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Anomaly reacquisition Site 54. Completed Reacquisition of all anomalies in Site 27 except Transect # 8. Have not received this dig sheet. Authorized Site Visitor from EPA from 1100 to 1200. Visitor Escorted by SUXOS and COE Safety.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __6/29/06__

00049285

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 035-06 **Date: 6/30/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear / Partly Cloudy **Precipitation: None** **Temp.: Min. 65 Max. 94**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
1	GPS/Geo Operator	10	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/30/06	10	0	0
Honda 4x4 ATV	6/12/06		6/30/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 27 and 54. Complete Anomaly Reacquisition Site 27. Continue Anomaly Reacquisition Site 54. Intrusive Ops. Site 27.Completed intrusive investigation of Transect 13. Continue delineation of Former OB/OD Area in Site 27. Transects impacted at this time are 6,7,8,9,10. Portions of Transects 11 and 12 may also be impacted and included in the footprint area of the Former OB/OD Area.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

CAPE℠

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Weekly Vehicle Safety Inspections. Weekly Explosives Inventory.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Geophysical Instruments and hand held magnetometers. Anomaly reacquisition Site 54. Completed Reacquisition of all anomalies in Site 27.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 6/30/06

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 036-06 **Date: 7/3/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy/ Rain **Precipitation: ¼ Inch.** **Temp.: Min. 68 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/30/06	10	0	0
Honda 4x4 ATV	6/12/06		6/30/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Ordnance Avoidance Activities Sites 54. Complete Anomaly Reacquisition Site 54. Intrusive Ops. Site 27. Completed intrusive investigation of Transects 12 and 8. Teams continue intrusive investigation of Transects 11 and 7. Continue delineation of Former OB/OD Area in Site 27. Transects impacted and included in the foot print area of the Former OB/OD Area at this time are 6,7,8,9,10.and 11. Transect 11 runs directly through the Photoflash Bomb Test Area. Completed Quality Control Inspection on Transects 14, 13, 12, 10, 9 and 6 with Satisfactory Results. See QCI Report 008-06.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection on Transects 14, 13, 12, 10, 9 and 6 with Satisfactory Results. See QCI Report 008-06.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results:

6. Material Received: (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. Submittals Reviewed:

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Lightning Precautions. Observed Teams performing intrusive ops Site 27. Good work practices and use of PPE.

10. Remarks: (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Anomaly reacquisition Site 54 complete. Visual Inspection of Explosives Storage Area. Thunder Storms After noon. Observed Lightning Precautions from 1315 to 1420.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 7/3/06

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 037-06 **Date: 7/5/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy/ Rain **Precipitation: ¼ Inch.** **Temp.: Min. 70 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/30/06	10	0	0
Honda 4x4 ATV	6/12/06		6/30/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 27. Completed intrusive investigation of Transects 11. Added 200 foot of Transect at the north Ends of Transects 6 and 7. Completed Intrusive Investigation of these additional areas by Mag and Dig Ops. Begin Intrusive Investigation Site 54. Completed Anomaly Investigation Transect 22 Site 54.Completed Quality Control Inspection on Transects 11, 8 and 7 with Satisfactory Results. See QCI Report 009-06. Completed Quality Control Inspection of 200 foot additions on Transects 6 and7 with Satisfactory Results. See QCI Report 010-06***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements,

and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection on Transects 11, 8 and 7 with Satisfactory Results. See QCI Report 009-06. Completed Quality Control Inspection of 200 foot additions on Transects 6 and7 with Satisfactory Results. See QCI Report 010-06***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Intrusive Ops. Site Control. MSD. Team Distances. Lightning Precautions. Observed Teams performing intrusive ops Site 27 and 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV. Scrap collection Site 27.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of all Transects Site 27. Collected and consolidated all scrap at Site 27. Received request from COE Safety to Extend the North Ends of Transects 6 and 7 by 200 feet each. This action was accomplished and Intrusive Investigation completed with Mag and Dig Procedures. Begin Intrusive Ops. Site 54. Completed Transect 22 Site 54.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: __7/5/06__**
UXO QC/Safety Officer

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 038-06 **Date: 7/6/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 68 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
Crew Truck, Dodge	6/12/06		6/30/06	10	0	0
CAT 304CR Track Hoe	6/19/06		6/30/06	10	0	0
Honda 4x4 ATV	6/12/06		6/30/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transects 11 and 21. Completed Quality Control Inspection on Transects 11, 21 and 22 Site 54 with Satisfactory Results. See QCI Report 011-06.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection on Transects 11, 21 and 22 Site 54 with Satisfactory Results. See QCI Report 011-06.***

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 11 and 21 Site 54. Fish and Game requested entry to Site 54 at approximately 1530 for maintenance of weather station. Caused little delay to ops at the end of the day.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 7/6/06**
UXO QC/Safety Officer

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 039-06 **Date: 7/7/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 68 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
CAT 304CR Track Hoe	6/19/06		7/7/06	10	0	0
Honda 4x4 ATV	6/12/06		7/7/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transects 20 and 12 Site 54. Demolition Ops. Site 27. Explosives Inventory.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Surveillance for Storage and Transportation of Explosives with Satisfactory Results.***

CAPE SM

See QCS Report 014-06. Completed Quality Control Inspection for Demolition Procedures with Team # 2 at Site 27 with Satisfactory Results. See QCI Report 012-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:** ***Pre Demolition and Post Demolition Soil Samples taken at Site 27. Completed paperwork,, preservation and packaging and shipping of samples.***

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. Vehicle Safety Inspections. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Inspection of Explosives Storage Area. Transportation of Explosives. Demolition Ops. Site 27. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 20 and 12 Observed Team # 2 during Demolition Operations. This team performed all tasks in a Safe and Efficient Manner.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 7/7/06

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 040-06 **Date: 7/10/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 68 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/7/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transect 19 Site 54. Clean up of Site 27. Removing all stakes, ribbon and flags.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection for Transects 12, 19 and 20 Site 54 with Satisfactory Results. See QCI***

CAPE SM

Report 013-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transect 19. Mini Track Hoe Off Charge 7/7/06. Awaiting Pick Up.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: __7/10/06__**
UXO QC/Safety Officer

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 041-06 **Date: 7/11/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 96**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/7/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transect 18, 13, 1 and 2 Site 54. Clean up of Site 27. Brush Trimming Site 53, GPO and Explosives Storage Area.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV and brush trimming ops.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transect 18, 13, 1 and 2.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: __7/11/06__**
UXO QC/Safety Officer

00049299

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 042-06 **Date: 7/12/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 98**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/7/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transect 17, 3, 4, 5, 6 and 7 Site 54. Brush Trimming Site 53, GPO and Explosives Storage Area.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality***

CAPE SM

Control Inspection of Transects 1, 2, 3 and 4 Site 54 with satisfactory results. See QCI Report 014-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV and brush trimming ops.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transect 17, 3, 4, 5, 6 and 7 Site 54. Extended Transects 3, 4 and 5 by an additional 100 feet at North end. Placed additional Transect between Transects 3 and 4 at the Mortar Test Site. This transect will cover approximately 200 feet inside Test Area Back Stop and 200 feet North of Back Stop in "Overshoot Area".***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __7/12/06__

CAPE[SM]

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 043-06 **Date: 7/13/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 100**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
Crew Truck, Dodge	6/12/06		7/7/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/7/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transects 8 and 9 Site 54. Brush Trimming Site 54.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection of Transects 5, 6, 7, 8, 9 and 13 Site 54 with satisfactory results. See QCI***

Report 015-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV and brush trimming ops.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 8 and 9 Site 54. Completed Brush Removal for Extended Transects 3, 4 and 5 at North end. Completed Brush Removal for Additional Transects and Placement of Grids between Transects 3 and 4 at the Mortar Test Site. This area has an Addition of Transect and Grids which covers approximately 200 feet inside Test Area Back Stop and Additional Transects 200 feet North of Back Stop in "Overshoot Area".***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 7/13/06

00049303

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 044-06 **Date: 7/14/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 100**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
2	UXO TECH II	20	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/14/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transects 16 and 10 Site 54. Brush Trimming Site 54.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality Control Inspection of Transects 18, 17 and 16 Site 54 with satisfactory results. See QCI Report***

5. Tests Performed and Test Results:

6. Material Received: (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. Submittals Reviewed:

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV and brush trimming ops. Vehicle Safety Inspections. Explosives Inventory.

10. Remarks: (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 16 and 10 Site 54.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 7/14/06

00049305

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 045-06 **Date: 7/17/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 105**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
3	UXO TECH II	30	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/14/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54. Completed intrusive investigation of Transect 15, the 100 foot extensions at north end of Transects 3, 4 and 5 and Added Transects / Grids 4B-3 and 4B-4 at Site 54.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality***

Control Inspection of Transect 10, the 100 foot extensions at north end of Transects 3, 4 and 5 and Added Transects / Grids 4B-3 and 4B-4 at Site 54 with satisfactory results. See QCI Report 017-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV. Site Specific Training for Mark Simmonds.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 15, the 100 foot extensions at north end of Transects 3, 4 and 5 and Added Transects / Grids 4B-3 and 4B-4 at Site 54. High Heat Conditions. Physiological Monitoring Procedures are proving to be effective.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 7/17/06**
UXO QC/Safety Officer

00049307

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 046-06 **Date: 7/18/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 105**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
3	UXO TECH II	30	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/14/06	10	0	0

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 54 and 53. Completed intrusive investigation of Transect 14, and Added Transects / Grids 4B-1 and 4B-2 at Site 54. Begin Intrusive Ops. Site 53 at Grid # 4.***

4. **Control Activities Performed:**
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality***

Control Inspection of Transect 14, 15 and Added Transects / Grids 4B-1 and 4B-2 at Site 54 with satisfactory results. See QCI Report 018-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 54 and Site 53. Good work practices and use of PPE. Observed operation of Honda 4x4 ATV.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Transects 14 and Added Transects / Grids 4B-1 and 4B-2 at Site 54. High Heat Conditions. Physiological Monitoring Procedures are proving to be effective.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 7/18/06**
UXO QC/Safety Officer

00049309

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 047-06 **Date: 7/19/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 78 Max. 105**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
3	UXO TECH II	30	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Honda 4x4 ATV	6/12/06		7/14/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 53. Completed intrusive investigation of Grids 3 and 4 Site 53. Started Intrusive Ops Grid # 1.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 53. Good work practices and use of PPE.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Grids 3 and 4 Site 53. High Heat Conditions. Physiological Monitoring Procedures. Begin Intrusive Ops Grid # 1 Site 53. Mag and Dig Procedures will be used to complete this Grid. Survey of Anomalies (Reacquisition) was not correctly placed. The results of intrusive investigation thus far on Grid # 1 are not consistent with results that should have been achieved regarding anomaly location or anomaly response..***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: __7/19/06__**
UXO QC/Safety Officer

CAPE SM

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 048-06 **Date: 7/20/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 75 Max. 105**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
3	UXO TECH II	30	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
Crew Truck, Dodge	6/12/06		7/14/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06		7/20/06	4	0	0
Honda 4x4 ATV	6/12/06		7/14/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 53. Completed intrusive investigation of Grid # 1 Site 53. Started Intrusive Ops Grid # 2. Demolition Ops Site 54 with Team 2.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality***

Control Inspection of Grids 3 and 4 Site 53 with satisfactory results. See QCI Report 019-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:** ***Pre Demolition and Post Demolition Soil Samples taken at Site 54. Completed paperwork, preservation and packaging and shipping of samples.***

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 53. Good work practices and use of PPE. Heavy Equipment Ops Site 53. Demolition Ops Site 54.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Grid 1 Site 53. Demolition Ops Site 54. High Heat Conditions. Physiological Monitoring Procedures. Begin Intrusive Ops Grid # 2 Site 53. Mag and Dig Procedures used to complete Grid # 1. Satisfactory results have been achieved with the Mag and Dig Procedures. Received Teramite Mini Back Hoe on site this afternoon for use investigating Grid # 2 of Site 53. Start Clean Up Ops Site 54.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: 7/20/06

00049313

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 049-06 **Date: 7/21/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Partly Cloudy **Precipitation:** **Temp.: Min. 75 Max. 105**

1. **Contract/Subcontractors and Area of Responsibility:**

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
3	UXO TECH III	30	CAPE	UXO Supervisor
3	UXO TECH II	30	CAPE	UXO Technician
1	LABORER	10	CAPE	Support
1	CLERK	10	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. **Equipment.** **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06		7/21/06	10	0	0
Honda 4x4 ATV	6/12/06		7/21/06	10	0	0

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Intrusive Ops. Site 53. Completed Intrusive Ops Grid # 2 Site 53. Clean Up Site 54. Scrap collection and containerizing.***

4. **Control Activities Performed:**
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Quality***

Control Inspection of Grids 1 and 2 Site 53 with satisfactory results. See QCI Report 020-06.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area. Intrusive Ops. Site Control. MSD. Team Distances. Observed Teams performing intrusive ops Site 53. Good work practices and use of PPE. Heavy Equipment Ops Site 53.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Completed Intrusive Investigation of Grid 2 Site 53. High Heat Conditions. Physiological Monitoring Procedures. Begin Intrusive Ops Grid # 2 Site 53. Teramite Mini Back Hoe Ops investigating Grid # 2 of Site 53. Start Clean Up Ops Site 54. Completed Site Intrusive Ops. Will Demob Part of Crew over weekend. Will Have 4 personnel on site next week for close out.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 7/21/06**
UXO QC/Safety Officer

00049315

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 050-06 **Date: 7/24/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation:** **Temp.:** **Min. 70** **Max. 100**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
1	UXO TECH III	10	CAPE	UXO Supervisor
1	UXO TECH II	10	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06		7/21/06	10	0	0
Honda 4x4 ATV	6/12/06		7/21/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Survey Ops Site 54. Clean Up Site 54. Scrap consolidation and containerizing at Site 54.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Visual Inspection of Explosives Storage Area.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. High Heat Conditions. Physiological Monitoring Procedures. Clean Up Ops Site 54. EPA on Site this afternoon. Escorted by SUXOS and COE Safety.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance

James H. Vance **Date: 7/24/06**
UXO QC/Safety Officer

00049317

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 051-06 **Date: 7/25/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Clear **Precipitation:** **Temp.:** **Min. 70** **Max. 100**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
1	UXO TECH III	10	CAPE	UXO Supervisor
1	UXO TECH II	10	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06		7/21/06	10	0	0
Honda 4x4 ATV	6/12/06		7/21/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Survey Ops Site 53. Clean Up Site 54. Scrap consolidation and containerizing at Site 54.Demolition Ops. Destroyed all remaining Demolition Explosives.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. Physiological Monitoring Procedures. Demolition Ops. Transportation and Use of Explosives.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. High Heat Conditions. Physiological Monitoring Procedures. Consolidated and Containerized Scrap Site 54. Sealed and Labeled all containers (Drums) for shipment. Destroyed all remaining on hand stocks of Demolition Explosives. No Explosives Stored On Site. Magazine is empty and ready to be returned to the vendor.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance **Date: 7/25/06**
UXO QC/Safety Officer

00049319

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 052-06 **Date: 7/26/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation: Light Rain** **Temp.: Min. 70 Max. 95**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
1	UXO TECH III	10	CAPE	UXO Supervisor
1	UXO TECH II	10	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
1	Geophysicist	10	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. (Not hand tools)

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06		7/21/06	10	0	0
Crew Truck, Dodge	6/12/06	7/26/06	7/21/06	10	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06		7/21/06	10	0	0
Honda 4x4 ATV	6/12/06		7/21/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Operational Checks for hand held magnetometers. Survey Ops Site 27 and 54. Scrap consolidation and containerized at Site 54 and ready for shipment. Explosives Magazine removed from site by Austin Powder.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. Insects, Snakes and Poison Plants. Heat Conditions and Hydration. ATV and Teramite Ops.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Observed Operational Checks for Hand Held Magnetometers. Scrap Containerized at Site 54. Containers (Drums) Sealed, Labeled and ready for shipment. Scrap dealer did not show today as scheduled. Explosives Magazine removed from site.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __7/26/06__

00049321

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 053-06 **Date: 7/27/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation: Rain** **Temp.:** **Min. 70**
Max. 90

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
1	UXO TECH III	10	CAPE	UXO Supervisor
1	UXO TECH II	10	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06	7/27/06	7/21/06	10	0	0
Crew Truck, Dodge	6/12/06	7/26/06	7/21/06	~~10~~ 0	0	0
Crew Truck, Dodge	6/12/06		7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06	7/27/06	7/21/06	10	0	0
Honda 4x4 ATV	6/12/06		7/21/06	10	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Containers of scrap removed from site by scrap dealer. Teramite mini Backhoe turned in to local rental company. Maroon Ford truck turned in to Enterprise. Pre Demob equipment pack and records maintenance.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification

requirements, and corrective actions taken when deficiencies are noted).

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. Comm Checks. General Safety and Vehicle Ops. Slip, Trip, Fall. ATV and Teramite Ops. Weather conditions. Possible Thunder Storms.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). ***Preparation for Demobilization.***

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __7/27/06__

00049323

Cape Environmental Management Inc

DAILY QUALITY CONTROL REPORT

Daily Report No.: 054-06 **Date: 7/28/06**
Contract No.: W912BV-04-D-2019 **DO No.: DY04**
Contract Title: EE/CA at Longhorn Army Ammunition Plant

Weather: Overcast **Precipitation: Rain** **Temp.: Min. 70 Max. 90**

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/ DESCRIPTION WORK
1	SUXOS	10	CAPE	Senior UXO Supervisor
1	QC / SAFETY	10	CAPE	Quality Control / Safety
0	UXO TECH III	0	CAPE	UXO Supervisor
0	UXO TECH II	0	CAPE	UXO Technician
0	LABORER	0	CAPE	Support
0	CLERK	0	CAPE	Field Office Administrator
0	Geophysicist	0	RRR	Survey / Geophysics
0	GPS/Geo Operator	0	RRR	Survey / Geophysics

2. Equipment. **(Not hand tools)**

Plant/Equipment	Arrival Date	Departure Date	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Crew Truck, Ford	6/12/06	7/27/06	7/21/06	0	0	0
Crew Truck, Dodge	6/12/06	7/26/06	7/21/06	0	0	0
Crew Truck, Dodge	6/12/06	7/28/06	7/21/06	10	0	0
CAT 304CR Track Hoe	6/19/06	7/10/06	7/7/06	0	0	0
Mini Back Hoe	7/20/06	7/27/06	7/21/06	0	0	0
Honda 4x4 ATV	6/12/06	7/28/06	7/21/06	0	0	0

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by activity number). ***Pack and Clear Office Space. Pack and Transport Equipment Trailer and Honda ATV back to San Antonio. Records maintenance. Turn in remaining rental vehicle.***

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).

Initial Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Follow-up Inspection: (Identify feature of work, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted). ***Completed Destruction of***

all Demolition Explosives on 7/25/06. Explosives Magazine Removed from Site 7/26/06 Magazine Security Fence remains in place at the request of the Government. Containerized Scrap removed from the Site 7/27/06 by Scrap Metals Vendor. Ken Hoosier Transport Equipment Trailer and Honda ATV back to San Antonio. Site Close Out. DEMOB.

5. **Tests Performed and Test Results:**

6. **Material Received:** (Note inspection results and storage provided).

				Inspection Results		
Item	**Quantity**	**Description**	**Storage Provided**	**Accept**	**Reject**	**Comments**

7. **Submittals Reviewed:**

(a) Submittal No. (b) Spec/Plan Reference (c) By Whom (d) Action

8. **Offsite Surveillance Activities, Including Action Taken:**

9. **Job Safety:** (List items checked, results, instructions, and corrective actions taken).
Morning Safety and Ops. Brief. General Safety and Vehicle Ops. Slip, Trip, Fall. Weather conditions. Possible Thunder Storms.

10. **Remarks:** (Instructions received or given. Conflict(s) in Plans and/or specifications. Delays encountered). *Demobilization.*

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James H. Vance
UXO QC/Safety Officer

Date: __7/28/06__

CAPE[SM]

QC Inspection Report

		Report No: 001-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/15/06**
Team/Function: **Explosives Receipt and Storage**	**Grid/Location:** **Explosives Magazine Area**	**Activity:** **Storage of Explosives**

Inspection Summary: Explosives were received today from Austin Powder. The delivery was a Quantity in excess of what had been ordered. 30 Pounds of Cast Boosters, 1000 Feet of 50 Grain Det Cord and 100 Electric Blasting Caps were ordered. The delivery made was 50 Pounds Cast Boosters, 2000 Feet of Det Cord and 100 Electric Blasting Caps. As stated in the Cape LHAAP Work Plan, Para. 5.1, Page 5.1, "Explosives Storage will be Limited to Less than 50 Pounds NEW of Explosives". The shipment received and accepted places the total Net Explosives Weight (NEW) at 64 Pounds. This exceeds the explosives storage limit by 14 pounds. Storage of explosives in greater quantities than allowed in Chapter 5 of the Work Plan has created a Non Conformance situation.

Comments: The Explosives Storage Limits in the LHAAP Work Plan have been established at a lower quantity than are customary for a UXO / MEC Site. The Unit Pack of ½ Pound Cast Boosters is equal to 50 Pounds NEW. If the provider will not break a unit pack, then the one case of cast boosters would exceed the "Less than 50 Pound" NEW Limit. As written, the work plan allows the storage of 49.999999 Pounds NEW, but not 50. Where Inhabited Building and Public Traffic Route distances can be maintained at 670 feet or greater, 100 Pounds NEW of HD 1.1 is authorized by DA PAM 385-64 Table 5-1 and Paragraph 5.5 (6) c (3). It is believed that the ATF Publication 5400.7 as referenced in the work plan is not the correct reference for determining QD and Storage Limits on a FUDS, BRAC or Active Installation. Distances to Inhabited Buildings and Public Roadways on this site are approximately 6,500 feet. QD is not a problem on this site and an increase in authorized quantity stored should have been established at 100 Pounds NEW. **Immediate Remedy: Destroy excess quantities for Training on 6/16/06.**

Pass: ☐ Fail: XXX	**NCR No: 001-06**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 002-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/16/06**
Team/Function: **Explosives Receipt and Storage**	**Grid/Location:** **Explosives Magazine Area**	**Activity:** **Storage of Explosives**

Inspection Summary: Re Inspection Completed. NCR-001-06 Resolved. On Hand Quantities of Explosives within limits established in Chapter 5 of Work Plan.

Comments: The Explosives Storage Limits in the LHAAP Work Plan should be increased to reflect **"Not to Exceed 100 Pounds NEW".** This would require a Work Plan Change.

Should this site require a re supply of explosives, a Failure in Compliance with the Work Plan as written will again occur. The current limits are far too restrictive and disruptive to the UXO / MEC operational mission at hand.

Pass: XXX **Fail:**	**NCR No: 001-06**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 003-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/22/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 18B.
Completed Quality Control Inspection of Transect 17 North of Creek.

Comments:

Transect 18B and the portion of Transect 17 North of the creek have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H Vance

CAPE[SM]

QC Inspection Report

		Report No: 004-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/23/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 19
Completed Quality Control Inspection of Transect 18A.
Completed Quality Control Inspection of Transect 17 South of Creek.

Comments:

Transect 19, 18A and the portion of Transect 17 North and South of the creek have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H Vance

CAPE

QC Inspection Report

		Report No: 005-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/26/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 15
Completed Quality Control Inspection of Transect 16.

Comments:

Transects 15 and 16 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 006-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/27/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 20
Completed Quality Control Inspection of Transect 21.
Completed Quality Control Inspection of Transect 22.

Comments:

Transects 20, 21 and 22 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 007-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 6/30/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 1
Completed Quality Control Inspection of Transect 2
Completed Quality Control Inspection of Transect 3
Completed Quality Control Inspection of Transect 4
Completed Quality Control Inspection of Transect 5

Comments:

Transects 1, 2, 3, 4 and 5 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Inspection Report

		Report No: 008-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/3/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 14
Completed Quality Control Inspection of Transect 13
Completed Quality Control Inspection of Transect 12
Completed Quality Control Inspection of Transect 10
Completed Quality Control Inspection of Transect 9
Completed Quality Control Inspection of Transect 6

Comments:

Transects 14, 13, 12, 10, 9 and 6 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Inspection Report

		Report No: 009-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/5/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 11
Completed Quality Control Inspection of Transect 8
Completed Quality Control Inspection of Transect 7

Comments:

Transects 11, 8 and 7 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 010-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/5/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 27**	**Activity:** **Intrusive Investigation**

Inspection Summary:

A 200 foot Anomaly Investigation area was added to the North Ends of Transects 6 and 7. Intrusive Investigation was accomplished with Mag and Dig Procedures.

Completed Quality Control Inspection of 200 foot addition Transect 6
Completed Quality Control Inspection of 200 foot addition Transect 7

Comments:

The 200 foot additional Anomaly Investigation Area of Transects 6 and 7 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 011-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/6/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 22
Completed Quality Control Inspection of Transect 21
Completed Quality Control Inspection of Transect 11

Comments:

Transects 22, 21 and 11 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

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QC Inspection Report

		Report No: 012-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/7/06**
Team/Function: **Team # 2**	**Grid/Location:** **Site 27**	**Activity:** **Demolition Operations**

Inspection Summary:

Observed Team # 2 during Demolition Operations at Site 27 Transect # 6. Loran Poindexter performed duties as Demolition Supervisor. Team members were John Clifford and Jeff Yonuss. Observed Demo Team Safety Brief, Explosives Magazine Ops, Issue and Transportation of Explosives. On site activities observed during site prep, combination detonating cord and electric priming procedures, pre detonation and post detonation procedures were conducted in accordance with approved Work and Safety Plans and Cape Demolition SOP's.

Comments:

Team performed all tasks in an enthusiastic, safe and professional manner.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Inspection Report

		Report No: 013-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/10/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 12
Completed Quality Control Inspection of Transect 19
Completed Quality Control Inspection of Transect 20

Comments:

Transects 12, 19 and 20 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE SM

QC Inspection Report

		Report No: 014-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/12/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 1
Completed Quality Control Inspection of Transect 2
Completed Quality Control Inspection of Transect 3
Completed Quality Control Inspection of Transect 4

Comments:

Transects 1, 2, 3 and 4 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 015-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/13/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 5
Completed Quality Control Inspection of Transect 6
Completed Quality Control Inspection of Transect 7
Completed Quality Control Inspection of Transect 8
Completed Quality Control Inspection of Transect 9
Completed Quality Control Inspection of Transect 13

Comments:

Transects 5, 6, 7, 8, 9 and 13 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 016-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/14/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 18
Completed Quality Control Inspection of Transect 17
Completed Quality Control Inspection of Transect 16

Comments:

Transects 18, 17 and 16 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Inspection Report

		Report No: 017-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/17/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 10
Completed Quality Control Inspection of Transect 3 100 Foot Extension
Completed Quality Control Inspection of Transect 4 100 Foot Extension
Completed Quality Control Inspection of Transect 5 100 Foot Extension
Completed Quality Control Inspection of Added Transect / Grid 4B-3
Completed Quality Control Inspection of Added Transect / Grid 4B-4

Comments:

Transects 10, the 100 foot extensions of Transects 3, 4 and 5 North and the Added Transects / Grids 4B-3 and 4B-4 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 018-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/18/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 54**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Transect 14
Completed Quality Control Inspection of Transect 15
Completed Quality Control Inspection of Added Transect / Grid 4B-1
Completed Quality Control Inspection of Added Transect / Grid 4B-2

Comments:

Transects 14, 15 and the Added Transects / Grids 4B-1 and 4B-2 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 019-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/20/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 53**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Grid # 3
Completed Quality Control Inspection of Grid # 4

Comments:

Grids 3 and 4 Site 53 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Inspection Report

		Report No: 020-06
Name: J.H. Vance	**Site/Task Order:** **Long Horn Army Ammo Plant** **Karnack, Texas**	**Date: 7/21/06**
Team/Function: **Intrusive Investigation**	**Grid/Location:** **Site 53**	**Activity:** **Intrusive Investigation**

Inspection Summary:

Completed Quality Control Inspection of Grid # 1
Completed Quality Control Inspection of Grid # 2

Comments:

Grids 1 and 2 Site 53 have Passed Cape Quality Control inspection and are ready for Government Quality Assurance Inspection.

Pass: XXX **Fail:**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE SM

QC INSPECTION
NON CONFORMANCE REPORT (NCR)

DATE: 6/15/06

CONTRACT #.: W912BV-04-D-2019 **DO#: DY04**
LOCATION: LHAAP, Karnack, TX

The following Grids / Transects or Process / Tasks Failed QC Inspection and have been assigned to Rework / Corrective Action:

Task: Storage of Explosives
Reference: LHAAP Work Plan Chapter 6 Paragraph 6.1
Non Compliance / Non Conformance: Quantity of Explosives Stored Exceeds Authorized
Limits established by the Work Plan. Authorized Less than 50 Pounds. Have on site quantity of 64 Pounds.

Corrective Action Required: Overnight Storage Authorized by on site COE Safety Specialist. Conduct Demolition Training with Team # 2 on Morning of 6/16/06 and Reduce Quantity Stored by 14 Pounds .

Rework / Corrective Action Taken / Date Completed		Hours spent re-working grids:
6/16/06	Completed Destruction of 14.5 Pounds Cast Boosters. Current Inventory Shows Quantity on hand within limits detailed in Work Plan.	
6/16/06	**Re Inspection QCI-002-06 PASS.** James A Vance / QC	

Root Cause Analysis: See QCI-001-06
Lessons Learned: See QCI-001-06

CAPE℠

QC INSPECTION
NON CONFORMANCE REPORT (NCR)

DATE: 7/20/06

CONTRACT #.: W912BV-04-D-2019 **DO#: DY04**
LOCATION: LHAAP, Karnack, TX

The following Grids / Transects or Process / Tasks Failed QC Inspection and have been assigned to Rework / Corrective Action:

Task: Intrusive Investigation / Reacquired Geophysical Anomaly Investigation
Reference: LHAAP Work Plan Chapter 3.
Non Compliance / Non Conformance: This Grid was not Reacquired correctly during the Geophysical Anomaly Reacquisition / Survey Phase of work. The Survey Data was applied backwards which placed all the anomaly flags in the wrong position. This error effects the entire grid.

Corrective Action Required: Terminate Activities regarding investigation of "Flagged" anomalies. Perform 100 % Mag and Dig Procedures for complete rework of this grid.

Rework / Corrective Action Taken / Date Completed		Hours spent re-working grids:
7/20/06	Completed 100 % Mag and Dig Procedures.	
7/21/06	**Re Inspection QCI-020-06 PASS.** James Hance QC	

Root Cause Analysis: It appears that the data collected may have been "Flipped" and / or "Rotated" during processing.
Lessons Learned: Geo / Survey was not available on site to correct deficiencies.

CAPE SM

QC Surveillance Report

		Report No: 001
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **3/29/06**
Team/Function: **Brush**	**Grid/Location:** **Site 54 Transect #7**	**Activity:** **Brush Clearing**

Surveillance Results:

Completed cut of Transect # 7. Emerged at South end of site approximately 50 feet off the South # 7 Stake. Without the aid of more sophisticated equipment, it does not appear that we will be able to hit each stake dead on with approximately 2000 (Linear) feet of brush cutting per transect. With a 5 foot wide lane, this will equal 10,000 square feet. It may be advised that these existing points be the Proposed Transect and that the actual Cut be re surveyed as the As Built. For the purpose of this project, it is believed that this would be an Acceptable Allowable Deviation for the basic Transect Lay Out.

Comments:

Transect # 7 was cut by (3) Personnel with (1) Brush Saw and (1) Chain Saw. The third person was responsible for brush pulling, developing the cut line as work progressed and bringing supplies forward. From the efforts expended cutting line # 7 it is anticipated that a (3) person Brush Team may reasonably cut 2000 feet 5 feet wide in a 10 Hour day leaving a sufficiently clean lane for Geophysical Data Collection. The concentration of brush is not equal at all points on the site with some transects requiring more or less actual effort than transect # 7. It is believed that this transect was representative of the mixture and density of brush that will be encountered and provides as fair a representation as is possible for planning purposes. From the above known factors, it is anticipated that approximately 21 Team Days would be required to complete brush cutting by hand on Site 54.

Lessons Learned:

Similar results were observed at Site 27 regarding brush removal and transect preparation. At site 27, drainage and standing water are more of an issue than at Site 54.

The overall estimate of Manpower, Equipment Resources and Funding required for the On Site Staff to accomplish the Brush / Vegetation Removal and Site Preparation Phase was grossly underestimated. It is not known whether alternative means for accomplishing the Brush / Vegetation Task was or was not considered.

For future planning, the Impacts and Advantages associated with alternatives such as Local Hire Sawyer / Brush Teams, Sub Contract to a local Timber / Right of Way Clearance Company or use of UXO personnel would be most effective and advantageous to the project must be weighed.

The importance of Site Preparation cannot be underestimated. All field phases of a UXO Job, whether an EE/CA or Clearance, are affected by the importance placed on Site Preparation. The basic Cape mission on this site, to provide the Government with Quality and Timely Geophysical Data Collection, has been undermined by the lack of importance placed on site preparation.

Pass: ☐ **Fail:** ☐	**NCR No:**
SUXOS/Team Leader:	**Signature:** Robert Nolan
QCS: JAMES H. VANCE	**Signature:** James H Vance

CAPE[SM]

QC Surveillance Report

		Report No: 002
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/14/06**
Team/Function:	**Grid/Location:**	**Activity:** **MOBILIZATION**

Surveillance Results:
Mobilization / Remobilization was accomplished on 11 and 12 June 06. Two personnel were on site from 22 May 06 and a third was mobilized to the site on 29 May 06. On 11 June the UXO Team members and site support personnel mobilized to the site as well as the Geophysical Sub Contractor with four personnel. One UXO Tech III mobilized on 12 June. Equipment from previous operations was available on site. Vehicle assets (3 Rental Trucks) were received the afternoon of 12 June.

Comments:
Conversations with the crew after mobilization indicated that there was some question as to whether the actual MOB day was to be Sunday the 11th or Monday the 12th. Similar confusion was experienced during the mobilization in March. Most of the crew made the correct guess with no adverse impact to operations with the delay of one team member.

Lessons Learned:
Effective Communication with Team Members is Required to insure the crew will mobilize in a timely manner when and where required in support of Cape field operations.

Pass: ☒ **Fail:** ☐	**NCR No:**
SUXOS:	**Signature:**
QCS: JAMES H. VANCE	**Signature:**

CAPE℠

QC Surveillance Report

		Report No: 003
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/14/06**
Team/Function: **Transect Lay Out**	**Grid/Location:** **SITES 54, 53 and 27**	**Activity:** **Vegetation Removal**

Surveillance Results:
Mechanical Brush / Vegetation removal to effect transect accessibility and lay out was completed 7 June 06.
Site 54: All transects completed with limited hand work required.
Site 53: Suspect Scarred Area cut in a 200 by 200 foot grid. 100% Geophysical Data Collection is possible in this area. Grids 1, 2 and 3 may require limited hand work to remove new growth material.
Site 27: Transects complete with limited hand work required on transects 9, 10 and 18.

Comments:
Site 27 Transects 15, 16, 17, 18 and 19 will have some partial transect lengths from time to time along the transect that will not be accessible for geophysical data collection due to creeks passing through and across a transect on 16 and 17 and from swamp area covering portions of 18 and 19. Approximately 500 feet of transect will be lost on 18 and all but 300 feet will be lost on 19 due to the swamp area. Approximately 50 to 100 feet of transect will be lost on 15, 16 and 17 due to a creek.

Lessons Learned:
Mechanical Vegetation Removal on this site has proven to be a cost effective and timely approach in accomplishing the Brush / Vegetation Removal task.

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS:	**Signature:**
QCS: James H. Vance	**Signature:** James H. Vance

CAPE[SM]

QC Surveillance Report

		Report No: 004
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/14/06**
Team/Function: **Site Personnel**	**Grid/Location:**	**Activity:** **Site Specific Training**

Surveillance Results:
Site Specific Training was accomplished for New and Returning personnel on 12 and 13 June 06. The majority of the crew had received site specific training during a previous mobilization to the site and received a training review.

Comments:
Personnel and Site files updated.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS:	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE SM

QC Surveillance Report

		Report No: 005
Name: J. H. Vance	**Site/Task Order: – LHAAP, EE/CA Karnack, Texas**	**Date: 6/14/06**
Team/Function:	**Grid/Location: Y-40 Storage Area**	**Activity: Explosives Magazine Storage Area**

Surveillance Results:
Completed preparation for explosives magazine placement. Removed new growth vegetation. Inspected fence, gates and fixtures. No discrepancies noted. Signage is in place. Lock and chain for gate on hand. Fire extinguisher in place with current inspection tag. Electrician on call to complete ground and bond once magazine arrives.

Comments:
Anticipate magazine on site 6/15/06.

Follow On Inspection after placement.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS:	**Signature:**
QCS: James H. Vance	**Signature:** James H. Vance

CAPE[SM]

QC Surveillance Report

		Report No: 006
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/15/06**
Team/Function: **Geophysical / EM-61 Operations**	**Grid/Location:** **GPO**	**Activity:** **Geophysical Test / Calibration**

Surveillance Results:
Geophysical Instrument, EM-61, Test and Calibration on GPO site.
Personnel Test, Instrument Warm Up.
Static Test, Static Spike Test and Vibration Test (Cable Shake)
Line Test, Review Data Collected, Data Collection Repeatability.

Comments:
Data Position: GPS Positioning not available. Manual positioning using Fiducial Data Markers at 50 foot intervals will be used for Data Position and Anomaly location.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Surveillance Report

		Report No: 007
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/15/06**
Team/Function: **Geophysical Operations**	**Grid/Location:** **GPO / Site 27**	**Activity:** **Geophysical Operations**

Surveillance Results:
Geophysical Instrument, EM-61, Test and Calibration on GPO site.
Transect Layout.
Geophysical Operations Data Collection Procedures Site 27.

Comments:
Data Position: GPS Positioning not available. Manual positioning using Fiducial Data Markers at 50 foot intervals will be used for Data Position and Anomaly location.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Surveillance Report

		Report No: 008
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/16/06**
Team/Function: **Geophysical / EM-61 Operations**	**Grid/Location:** **GPO**	**Activity:** **Geophysical Test / Calibration**

Surveillance Results:
EM-61 Instrument # 2.
Geophysical Instrument, EM-61, Test and Calibration on GPO site.
Personnel Test, Instrument Warm Up.
Static Test, Static Spike Test and Vibration Test (Cable Shake)
Line Test, Review Data Collected, Data Collection Repeatability.

Comments:
Data Position: GPS Positioning not available. Manual positioning using Fiducial Data Markers at 50 foot intervals will be used for Data Position and Anomaly location.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Surveillance Report

		Report No: 009
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/16/06**
Team/Function: **Explosives Storage, Transportation and Demolition Ops. Training**	**Grid/Location:** **Site office, Explosives Storage Site, Site 54**	**Activity:** **Team Training**

Surveillance Results:
Conducted Classroom Training with Team # 2 for Storage and Transportation of Explosives and Demolition Procedures. Review of Work Plan and SOP's.
Conducted Hands on Field Training concluded with Live Demolition Exercise at Site 54.

Comments:
Personnel trained demonstrated understanding of Policy and Procedure. Demonstrated ability to perform all tasks in a safe and efficient manner. Completed administrative requirements and documentation.

Training observed by COE Safety Specialist.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H. Vance

CAPE℠

QC Surveillance Report

		Report No: 010
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/21/06**
Team/Function: **Anomaly Reacquisition**	**Grid/Location:** **Site 27 Transects 6,7,9 and 10**	**Activity:** **Anomaly Location, Target Response and Off Set**

Surveillance Results:
Performed QC Surveillance of Anomaly Location, Target Response comparing Mv responses recorded during Data Collection to the Reacquired Mv Response at the Target Anomaly Location recorded on the Dig Sheet. An Off Set Distance was also recorded as the distance between the actual anomaly reacquired and the anomaly pin flag location. This Surveillance was performed using the EM-61. (4) Transects and (15) Anomaly locations were randomly selected for this Surveillance. Satisfactory Results Achieved.

Comments:
The following Transects and Anomalies were selected:
Transect 6 L6-44, L6-45 and L6-46
Transect 7 L7-63, L7-64, L7-65, L7-66 and L7-67
Transect 9 L9-46, L9-47 and L7-48
Transect 10 L10-35, L10-36, L10-37 and L10-38
All responses and locations were found to be within acceptable tolerance in Mv readings recorded and Off Set distances measured.
One exception was noted at point L10-36. It is believed that the values shown on the Dig Sheet were a result of a Coil Bump or Spike with major contributing factors being a steep down slope with stumps and rough ground at the bottom. The instrument at this point was not in a level or stable attitude and consistent speed of travel was disrupted.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H. Vance

CAPE SM

QC Surveillance Report

		Report No: 011
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/22/06**
Team/Function: **Team # 1 Anomaly Intrusive Investigation**	**Grid/Location:** **Site 27 Transects 18B, 17 North and 16 North**	**Activity:** **Intrusive Investigation**

Surveillance Results:
Observed Dig Team # 1 during Intrusive Investigation Activities in the above listed Transects. Observed Anomaly Detection and Location using the Schonstedt GA-52Cx and the Whites XLT Magnetometers. Observed Anomaly Excavation and Re Check of excavation location for secondary or masked anomalies. Proper Recording of Intrusive Investigation Results on Grid Sheet. Holes Backfilled. Flags left in place for future QC and QA Activities. Activities performed in accordance with Work and Safety Plans. Level D PPE.

Comments:
Team # 1 has demonstrated proper use of Magnetometers and hand tools required to complete this task. Team members have a thorough understanding of task and records keeping requirements. Performed Task in a Safe and Efficient manner.

Team # 1 has displayed understanding of and ability to perform the Intrusive Investigation Task unassisted with no additional training required.

Team Leader UXO Tech III: Sam Thomas
Team Member UXO Tech II: Robert Gibbons

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE℠

QC Surveillance Report

		Report No: 012
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/22/06**
Team/Function: **Anomaly Reacquisition** **Intrusive Investigation**	**Grid/Location:** **Site 27 Transects 18B**	**Activity:** **Intrusive Investigation**

Surveillance Results:
This is a Follow On Surveillance Intrusive Activity. See also QCS Report # 10.

Performed QC Surveillance with Team # 1 for Reacquired Anomaly Location, Target Response using Dig Team Instruments: Schonstedt GA-52Cx and Whites XLT Magnetometers. Compared Target Anomaly Response recorded on the Dig Sheet with actual item or items located and the off set distance. Satisfactory Results Achieved.

Comments:
Transect 18 Anomaly 18B-5. Anomaly located. (2) Contacts. #1 at 7'4" from flag. #2 was 10'3" from flag. Checked location of anomaly flag. Measured 19.5' North of Fiducial Marker 18B150. This is correct location. Anomaly 18B4. Not detected at flag. Located 4.5' North. Anomaly was the Survey Pin at Stake 18 North. Anomaly 18B3. Anomaly located 12 Inches West of flag. Anomaly 18B2. Anomaly located 4.5' NW of flag. Anomaly 18B1. Anomaly located 1' North of flag.
Anomalies located and recovered through Intrusive Investigation were consistent with responses recorded on the dig sheet. A reasonable line of travel for the EM-61 was determined corresponding to the flag line. All previously reacquired anomaly flags were placed in line with the transect fiducial markers. A reasonable line of pull given terrain and obstacles may have been left, right or center of these markers. Determining where the EM-61 was reasonably located at the time of anomaly detection and concluding that the target anomaly was detected at the left or right of the one meter coil brings the otherwise large off set distances into perspective with acceptable tolerance.
Transect 18B was 100% swept with hand held magnetometers. No additional anomalies detected.

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:**

CAPE[SM]

QC Surveillance Report

		Report No: 013
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **6/22/06**
Team/Function: **Team # 2 Anomaly Intrusive Investigation**	**Grid/Location:** **Site 27 Transect # 7**	**Activity:** **Intrusive Investigation**

Surveillance Results:
Observed Dig Team # 2 during Intrusive Investigation Activities in the above listed Transect. Observed Anomaly Detection and Location using the Schonstedt GA-52Cx and the Whites XLT Magnetometers. Observed Anomaly Excavation and Re Check of excavation location for secondary or masked anomalies. Proper Recording of Intrusive Investigation Results on Grid Sheet. Holes Backfilled. Flags left in place for future QC and QA Activities. Activities performed in accordance with Work and Safety Plans. Level D PPE.

Comments:
Team # 2 has demonstrated proper use of Magnetometers and hand tools required to complete this task. Team members have a thorough understanding of task and records keeping requirements. Performed Task in a Safe and Efficient manner.

Team # 2 has displayed understanding of and ability to perform the Intrusive Investigation Task unassisted with no additional training required.

Team Leader UXO Tech III: Loran Poindexter
Team Member UXO Tech II : John Clifford

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H. Vance

CAPE[SM]

QC Surveillance Report

		Report No: 014
Name: J. H. Vance	**Site/Task Order:** **LHAAP, EE/CA Karnack, Texas**	**Date:** **7/7/06**
Team/Function: **Team # 2**	**Grid/Location:** **Y-Area Storage / Transport to Site 27.**	**Activity:** **Explosives Storage and Transport**

Surveillance Results:
Conducted Surveillance of Explosives Storage, Issue, Inventory and Transportation of Demolition Explosives for use during Demolition Operations at Site 27. All activities and procedures performed were / are in accordance with approved Work and Safety Plans and Local and Federal Regulations.

Comments:
Weekly Explosives Inventory conducted with no discrepancies noted.

Lessons Learned:

Pass: XX **Fail: ☐**	**NCR No:**
SUXOS: Richard Norton	**Signature:**
QCS: James H. Vance	**Signature:** James H Vance

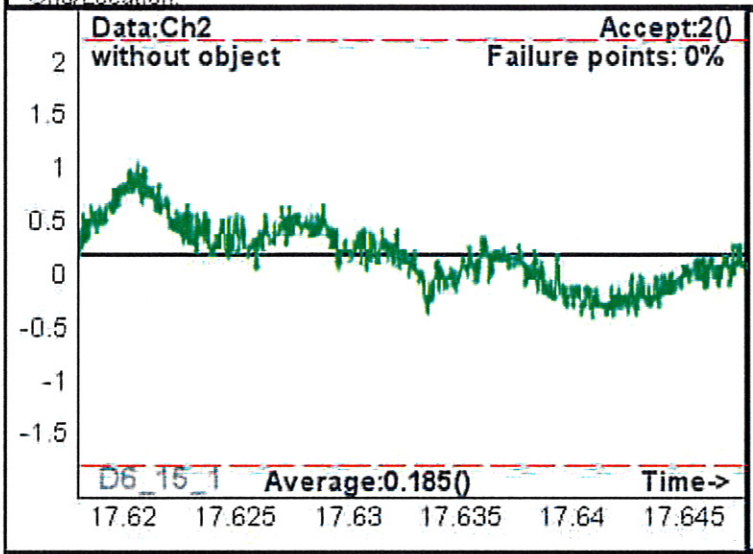
00049362

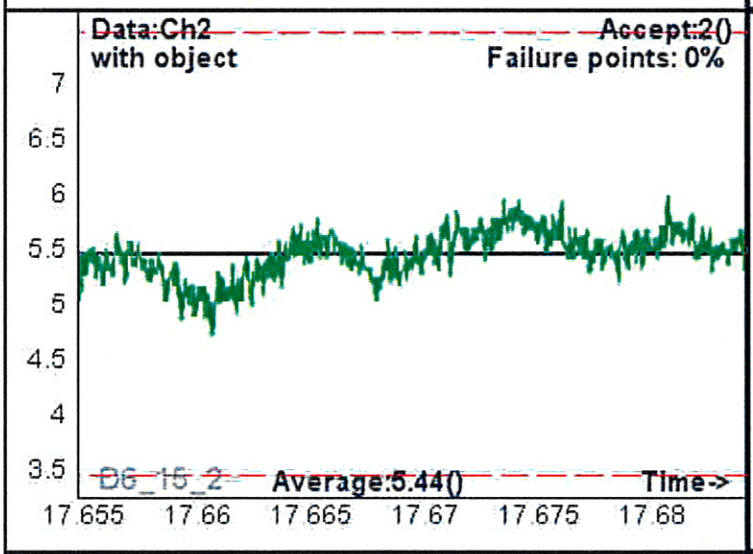
Static Calibration Test

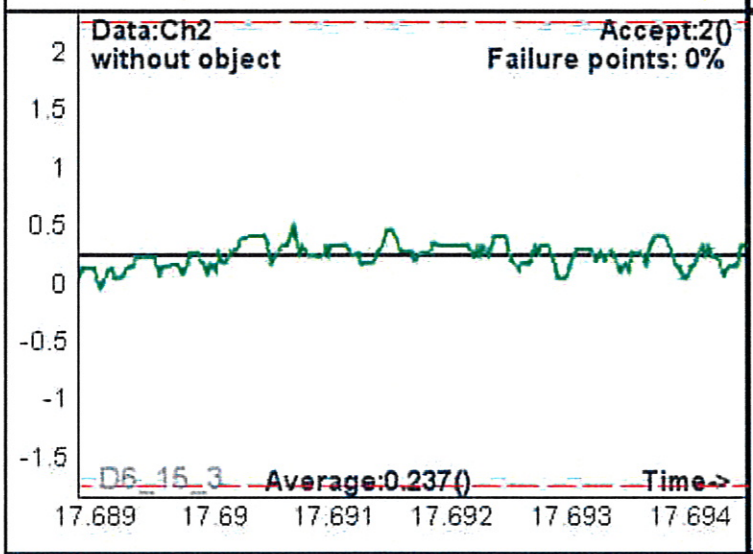
Project: LHAAP
Equipment: EM-61 Mark II
Grid/Location:

Instrument Threshold: 20%
Outside range
Acceptable limits

PM test
Operator:
Date: 2006/06/15







Database: c:\longhorn_lhaap\analysed data\dailytests\Daily Tests.gdb
Line Name: D6_15_1 D6_15_2 D6_15_3

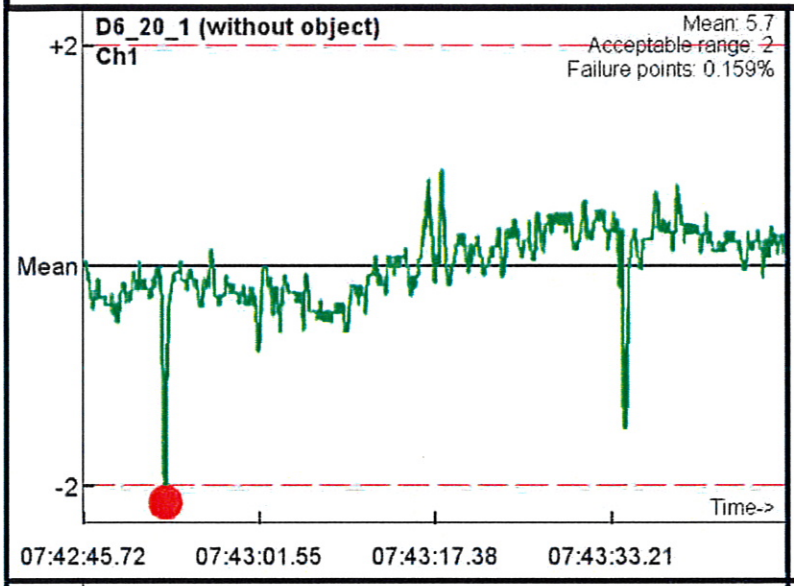
Static Calibration Test

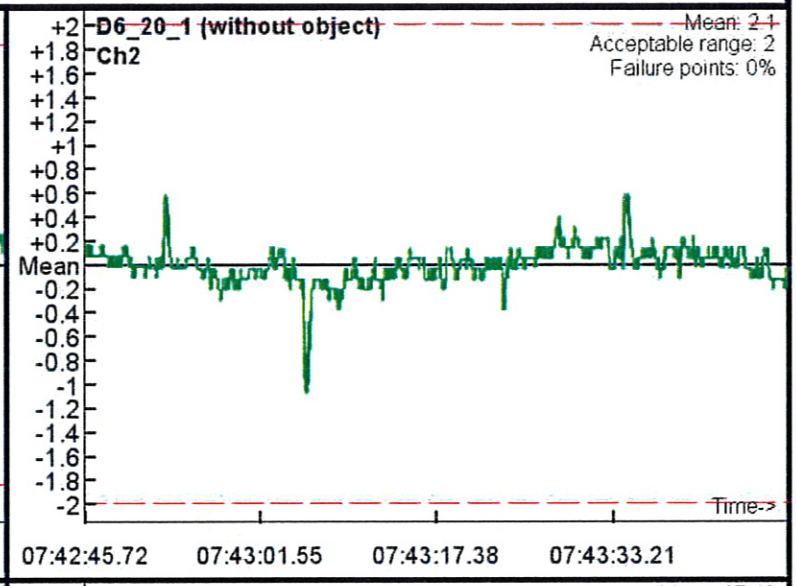
00049363

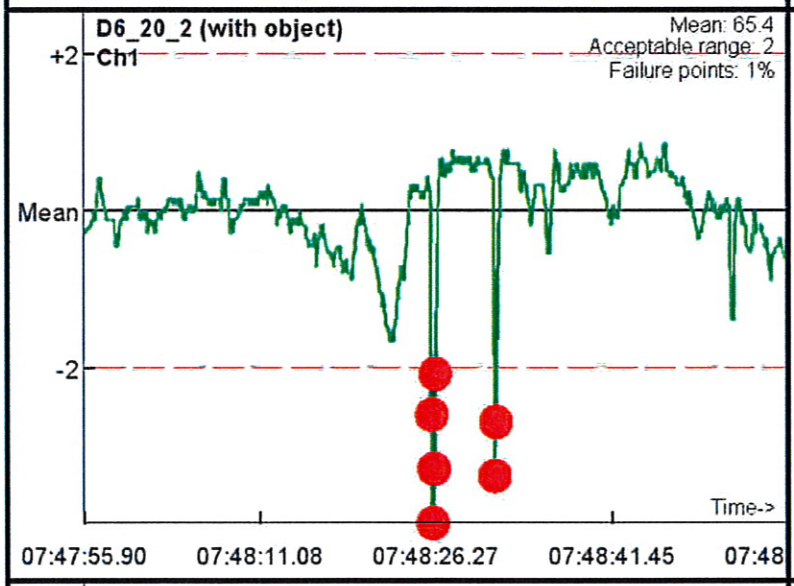
Project: LHAAP
Equipment: EM-61 (1.0x0.5m)
Grid/Location:

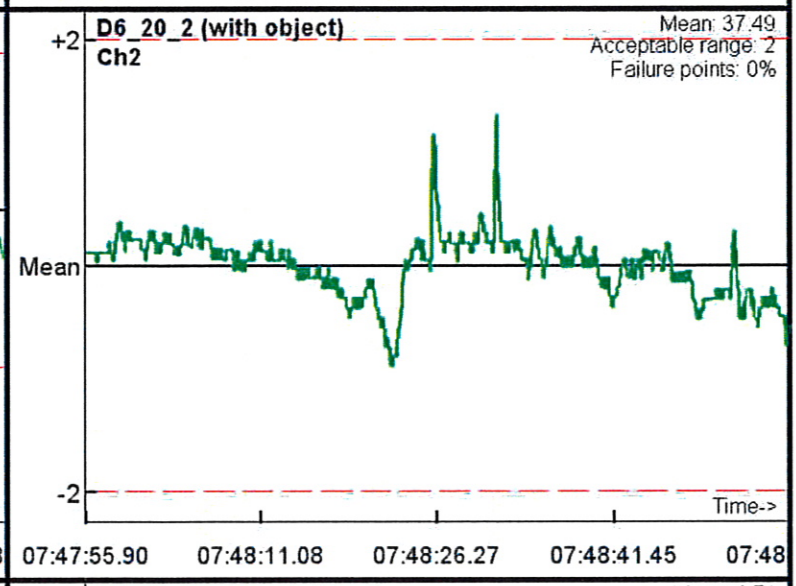
Instrument Threshold: 10%
Outside range
Acceptable limits

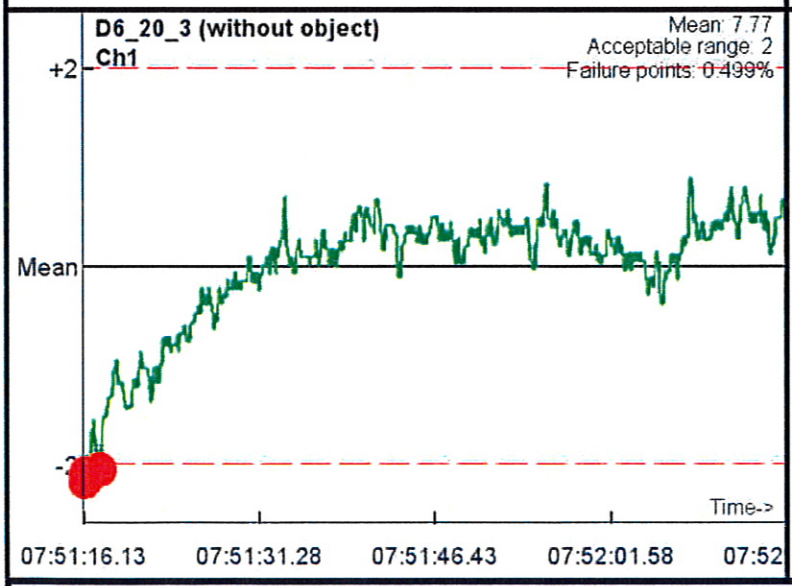
AM test
Operator:
Date: 2006/06/20

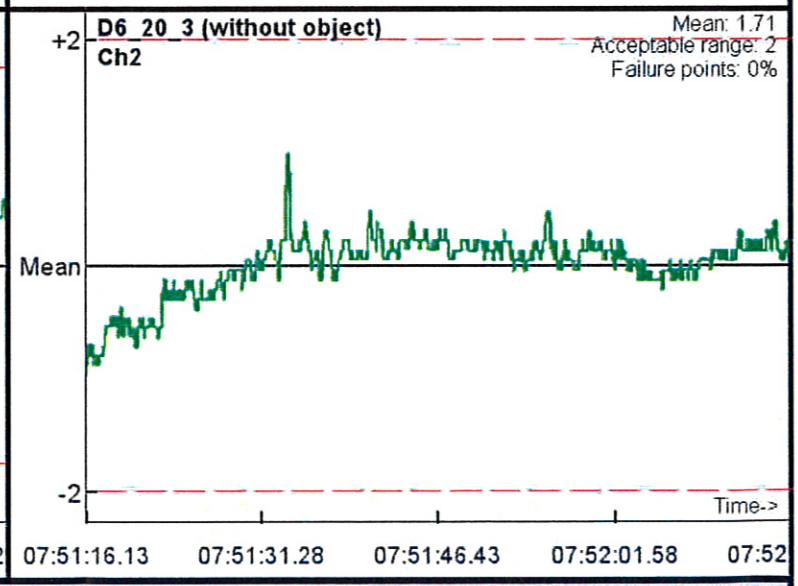












Database: C:\Longhorn_LHAAP\Analysed Data\DailyTests\Daily Tests.gdb
Line Name: D6_20_1 D6_20_2 D6_20_3

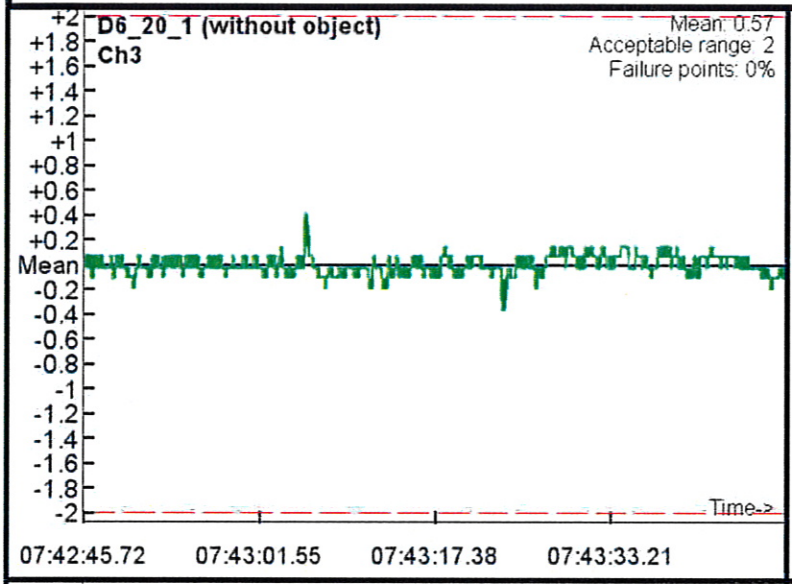
Static Calibration Test

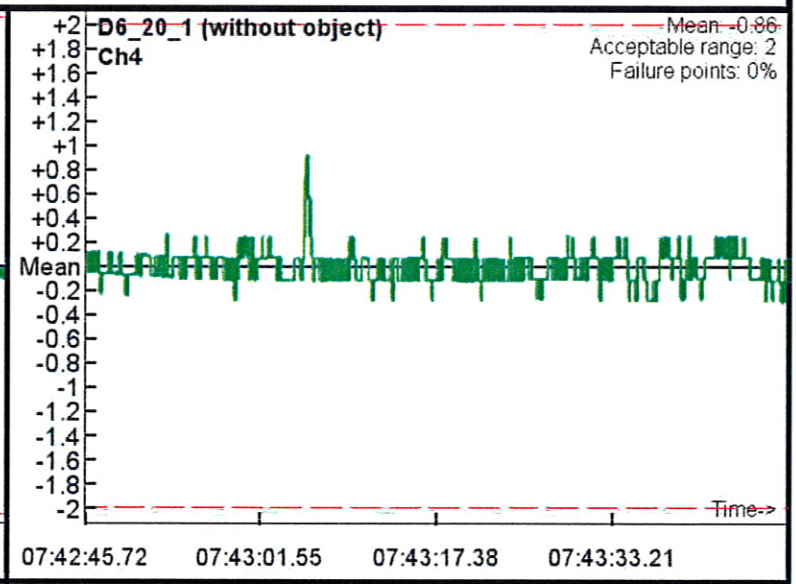
00049364

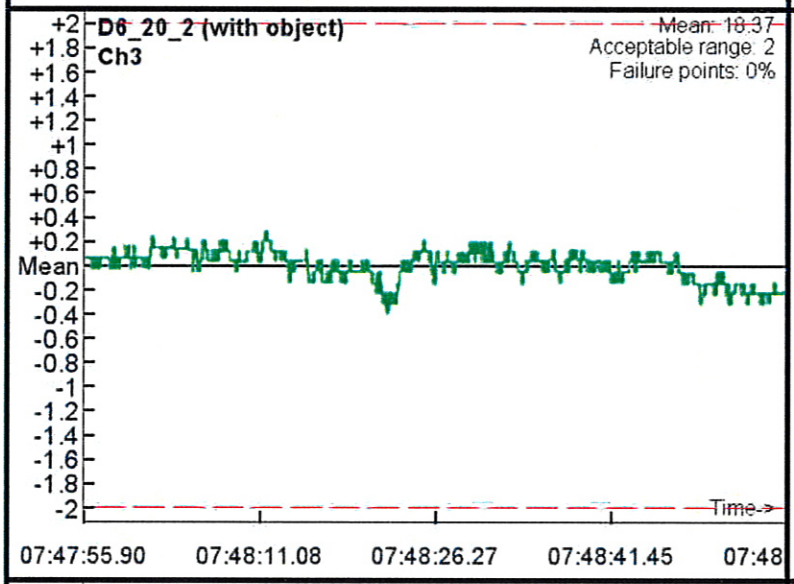
Project: LHAAP
Equipment: EM-61 (1.0x0.5m)
Grid/Location:

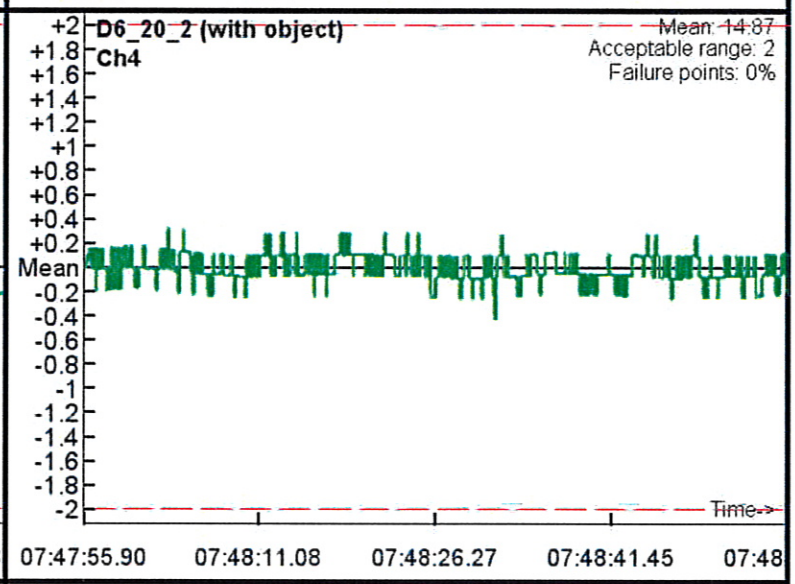
Instrument Threshold: 10%
Outside range
Acceptable limits

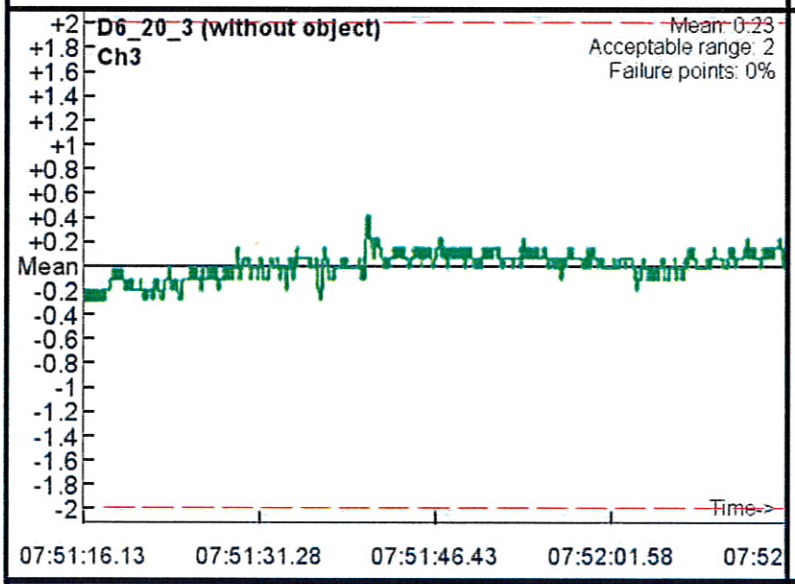
AM test
Operator:
Date: 2006/06/20

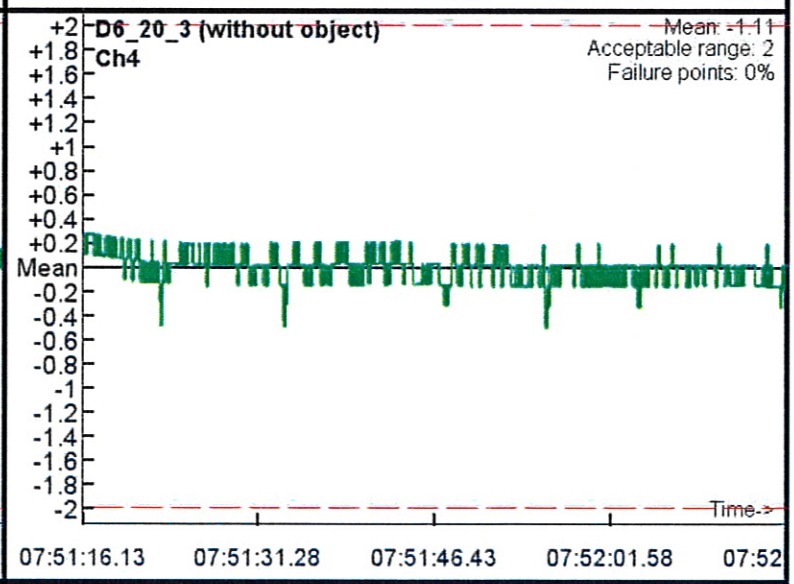












Database: C:\Longhorn_LHAAP\Analysed Data\DailyTests\Daily Tests.gdb
Line Name: D6_20_1 D6_20_2 D6_20_3

APPENDIX H

DIG SHEETS

Area 27 - Line 1 - LHAAP Anomaly Digsheet 00049366

Area	Transect		
27	1	EOD Team	1
		Date of Excavation	6/26/2006
		Start Time	6:50
		Stop Time	9:10

Total Scrap 13.5 lbs.
Total MEC Scrap 12.5 lb.
Total Scrap (other) 1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-LN1-1	27.1	21.9	2 ft.	6"	N	2	Bomb Fragment
27-LN1-2	77.6	58.4	4 ft.	4"	N	2	Bomb Fragment
27-LN1-3	13.5	71.8	4 ft.	6"	N	1	Bomb Fragment
27-LN1-4	4.3	101.1	2 ft.	4"	N	0.25	Fragment
27-LN1-5	3.2	115.8					No Contact
27-LN1-6	2.1	122.8					No Contact
27-LN1-7	2.0	183.5					No Contact
27-LN1-8	1.3	207.1					No Contact
27-LN1-9	79.1	237.3	1 ft.	0	N		Marker Nail For The Hub
27-LN1-10	2.2	332.4	1 ft.	1"	N	0.25	OE scrap
27-LN1-11	22.4	398.9	1.5 ft.	1"	N	1	Bomb Fragment
27-LN1-12	41.0	410.9	3 ft.	2"	N	0.5	Fragment
27-LN1-13	2.2	561.8	3 ft.	4"	N	0.25	Scrap
27-LN1-14	58.8	582.5	2 ft.	2"	N	2	Barbed Wire
27-LN1-15	17.4	605.2	4 ft.	0	N	3	Bomb Fragment
27-LN1-16	1.5	616.5	2 ft.	3"	N	0.25	Fragment
27-LN1-17	3.7	746.2	1 ft.	5"	N	0.25	Scrap
27-LN1-18	6.3	785.7	1.5 ft.	1"	N	0.25	OE scrap
27-LN1-19	0.9	821.0	6 ft.	4"	N	0.25	Scrap
27-LN1-20	46.3	841.6	1 ft.	3"	N	1	Bomb Fragment
27-LN1-21	1.5	872.6					No Contact
27-LN1-22	1.3	911.4	12 ft.	4"	N	0.25	Scrap
27-LN1-23	47.6	942.1	2 ft.	6"	N	1	Bomb Fragment
27-LN1-24	0.9	1008.5	10 ft.	0	N	0.25	Wire
27-LN1-25	36.2	1048.0	0.0	0	N		Marker Nail For The Hub

Area 27 - Line 2_A - LHAAP Anomaly Digsheet

00049367

Area	Transect	Note: Replaces 27-L2 850 feet to 1100 feet.				
27	2_A	EOD Team	1			
		Date of Excavation	6/27/2006		Total MEC Scrap	6 lbs.
		Start Time	7:10			
		Stop Time	8:15			

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L2__A-1	3.5	857.9	1.0	2	N	.25 lb.	Scrap
27-L2__A-2	5.3	863.6	1.0	2	N	.5 lb.	Fragment
27-L2__A-3	3.4	869.8	1.5	5	N	.5 lb.	Scrap
27-L2__A-4	3.1	877.6					No Contact
27-L2__A-5	21.0	887.7	4.0	1	N	1 lb.	Bomb Fragment
27-L2__A-6	5.2	924.7	2.0	4	N	.25 lb.	Fragment
27-L2__A-7	3.4	940.0	7.0	6	N	1	Bomb Fragment
27-L2__A-8	10.2	950.9					No Contact
27-L2__A-9	3.6	969.9	2.0	3	N	.25 lb.	Fragment
27-L2__A-10	6.6	1005.1	3.0	3	N	.25 lb	Scrap
27-L2__A-11	4.9	1016.2	6.0	1	N	1 lb.	Bomb Fragment
27-L2__A-12	10.1	1044.4	3.0	9	N	.25 lb.	Scrap
27-L2__A-13	8.0	1050.0	2.0	6	N	.25 lb.	Scrap
27-L2__A-14	3.0	1152.0					No Contact
27-L2__A-15	4.1	1162.5					No Contact
27-L2__A-16	2.8	1189.0	6.0	5	N	.25 lb.	OE Scrap
27-L2__A-17	7.5	1217.0					No Contact
27-L2__A-18	9.2	1222.8	2.5	6	N	.25 lb.	OE Scrap
27-L2__A-19	2.9	1237.4					No Contact

Area 27 - Line 2_A - LHAAP Anomaly Digsheet

00049368

Area	Transect		
27	2_A	EOD Team	1

Note: Replaces 27-L2 850 feet to 1100 feet.

Date of Excavation 6/27/2006

Total MEC Scrap 6 lbs.

Start Time 7:10
Stop Time 8:15

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment

Area 27 - Line 2 - LHAAP Anomaly Digsheet

00049369

Area	Transect		
27	2	EOD Team	
		Date of Excavation	**Total MEC Scrap 17.75 lbs.**
		Start Time	8:15
		Stop Time	10:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L2-1	1.4	79.6					No Contact
27-L2-2	7.8	119.9	6.0	8"	N	2 lbs.	Bomb fragment
27-L2-3	17.6	210.4	1.0	8"	N	0.25 lb.	Bomb fragment
27-L2-4	6.3	234.7	3.0	6"	N	1 lb.	Bomb fragment
27-L2-5	0.9	260.3	4.0	2"	N	0.25 lb.	Fragment
27-L2-6	8.0	360.3	0.0	0	N	0.25 lb.	OE Scrap
27-L2-7	23.6	377.2	3.0	2"	N	2 lbs.	Bomb fragment
27-L2-8	19.2	384.9	3.0	1"	N	1 lb.	Bomb fragment
27-L2-9	7.1	414.9	5.0	1"	N	1 lb.	Bomb fragment
27-L2-10	1.7	428.7	8.0	3"	N	1 lb.	Bomb fragment
27-L2-11	17.2	472.6	4.0	1"	N	1 lb.	Bomb fragment
27-L2-12	1.6	489.9	4.0	3"	N	0.25 lb.	OE Scrap
27-L2-13	63.3	508.0	1.0	5"	N	1 lb.	Bomb fragment
27-L2-14	2.9	588.4	3.0	6"	N	0.25 lb.	Scrap
27-L2-15	31.2	617.9	3.0	2"	N	1 lb.	Bomb fragment
27-L2-16	1.1	635.8	2.0	3"	N	0.25 lb.	OE Scrap
27-L2-17	3.0	660.9	1.0	3"	N	0.5 lb.	Fragment
27-L2-18	1.8	708.3					No Contact
27-L2-19	15.4	740.0	1.0	2"	N	1 lb.	Bomb fragment
27-L2-20	2.4	752.3	1.0	4"	N	0.25 lb.	OE Scrap
27-L2-21	162.9	805.2	1.0	1"	N	2 lb.	Bomb fragment
27-L2-22	14.3	813.5	0.0	2"	N	0.25 lb.	OE Scrap
27-L2-23	17.6	823.9	3.0	4"	N	0.25 lb.	Scrap
27-L2-24	17.7	841.3	12.0	3"	N	1 lb.	Bomb fragment
27-L2-25	5.7	864.7					

Area 27 - Line 2 - LHAAP Anomaly Digsheet

00049370

Area	Transect	
27	2	EOD Team
		Date of Excavation **Total MEC Scrap 17.75 lbs.**
		Start Time 8:15
		Stop Time 10:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
27-L2-26	2.9	872.5				
27-L2-27	22.2	895.4				
27-L2-28	5.6	931.7				
27-L2-29	1.7	977.3				Reaccomplished remaider of targets in lane 2 with new
27-L2-30	0.7	986.7				collection Data. Problem occurred with fiducial points being
27-L2-31	7.4	1013.8				off by 11 feet for the remaider of the lane. Note The targets
27-L2-32	1.6	1142.2				identified in red were moved to Site 27 Line 2A dig sheet, with
27-L2-33	2.5	1204.3				corrected fiducail points.
27-L2-34	6.7	1228.6				
27-L2-35	1.9	1235.7				
27-L2-36	0.8	1261.2				

Area 27 - Line 3 - LHAAP Anomaly Digsheet 00049371

Area	Transect		
27	3	EOD Team	1
		Date of Excavation	6/26/2006
			Total MEC Scrap 24.5 lbs.
		Start Time	13:35 Pg 1, MEC scrap14.75 lbs.
		Stop Time	15:30 Pg. 2, MEC scrap 9.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L3-1	8.2	116.0	3 ft.	2"	N	0.5 lb.	Scrap
27-L3-2	2.9	123.6	3 ft.	4"	N	0.25 lb.	Fragment
27-L3-3	1.6	128.8					No Contact
27-L3-4	2.0	133.7					No Contact
27-L3-5	116.2	169.0	2 ft.	4"	N	2 lbs.	Bomb Fragment
27-L3-6	12.4	180.3	0.0	1"	N	1 lb.	Scrap
27-L3-7	19.6	228.2	2 ft.	1"	N	1 lb.	Bomb Fragment
27-L3-8	128.7	241.4	0.0	1"	N	1 lb.	Bomb Fragment
27-L3-9	10.5	266.7	3 ft.	1"	N	1 lb.	Bomb Fragment
27-L3-10	0.2	274.5					No Contact
27-L3-11	1.6	366.5					No Contact
27-L3-12	9.7	394.4	0.5 ft.	4"	N	0.25 lb.	OE Scrap
27-L3-13	2.0	436.7	3 ft.	6"	N	1 lb.	Bomb Fragment
27-L3-14	1.7	454.1	6 ft.	3"	N	1 lb.	Bomb Fragment
27-L3-15	1.5	511.9	4 ft.	1"	N	0.25 lb.	OE Scrap
27-L3-16	1.3	517.5					No Contact
27-L3-17	1.7	527.6					No Contact
27-L3-18	0.6	542.0					No Contact
27-L3-19	3.8	592.7	2 ft.	4"	N	1 lb.	Bomb Fragment
27-L3-20	0.9	612.2	3 ft.	2"	N	0.25 lb.	Scrap
27-L3-21	13.8	630.2	1 ft.	1"	N	1 lb.	Bomb Fragment
27-L3-22	2.8	637.4	3 ft.	2"	N	1 lb.	Bomb Fragment
27-L3-23	5.6	676.5	2 ft.	4"	N	1 lb.	Bomb Fragment
27-L3-24	5.2	686.5	0.0	3"	N	0.25 lb.	Scrap
27-L3-25	1.5	716.0	6 ft.	2"	N	1 lb.	Bomb Fragment

Area 27 - Line 3 - LHAAP Anomaly Digsheet 00049372

Area	Transect		
27	3	EOD Team	1
		Date of Excavation	6/26/2006
		Start Time	13:35
		Stop Time	15:30

Total MEC Scrap 24.5 lbs.
Pg 1, MEC scrap14.75 lbs.
Pg. 2, MEC scrap 9.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L3-26	63.2	746.5	0.0	1"	N	1 lb.	Bomb Fragment
27-L3-27	9.3	764.7	1 ft.	3"	N	0.25 lb.	OE Scrap
27-L3-28	1.0	835.9	10 ft.	2"	N	.5 lb.	Fragment
27-L3-29	4.7	864.3	4 ft.	3"	N	0.25 lb.	OE Scrap
27-L3-30	8.9	914.1	0.0	2"	N	0.25 lb.	OE Scrap
27-L3-31	3.1	933.2	1.5 ft.	3"	N	2 lbs.	Bomb Fragment
27-L3-32	3.3	1003.8	1 ft.	1"	N	0.25 lb.	OE Scrap
27-L3-33	2.3	1025.5	5 ft.	3"	N	1 lb.	Bomb Fragment
27-L3-34	10.7	1075.7	3 ft.	2"	N	0.25 lb.	OE Scrap
27-L3-35	4.9	1083.4	3 ft.	1"	N	0.25 lb.	OE Scrap
27-L3-36	122.4	1127.0	2 ft.	2"	N	1 lb.	Bomb Fragment
27-L3-37	6.3	1137.3	0.0	2"	N	0.25 lb.	OE Scrap
27-L3-38	21.0	1191.1	1.5 ft.	1"	N	0.5 lb.	OE Scrap
27-L3-39	1.8	1229.3	2 ft.	4"	N	0.25 lb.	OE Scrap
27-L3-40	2.6	1235.0	1 ft.	4"	N	0.25 lb.	OE Scrap
27-L3-41	4.5	1256.2	1.5 ft.	3"	N	0.25 lb.	OE Scrap
27-L3-42	6.5	1301.7	4 ft.	5"	N	1 lb.	Bomb Fragment
27-L3-43	1.6	1375.5	2 ft.	4"	N	.25 lb.	OE Scrap
27-L3-44	3.4	1418.9	1 ft.	0	N		Marking Nail for The Hub

Area 27 - Line 4 - LHAAP Anomaly Digsheet 00049373

Area	Transect		
27	4	EOD Team	1
		Date of Excavation	6/27/2006
		Start Time	10:30
		Stop Time	15:45

Total MEC Scrap 29 lbs.
Pg. 1 Total scrap 18.5 lbs
Pg. 2 Total scrap 10.5 lbs

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L4-1	164.9	33.0	3 ft.	6"	N	3 lbs.	Bomb Fragment
27-L4-2	0.7	58.8	1 ft.	4"	N	.25 lbs.	OE Scrap
27-L4-3	26.1	160.7	0.0	1"	N	.5 lbs	Fragment
27-L4-4	4.4	187.7	6 ft.	2"	N	1 lb.	Bomb Fragment
27-L4-5	3.2	204.3	5 ft.	0	N	1 lb.	Bomb Fragment
27-L4-6	21.2	272.3	2 ft.	1"	N	1 lb.	Bomb Fragment
27-L4-7	162.2	296.3	4 ft.	3"	N	1 lb.	Bomb Fragment
27-L4-8	264.2	387.5	1 ft.	0	N	1 lb.	Bomb Fragment
27-L4-9	9.3	414.4	3 ft.	2"	N	1lb.	Bomb Fragment
27-L4-10	1.7	426.6	1 ft'	0	N	.25 lb	OE Scrap
27-L4-11	52.9	455.6	1 ft.	4"	N	1 lb.	Bomb Fragment
27-L4-12	11.3	463.6	2 ft.	6"	N	1 lb.	Bomb Fragment
27-L4-13	1.3	505.9	1 ft.	1"	N	.25 lb.	OE Scrap
27-L4-14	21.9	518.2	6 ft.	4"	N	2 lbs.	Bomb Fragment
27-L4-15	16.8	552.8	1 ft.	2"	N	1 lb.	Bomb Fragment
27-L4-16	25.8	589.0	4 ft.	5"	N	.25 lb.	OE Scrap
27-L4-17	2.9	597.2	5 ft.	2"	N	.25 lb.	OE Scrap
27-L4-18	20.0	614.7	2 ft.	6"	N	.25 lb.	OE Scrap
27-L4-19	4.1	633.9	2 ft.	3"	N	.25 lb.	OE Scrap
27-L4-20	2.2	669.6	1 ft.	2"	N	.25 lb.	Fragment
27-L4-21	7.7	702.2	1 ft.	5"	N	.25 lb.	OE Scrap
27-L4-22	3.4	715.6	1 ft.	2"	N	.25 lb.	OE Scrap
27-L4-23	3.1	724.3	3 ft.	3"	N	.25 lb.	OE Scrap
27-L4-24	40.3	738.8	6 ft.	3"	N	1 lb.	Bomb Fragment
27-L4-25	8.0	769.1	2 ft.	1"	N	.25 lb.	Scrap

Area 27 - Line 4 - LHAAP Anomaly Digsheet 00049374

Area	Transect		
27	4	EOD Team	1
		Date of Excavation	6/27/2006
		Start Time	10:30
		Stop Time	15:45

Total MEC Scrap 29 lbs.
Pg. 1 Total scrap 18.5 lbs
Pg. 2 Total scrap 10.5 lbs

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L4-26	2.0	774.2	1 ft.	2"	N	.25 lb.	OE Scrap
27-L4-27	3.2	785.9	1 ft.	4"	N	.25 lb.	Scrap
27-L4-28	6.4	789.3	3.5 ft.	1"	N	.25 lb.	OE Scrap
27-L4-29	10.6	821.9	4 ft.	6"	N	.25 lb.	Nail
27-L4-30	2.9	833.0	4 ft.	6"	N	.25 lb.	OE Scrap
27-L4-31	4.1	874.1	3 ft.	0	N	.25 lb.	OE Scrap
27-L4-32	3.4	902.9	0.0	1"	N	.25 lb.	OE Scrap
27-L4-33	21.8	918.4	6 ft.	2"	N	3 lbs.	Bomb Fragment
27-L4-34	3.4	925.2	2 ft.	3"	N	.25 lb.	Scrap
27-L4-35	11.4	960.6	1 ft.	6"	N	.25 lb.	Scrap
27-L4-36	2.4	974.5	3 ft.	3"	N	.25 lb.	Scrap
27-L4-37	4.4	984.7	2 ft.	2"	N	.25 lb.	OE Scrap
27-L4-38	6.3	1018.5	4 ft.	4"	N	.25 lb.	Scrap
27-L4-39	1.9	1047.6	3 ft.	3"	N	.25 lb.	Scrap
27-L4-40	3.9	1133.0	0.0	0	N	.25 lb.	Scrap
27-L4-41	13.3	1141.1	3 ft.	3"	N	.5 lb.	Fragment
27-L4-42	2.1	1251.2	1 ft.	1"	N	.25 lb.	Scrap
27-L4-43	2.3	1257.9	3 ft.	3"	N	.25 lb.	OE Scrap
27-L4-44	6.8	1273.2	1 ft.	1"	NN	.25 lb.	OE Scrap
27-L4-45	5.3	1279.5	1 ft.	1"	N	.25 lb.	OE Scrap
27-L4-46	36.4	1324.7	1 ft.	1"	N	.25 lb.	Scrap
27-L4-47	1.5	1382.1	2 ft.	2"	N	.25 lb.	OE Scrap
27-L4-48	4.1	1401.4	3 ft.	3"	N	1 lb.	Bomb Fragment
27-L4-49	6.8	1464.1	2 ft.	2"	N	1 lb.	Bomb Fragment
27-L4-50	4.5	1505.4	1 ft.	1"	N	0	Hub Marker nail

Area 27 - Line 5 - LHAAP Anomaly Digsheet

00049375

Area	Transect			
27	5	EOD Team	1	
		Date of Excavation	6/28/2006	**Total MEC Scrap 36.75 lbs.**
		Start Time	7:30	Pg. 1, Total Scrap 30 lbs.
		Stop Time	13:15	Pg. 2, Total Scrap 6.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L5-1	80.4	10.4	3 ft.	8"	N	3	Bomb Fragment
27-L5-2	358.4	96.4	5 ft.	1"	N	3	Bomb Fragment
27-L5-3	499.7	123.0	1 ft.	2"	N	2	Bomb Fragment
27-L5-4	22.1	136.3	1 ft.	4"	N	1	Bomb Fragment
27-L5-5	209.5	170.4	3 ft.	2"	N	2	Bomb Fragment
27-L5-6	74.2	211.2	3 ft.	1"	N	2	Bomb Fragment
27-L5-7	182.4	303.4	1 ft.	4"	N	2	Bomb Fragment
27-L5-8	196.5	358.1	4 ft.	6"	N	1	OE Scrap
27-L5-9	25.0	386.7	3 ft.	6"	N	1	Bomb Fragment
27-L5-10	7.6	397.1	4 ft.	3"	N	1	Bomb Fragment
27-L5-11	11.3	420.9	4 ft.	2"	N	1	Bomb Fragment
27-L5-12	134.5	443.9	2 ft.	8"	N	3	Bomb Fragment
27-L5-13	41.2	485.0	4 ft.	6"	N	1	Bomb Fragment
27-L5-14	83.5	521.0	1 ft.	3"	N	2	Bomb Fragment
27-L5-15	25.4	562.9	2 ft.	2"	N	1	Bomb Fragment
27-L5-16	85.6	570.5	2 ft.	6"	N	1	Bomb Fragment
27-L5-17	26.4	670.6	1 ft.	4"	N	1	Bomb Fragment
27-L5-18	6.4	725.2	1 ft.	3"	N	.25 lb	OE Scrap
27-L5-19	7.3	826.8	4 ft.	4"	N	.25 lb	OE Scrap
27-L5-20	8.4	886.0	0.0	1"	N	.25 lb	OE Scrap
27-L5-21	8.8	919.3	2 ft.	1"	N	.25 lb	OE Scrap
27-L5-22	8.7	924.4	3 ft.	1"	N	.25 lb	OE Scrap
27-L5-23	17.4	960.3	2 ft.	2"	N	.25 lb	OE Scrap
27-L5-24	10.2	970.7	0.0	1"	N	.25 lb	OE Scrap
27-L5-25	11.5	1020.4	2 ft.	1"	N	.25 lb	Scrap

Area 27 - Line 5 - LHAAP Anomaly Digsheet

00049376

Area	Transect		
27	5	EOD Team	1
		Date of Excavation	6/28/2006
		Start Time	7:30
		Stop Time	13:15

Total MEC Scrap 36.75 lbs.

Pg. 1, Total Scrap 30 lbs.
Pg. 2, Total Scrap 6.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L5-26	7.1	1129.3	3 ft.	2"	N	.5 lb.	OE Scrap
27-L5-27	7.1	1181.4	2 ft.	4"	N	.25 lb	OE Scrap
27-L5-28	12.5	1189.9	0.0	2"	N	.5 lb.	OE Scrap
27-L5-29	11.5	1213.1	4 ft.	1"	N	.25 lb	Scrap
27-L5-30	18.3	1249.4	0.0	1"	N	.25 lb	Scrap
27-L5-31	192.8	1276.1	1 ft.	2"	N	2 lbs.	Bomb Fragment
27-L5-32	8.0	1301.0	2 ft.	4"	N	.25 lb	OE Scrap
27-L5-33	17.8	1338.4	2 ft.	3"	N	.25 lb	OE Scrap
27-L5-34	6.7	1356.9	1 ft.	2"	N	.25 lb	Scrap
27-L5-35	33.5	1377.5	1 ft..	1"	N	.25 lb	OE Scrap
27-L5-36	27.4	1444.2	4 ft.	2"	N	.25 lb	OE Scrap
27-L5-37	13.3	1462.8	2 ft.	3"	N	.25 lb	Scrap
27-L5-38	18.0	1490.1	1 ft.	2"	N	.25 lb	Scrap
27-L5-39	13.8	1513.2	1 ft.	3"	N	.5 lb.	Scrap
27-L5-40	8.0	1558.9	2 ft.	3"	N	.25 lb	OE Scrap
27-L5-41	8.4	1614.1	1 ft.	4"	N	.25 lb	OE Scrap
27-L5-42	26.9	1635.5	4 ft.	3"	N	.25 lb	Scrap

Area 27 - Line 6 - LHAAP Anomaly Digsheet 00049377

Area	Transect				
27	6	EOD Team	1		**Total MEC Items: 5 ea.**
		Date of Excavation	6/28/2006	6/29/2006	**Total MEC Scrap 25.75 lbs.**
		Start Time	13:20	7:00	Pg. 1, Total MEC Scrap 23.75 lbs.
		Stop Time	15:45	8:30	Pg. 2, Total MEC Scrap 2 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L6-1	332.4	62.0	1.5 ft.	5"	N	1 lb.	Bomb Fragment	1
L6-2	47.1	87.0	5 ft.	3"	N	2 lbs.	Bomb Fragment	1
L6-3	16.7	103.9	2.5 ft.	3"	N	1 lb.	Bomb Fragment	1
L6-4	96.2	186.8	1 ft.	1"	N	1 lb.	Bomb Fragment	1
L6-5	330.4	231.8	7 ft.	1"	N	2 lbs.	Bomb Fragment	1
L6-6	58.6	268.5	4 ft.	1"	N	1 lb.	Bomb Fragment	1
L6-7	29.4	352.8	1 ft.	2"	N	1 lb.	Bomb Fragment	1
L6-8	99.7	389.2	1 ft.	3"	N	1 lb.	Bomb Fragment	1
L6-9	37.5	426.7	7 ft.	6"	N	.25 lb.	OE Scrap	1
L6-10	361.5	471.6	4 ft.	2"	N	2 lbs.	Bomb Fragment	1
L6-11	149.8	509.6	1 ft.	2"	N	1 lb.	Bomb Fragment	1
L6-12	10.2	527.9	3 ft.	3"	N	1 lb.	Bomb Fragment	1
L6-13	28.7	570.8	3 ft.	1"	N	.25 lb.	OE Scrap	1
L6-14	7.7	787.4	3 ft.	3"	N	.25 lb.	OE Scrap	1
L6-15	6.1	820.7	2 ft.	4"	N	1 lb.	Bomb Fragment	1
L6-16	49.7	857.8	2 ft.	2"	N	1 lb.	Bomb Fragment	1
L6-17	8.0	883.6	2 ft.	1"	N	.25 lb.	OE Scrap	1
L6-18	12.2	910.9	3 ft.	2"	N	1 lb.	Bomb Fragment	1
L6-19	101.0	952.8	2 ft.	6"	N	3 lbs.	Bomb Fragment	6
L6-20	17.7	966.5	2 ft.	3"	N	1 lb.	Fragment	6
L6-21	55.8	1025.2	1 ft.	4"	N	1 lb.	Bomb Fragment	4
L6-22	7.1	1054.5	1 ft.	6"	N	.25 lb.	OE Scrap	2
L6-23	8.3	1069.6	3 ft.	4"	N	.25 lb.	OE Scrap	2
L6-24	25.1	1085.7	1 ft.	3"	N	.25 lb.	OE Scrap	2
L6-25	11.3	1110.8	1 ft.	6"	N	1 lb.	Scrap	3

Area 27 - Line 6 - LHAAP Anomaly Digsheet 00049378

Area	Transect				
27	6	EOD Team	1		**Total MEC Items: 5 ea.**
		Date of Excavation	6/28/2006	6/29/2006	**Total MEC Scrap 25.75 lbs.**
		Start Time	13:20	7:00	Pg. 1, Total MEC Scrap 23.75 lbs.
		Stop Time	15:45	8:30	Pg. 2, Total MEC Scrap 2 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L6-26	7.4	1164.5	1 ft.	0	N	.25 lb.	Scrap	3
L6-27	26.4	1184.8	2 ft.	1"	N	.5 lb.	OE Scrap	3
L6-28	11.1	1275.8	5 ft.	1"	N	.25 lb.	Scrap	1
L6-29	40.5	1336.6	2 ft.	1"	N	.5 lb.	OE Scrap	3
L6-30	7.9	1393.9	1 ft.	3"	N	.5 lb.	Scrap	7
L6-31	13.3	1415.1				NOTE	Distance From South boarder of OB/OD to North Boarder of	
L6-32	10.4	1421.7					the OB/OD of lane 6 is 351 feet	
L6-33	11.5	1426.8						
L6-34	17.5	1439.3						
L6-35	19.5	1458.2	**3 ft. Off Lane**	**0**	**Y**		**M-123 Photoflash Carteidge. East side of Lane**	
L6-36	8.2	1465.3						
L6-37	17.2	1470.9						
L6-38	6.9	1478.4						
L6-39	9.0	1485.5						
L6-40	57.2	1502.9	**3 ft. Off Lane**	**0**	**Y**		**M-123 Photoflash Cartridge, West side of Lane at 1,500 ft.**	
L6-41	12.6	1526.5				NOTE:	Site 27 L 6: Flags 31 through 49, South West to North West	
L6-42	128.4	1575.4					Boarder of OB/OD Site. Density of fragmentation leads to a	
L6-43	51.3	1620.1					general characterization and identifies it for clearance before	
L6-44	13.4	1642.6					turn over to Fish And Wildlife. Lane requires the outline staked	
L6-45	26.3	1659.2					& Northern, Western, Southern boundaries be surveyed in and	
L6-46	6.9	1673.8					ploted on Site map. Further investigation of lanes 7, 8, 9, 10,	
L6-47	8.4	1736.0					11 and 12 require the same consideration. The OB/OD is	
L6-48	22.3	1743.2					estimated to be 900 ft. diameter. Futher intrusive investigation	
L6-49	17.7	1766.1					of this lane has been suspended by the SUXOS. 6/29/2006	
L6-50	ADD ON	50.0	**3 ft. Off Lane**	**0**	**Y**	**3 ea.**	**M-112 Photoflash Cartridge, West Side of lane at 50 ft.**	

Area 27 - Line 7 - LHAAP Anomaly Digsheet 00049379

Area	Transect					
27	7	EOD Team	2			
						Total MEC Scrap
		Date of Excavation	6/22/2006	6/23/2006	7/1/2006	
						Pg 1, Total MEC Scrap: 45 lbs.
		Start Time	13:55	12:00	12:30	Pg. 3, Total MEC Scrap:
		Stop Time	15:45	13:15	15:50	Pg. 4, Total MEC Scrap:

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L7-1	10.5	7.6	6 ft.	4"	N	4 lbs.	Bomb Fragment	1
L7-2	58.8	45.1	2 ft.	0	N	1 lb.	Fragment	1
L7-3	16.5	74.3	5 ft.	3"	N	1 lb.	Fragment	1
L7-4	13.0	81.4	4 ft.	3"	N	1 lb.	Fragment	1
L7-5	6.8	86.5	3 ft.	2"	N	5 lbs.	Fragment	1
L7-6	17.0	90.2	4 ft.	3"	N	1 lb.	Fragment	1
L7-7	72.5	96.3	1 ft.	0	N	3 lbs.	Fragment	1
L7-8	78.2	132.0	5 ft.	3"	N	2 lbs.	Fragment	1
L7-9	58.1	230.9	2 ft.	2"	N	1 lb.	Fragment	1
L7-10	14.3	296.8	1 ft.	0	N	10 lbs.	Fragment	2
L7-11	91.1	309.3	1 ft.	3"	N	2 lbs.	Fragment	1
L7-12	86.1	372.3	5 ft.	2"	N	2 lbs.	Fragment	1
L7-13	36.8	445.1	6 ft.	4"	N	5 lbs.	Fragment	2
L7-14	38.4	458.2	4 ft.	8"	N	3 lbs.	Fragment	1
L7-15	7.6	514.9	5 ft.	6"	N	.25 lb.	OE Scrap	1
L7-16	18.2	521.7	3 ft.	4"	N	1 lb.	Fragment	1
L7-17	7.6	562.9	6 ft.	4"	N	2 lbs.	Fragment	2
L7-18	7.3	580.2	2 ft.	5"	N	.25 lb.	OE Scrap	1
L7-19	8.2	599.6	2 ft.	2"	N	.25 lb.	OE Scrap	1
L7-20	28.7	670.3	3 ft.	3"	N	.5 lb.	OE Scrap	2
L7-21	38.8	676.0	2 ft.	4"	N	.25 lb.	OE Scrap	3
L7-22	31.8	733.9				NOTE:	South Boarder OB/OD Area	
L7-23	6.6	770.7						
L7-24	11.7	837.4				NOTE:	Lane 7: Distance from the South Boarder OB/OD to the North	
L7-25	85.3	845.3					Boarder of the OB/OD is 645 feet.	

Area 27 - Line 7 - LHAAP Anomaly Digsheet 00049380

Area	Transect					
27	7	EOD Team	2			
						Total MEC Scrap
		Date of Excavation	6/22/2006	6/23/2006	7/1/2006	
						Pg 1, Total MEC Scrap: 45 lbs.
		Start Time	13:55	12:00	12:30	Pg. 3, Total MEC Scrap:
		Stop Time	15:45	13:15	15:50	Pg. 4, Total MEC Scrap:

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
L7-26	38.3	880.3					
L7-27	14.6	920.5					
L7-28	26.2	949.2					
L7-29	6.1	972.2					
L7-30	30.9	985.3					
L7-31	10.4	998.8				NOTE: Site 27, L7: Flags 22 through 51, South West to North West	
L7-32	28.6	1013.0				Boarder of OB/OD Site. Density of fragmentation leads to a	
L7-33	7.0	1030.8				general characterization and identifies it as an Open Burn/Open	
L7-34	110.8	1042.1				Detonation area. Lane requires the outline staked, Northern	
L7-35	87.6	1047.3				and Southern boundaries be surveyed in and ploted on Site	
L7-36	104.0	1096.3				map. Further investigation of lanes 6, 8, 9, 10,11 and 12	
L7-37	29.6	1132.7				require the same consideration. The OB/OD is estimated to	
L7-38	12.3	1146.9				be 700 ft. diameter. Futher intrusive investigation of this lane	
L7-39	9.8	1158.3				has been suspended by the SUXOS. 7/3/2006	
L7-40	52.2	1175.7					
L7-41	7.2	1187.9					
L7-42	145.0	1193.8					
L7-43	8.4	1213.9					
L7-44	28.8	1234.5					
L7-45	8.2	1260.4					
L7-46	8.3	1294.3					
L7-47	32.6	1308.8					
L7-48	20.5	1326.4					
L7-49	10.5	1344.3					
L7-50	10.8	1361.5					

Area 27 - Line 7 - LHAAP Anomaly Digsheet 00049381

Area	Transect				
27	7	EOD Team	2		
					Total MEC Scrap
		Date of Excavation	6/22/2006	6/23/2006	7/1/2006
					Pg 1, Total MEC Scrap: 45 lbs.
		Start Time	13:55	12:00	12:30
		Stop Time	15:45	13:15	15:50
					Pg. 4, Total MEC Scrap:

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L7-51	40.9	1378.5				NOTE:	North Boarder OB/OB Area	
L7-52	112.0	1396.2	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-53	20.5	1409.2	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-54	29.8	1418.4	Multiple Hits	1"	N	.5 lb.	OE Scrap	
L7-55	104.6	1438.8	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-56	128.6	1447.2	1 ft.	1"	N	2 lbs.	Steel Pipe 12" long	
L7-57	26.4	1458.5	3"	4"	N		Reinforced concrete	
L7-58	61.5	1462.6	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-59	30.5	1469.3	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-60	25.9	1478.9	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-61	32.2	1485.6	Multiple Hits	1"	N	.25 lb.	OE Scrap	
L7-62	87.0	1493.7	Multiple Hits	3"	N	3 lbs.	OE Scrap & Flat iron	
L7-63	57.4	1517.1	Multiple Hits	1"	N		OE Scrap QC 100mv. 12" offset	
L7-64	67.9	1525.4	Multiple Hits	1"	N		OE Scrap QC 60mv. 12" offset	
L7-65	42.5	1528.8	Multiple Hits	1"	N		OE Scrap QC 35mv. 12" offset	
L7-66	30.6	1541.3	Multiple Hits	1"	N		OE Scrap QC 45mv. 12" offset	
L7-67	30.7	1547.0	Multiple Hits	1"	N		OE Scrap QC 32mv. 12" offset	
L7-68	24.1	1560.9	Multiple Hits	1"	N		OE Scrap	
L7-69	40.8	1564.8	Multiple Hits	1"	N		OE Scrap	
L7-70	28.5	1578.9	Multiple Hits	1"	N		OE Scrap	
L7-71	57.1	1585.6	Multiple Hits	1"	N		OE Scrap	
L7-72	31.7	1598.1	Multiple Hits	1"	N		OE Scrap	
L7-73	31.1	1616.7	Multiple Hits	1"	N		OE Scrap	
L7-74	302.2	1627.4	Multiple Hits	1"	N		OE Scrap	
L7-75	35.5	1633.7	Multiple Hits	1"	N		OE Scrap	

Area 27 - Line 7 - LHAAP Anomaly Digsheet

00049382

Area	Transect				
27	7	EOD Team	2		
					Total MEC Scrap
		Date of Excavation	6/22/2006	6/23/2006	7/1/2006
					Pg 1, Total MEC Scrap: 45 lbs.
		Start Time	13:55	12:00	12:30 Pg. 3, Total MEC Scrap:
		Stop Time	15:45	13:15	15:50 Pg. 4, Total MEC Scrap:

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
L7-76	63.4	1641.7	Multiple Hits	1"	N	OE Scrap	
L7-77	45.1	1646.5	Multiple Hits	1"	N	OE Scrap	
L7-78	62.8	1651.8	Multiple Hits	2"	N	OE Scrap	
L7-79	28.6	1675.0	Multiple Hits	2"	N	OE Scrap	
L7-80	16.3	1679.0	10"	2"	N	OE Scrap	
L7-81	11.5	1693.5	1.5 ft.	2"	N	OE Scrap	
L7-82	8.4	1706.3	15 ft.	1"	N	Scrap	
L7-83	7.0	1715.7	10"	3"	N	Scrap	
L7-84	10.4	1785.3	1.5 ft.	6"	N	Non OE Scrap	
L7-85	6.7	1812.0	0.0	0	N	Survey Point (nail)	

Area 27 - Line 8 - LHAAP Anomaly Digsheet 00049383

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L8-1	15.6	0.0	4 ft.	1"	N	3 lbs.	Bomb Fragment	1
27-L8-2	713.6	75.3	3 ft.	1"	N	3 lbs.	Bomb Fragment	1
27-L8-3	20.8	133.2	3 ft.	4"	N	1 lb.	Bomb Fragment	1
27-L8-4	2.8	145.1	4 ft.	3"	N	2 lbs.	Bomb Fragment	1
27-L8-5	2.8	164.6	5 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L8-6	418.8	179.8	4 ft.	0	N	2 lbs.	Bomb Fragment	1
27-L8-7	1.9	193.8	2 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L8-8	4.1	201.1	1 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L8-9	126.8	216.8	5 ft.	3"	N	1 lb.	Bomb Fragment	1
27-L8-10	88.1	228.7	1 ft.	2"	N	2 lbs.	Bomb Fragment	2
27-L8-11	0.0	257.0	5 ft.	0	N	2 lbs.	Bomb Fragment	1
27-L8-12	88.6	269.9	2 ft.	2"	N	2 lbs.	Bomb Fragment	3
27-L8-13	83.5	299.5	1 ft.	2"	N	1 lb.	Bomb Fragment	3
27-L8-14	33.9	305.1	0.0	6"	N	1 lb.	Bomb Fragment	2
27-L8-15	10.2	325.8	3 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L8-16	53.0	329.9	2 ft.	4"	N	1 lb.	Bomb Fragment	1
27-L8-17	3.1	342.3	2 ft.	3"	N	1 lb.	Bomb Fragment	2
27-L8-18	606.3	373.2	6 ft.	1"	N	2 lbs.	Bomb Fragment	1
27-L8-19	2.7	409.9	3 ft.	2"	N	.25 lb.	Bomb Fragment	1
27-L8-20	107.4	433.0	1.5 ft.	1"	N	2 lbs.	Bomb Fragment	1
27-L8-21	11.5	440.1	2 ft.	2"	N	1 lb.	Bomb Fragment	2
27-L8-22	104.1	479.0	2 ft.	3"	N	.25 lb.	Bomb Fragment	1
27-L8-23	1.5	499.4	3 ft.	2"	N	.25 lb.	Bomb Fragment	1
27-L8-24	103.0	547.3	1 ft.	3"	N	1 lb.	Bomb Fragment	2
27-L8-25	10.1	557.1	2 ft.	3"	N	1 lb.	Bomb Fragment	2

Area 27 - Line 8 - LHAAP Anomaly Digsheet

00049384

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L8-26	8.2	565.5	3 ft.	4"	N	.25 lb.	Scrap	1
27-L8-27	4.1	599.4	2 ft.	6"	N	.5 lb.	Scrap	1
27-L8-28	3.4	622.1	5 ft.	4"	N	1 lb.	Fragment	2
27-L8-29	6.8	640.1	0.0	1"	N	.25 lb.	Fragment	3
27-L8-30	2.6	690.6				NOTE:	Lane 8: South Boarder OB/OD area.	
27-L8-31	14.9	749.0						
27-L8-32	3.4	757.3						
27-L8-33	4.5	768.0						
27-L8-34	18.2	786.5						
27-L8-35	1.8	827.7						
27-L8-36	12.5	835.6				NOTE:	Site 27, L8: Flags 30 through 145, South West to North West	
27-L8-37	37.6	847.0					Boarder of OB/OD Site. Density of fragmentation leads to a	
27-L8-38	4.2	852.1					general characterization and identifies it as an Open Burn/Open	
27-L8-39	69.5	858.3					Detonation area. Lane requires the outline staked, Northern	
27-L8-40	1.6	867.0					and Southern boundaries be surveyed in and ploted on Site	
27-L8-41	4.5	892.3					map. Further investigation of lanes 6, 7, 9, 10, 11	
27-L8-42	4.3	902.1					require the same consideration. The OB/OD is estimated to	
27-L8-43	6.0	907.5					be 1,192 ft. from South Boarder to the Northern Boarder.	
27-L8-44	11.6	922.9					Futher intrusive investigation of this lane has been suspended	
27-L8-45	6.9	930.9					by the SUXOS. 7/3/2006 until instructions have beeb received	
27-L8-46	7.9	937.2					by the USACE, Ft. Worth District.	
27-L8-47	24.7	956.5						
27-L8-48	2.0	967.9						
27-L8-49	3.0	981.0						
27-L8-50	0.0	1004.2						

Area 27 - Line 8 - LHAAP Anomaly Digsheet 00049385

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
27-L8-51	58.9	1014.0					
27-L8-52	3.8	1024.3					
27-L8-53	40.8	1029.9					
27-L8-54	8.7	1035.5					
27-L8-55	91.3	1043.5					
27-L8-56	14.1	1052.9					
27-L8-57	2.5	1066.3					
27-L8-58	7.2	1088.9					
27-L8-59	56.0	1093.8					
27-L8-60	93.5	1106.3					
27-L8-61	206.9	1119.2					
27-L8-62	0.0	1133.7					
27-L8-63	54.5	1145.2					
27-L8-64	16.4	1153.4					
27-L8-65	15.7	1157.8					
27-L8-66	0.0	1166.0					
27-L8-67	0.0	1187.9					
27-L8-68	4.2	1199.0					
27-L8-69	12.6	1204.8					
27-L8-70	3.8	1208.5					
27-L8-71	23.2	1212.9					
27-L8-72	266.4	1219.8					
27-L8-73	0.0	1233.9					
27-L8-74	0.0	1242.7					
27-L8-75	7.4	1247.6					

Area 27 - Line 8 - LHAAP Anomaly Digsheet

00049386

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
27-L8-76	13.4	1252.6					
27-L8-77	154.1	1267.1					
27-L8-78	89.9	1279.0					
27-L8-79	42.4	1307.3					
27-L8-80	18.3	1327.1					
27-L8-81	10.7	1335.3					
27-L8-82	6.6	1341.7					
27-L8-83	46.2	1350.5					
27-L8-84	48.0	1363.5					
27-L8-85	6.3	1369.0					
27-L8-86	6.6	1385.0					
27-L8-87	22.1	1401.0					
27-L8-88	8.3	1404.5					
27-L8-89	11.9	1407.4					
27-L8-90	3.1	1438.6					
27-L8-91	34.9	1446.0					
27-L8-92	25.9	1450.5					
27-L8-93	4.8	1457.1					
27-L8-94	7.2	1464.2					
27-L8-95	12.1	1476.4					
27-L8-96	16.5	1482.1					
27-L8-97	36.9	1485.4					
27-L8-98	1.4	1499.1					
27-L8-99	76.7	1514.4					
27-L8-100	21.5	1523.8					

Area 27 - Line 8 - LHAAP Anomaly Digsheet

00049387

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment Digs
27-L8-101	1.6	1530.2				
27-L8-102	54.7	1541.1				
27-L8-103	26.5	1546.0				
27-L8-104	34.1	1553.3				
27-L8-105	24.3	1561.3				
27-L8-106	28.4	1568.4				
27-L8-107	27.1	1573.6				
27-L8-108	10.0	1577.4				
27-L8-109	10.0	1584.9				
27-L8-110	45.8	1590.1				
27-L8-111	49.5	1596.7				
27-L8-112	86.3	1600.8				
27-L8-113	41.9	1609.7				
27-L8-114	46.1	1616.4				
27-L8-115	10.4	1621.4				
27-L8-116	0.0	1624.4				
27-L8-117	0.0	1626.9				
27-L8-118	39.2	1640.3				
27-L8-119	58.3	1644.5				
27-L8-120	0.0	1655.3				
27-L8-121	141.0	1667.7				
27-L8-122	123.0	1676.6				
27-L8-123	73.3	1683.6				
27-L8-124	23.5	1690.3				
27-L8-125	561.1	1697.3				

Area 27 - Line 8 - LHAAP Anomaly Digsheet

00049388

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L8-126	25.4	1705.8						
27-L8-127	34.0	1710.1						
27-L8-128	27.8	1717.6						
27-L8-129	2.4	1723.4						
27-L8-130	16.9	1735.1						
27-L8-131	16.1	1742.6						
27-L8-132	4.9	1755.8						
27-L8-133	16.4	1760.1						
27-L8-134	9.3	1763.8						
27-L8-135	17.2	1783.5						
27-L8-136	14.2	1788.8						
27-L8-137	50.7	1792.0						
27-L8-138	15.1	1804.0						
27-L8-139	12.9	1809.0						
27-L8-140	0.0	1817.5						
27-L8-141	15.5	1825.5						
27-L8-142	8.2	1831.5						
27-L8-143	19.5	1836.0						
27-L8-144	5.3	1847.0						
27-L8-145	6.1	1883.3				NOTE:	Lane 8: North Boarder OB/OD area.	
27-L8-146	14.2	1904.5	1 ft.	3"	N	1 lb.	OE Scrap	6
27-L8-147	33.1	1914.8	3 ft.	1"	N		Marker Nail for Survey Hub	
27-L8-148	179.7	1935.2	0.0	4"	N	.25 lb.	OE Scrap	4
27-L8-149	10.6	1950.5	0.0	4"	N	1 lb.	OE Scrap	6
27-L8-150	4.7	1968.9	0.0	3"	N	.25 lb.	OE Scrap	6

Area 27 - Line 8 - LHAAP Anomaly Digsheet

00049389

Area	Transect			
27	8	EOD Team	1	**Total MEC Scrap 41.5 lbs.**
		Date of Excavation	7/3/2006	Pg. 1, Total MEC Scrap 33.75 lbs.
				Pg. 2, Total MEC Scrap 2 lbs.
		Start Time	7:15	Pg. 5, Total MEC Scrap 2.5 lbs
		Stop Time	11:30	Pg. 6, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L8-151	1.1	1978.2	4 ft.	2"	N	.5 lb.	OE Scrap	2
27-L8-152	4.9	1984.0	1 ft.	3"	N	.25 lb.	Scrap	8
27-L8-153	2.7	2000.4	2 ft.	2"	N	.5 lb.	OE Scrap	4
27-L8-154	13.5	2014.0	2 ft.	1"	N	.25 lb.	Scrap	1
27-L8-155	5.6	2023.7	2 ft.	2"	N	0.5 lb.	OE Scrap	2
27-L8-156	30.3	2034.3	4 ft.	1"	N	.25 lb.	Scrap	2
27-L8-157	3.8	2088.6	3 ft.	2"	N	.5 lb.	OE Scrap	3
27-L8-158	2.1	2099.3	1 ft.	3"	N	.25 lb.	Scrap	1
27-L8-159	4.6	2103.5	6 ft.	4"	N	.25 lb.	OE Scrap	1

Area 27 - Line 9 - LHAAP Anomaly Digsheet

00049390

Area	Transect			
27	9	EOD Team	1	
		Date of Excavation	6/30/2006	**Total MEC Scrap 35 lbs.**
		Start Time	11:00	Pg 1, Total MEC Scrap 32.5 lbs.
		Stop Time	13:00	Pg 4, Total MEC Scrap 2.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		
L9-1	52.0	83.6	2 ft.	3"	N	1 lb.	Bomb Fragment	1
L9-2	125.2	96.8	2 ft.	1"	N	2 lbs.	Bomb Fragment	2
L9-3	347.5	111.5	1 ft.	0	N	2 lbs.	Bomb Fragment	2
L9-4	25.1	227.2	1 ft.	3"	N	1 lb.	Bomb Fragment	1
L9-5	7.9	238.0	3 ft.	2"	N	3 lbs.	Bomb Fragment	1
L9-6	47.1	323.1	1 ft.	3"	N	1 lb.	Bomb Fragment	1
L9-7	14.5	359.1	4 ft.	2"	N	2 lbs.	Bomb Fragment	3
L9-8	68.1	377.3	3 ft.	3"	N	1 lb.	Bomb Fragment	3
L9-9	71.4	390.2	2 ft.	6"	N	2 lbs.	Bomb Fragment	2
L9-10	106.6	407.8	1 ft.	3"	N	2 lbs.	Bomb Fragment	1
L9-11	30.0	423.8	3 ft.	6"	N	1 lb.	Bomb Fragment	2
L9-12	30.0	545.6	3 ft.	1"	N	2 lbs.	Bomb Fragment	3
L9-13	116.9	567.6	4 ft.	6"	N	2 lbs.	Bomb Fragment	5
L9-14	192.8	607.9	2 ft.	4"	N	1 lb.	Bomb Fragment	2
L9-15	12.4	638.2	3 ft.	6"	N	2 lbs.	Bomb Fragment	3
L9-16	227.2	666.7	2 ft.	4"	N	1 lb.	Bomb Fragment	3
L9-17	153.1	691.1	1 ft.	4"	N	1 lb.	Bomb Fragment	3
L9-18	13.6	755.9	3 ft.	3"	N	2 lbs.	Bomb Fragment	4
L9-19	247.0	764.7	1 ft.	2"	N	0.25 lb.	OE Scrap	3
L9-20	23.9	776.1	2 ft.	3"	N	0.25 lb.	OE Scrap	8
L9-21	32.9	784.5	1 ft.	6"	N	1 lb.	Bomb Fragment	6
L9-22	67.3	812.1	3 ft.	3"	N	0.5 lb.	OE Scrap	5
L9-23	71.2	825.4	1 ft.	4"	N	0.5 lb.	OE Scrap	6
L9-24	204.1	840.9				NOTE:	South Boarder Lane 9 of the OB/OD	
L9-25	42.9	863.8						

Area 27 - Line 9 - LHAAP Anomaly Digsheet

00049391

Area	Transect			
27	9	EOD Team	1	
		Date of Excavation	6/30/2006	**Total MEC Scrap 35 lbs.**
		Start Time	11:00	Pg 1, Total MEC Scrap 32.5 lbs.
		Stop Time	13:00	Pg 4, Total MEC Scrap 2.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
L9-26	34.5	880.4				**NOTE:** Site 27 L9: Flags 24 through 81, South West to North West
L9-27	21.7	928.3				Boarder of OB/OD Site. Density of fragmentation leads to a
L9-28	53.6	937.1				general characterization and identifies it for clearance before
L9-29	55.4	946.7				turn over to Fish And Wildlife. Lane requires the outline staked
L9-30	74.3	968.1				& Northern, Western, Southern boundaries be surveyed in and
L9-31	8.4	994.2				ploted on Site map. Further investigation of lanes 7, 8, 9, 10,
L9-32	14.2	1007.8				11 and 12 require the same consideration. The OB/OD is
L9-33	20.5	1019.9				estimated to be 900 ft. diameter. Futher intrusive investigation
L9-34	50.7	1026.9				of this lane has been suspended by the SUXOS. 6/30/2006
L9-35	55.9	1048.6				
L9-36	41.3	1062.1				
L9-37	234.5	1070.6				
L9-38	49.2	1084.8				**NOTE:** South Boarder to the North Boarder of the OB/OD, Lane 9 is
L9-39	28.1	1116.8				993 feet.
L9-40	32.4	1140.2				
L9-41	7.9	1156.6				
L9-42	9.4	1169.0				
L9-43	66.5	1192.2				
L9-44	11.2	1217.3				
L9-45	10.0	1241.1				
L9-46	11.9	1325.8				QC 22 mv. 3 ft. offset
L9-47	13.4	1340.3				QC 26 mv. 1 ft. offset
L9-48	58.5	1357.7				QC 70 mv. 0 offset
L9-49	56.3	1412.8				
L9-50	81.3	1427.9				

Area 27 - Line 9 - LHAAP Anomaly Digsheet

00049392

Area	Transect			
27	9	EOD Team	1	
		Date of Excavation	6/30/2006	**Total MEC Scrap 35 lbs.**
		Start Time	11:00	Pg 1, Total MEC Scrap 32.5 lbs.
		Stop Time	13:00	Pg 4, Total MEC Scrap 2.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
L9-51	12.7	1444.7				
L9-52	11.0	1471.5				
L9-53	12.2	1515.6				
L9-54	9.8	1522.1				
L9-55	89.8	1531.5				
L9-56	74.3	1568.2				
L9-57	7.4	1581.4				
L9-58	17.6	1606.9				
L9-59	20.8	1610.2				
L9-60	11.5	1615.7				
L9-61	33.1	1621.2				
L9-62	12.3	1628.1				
L9-63	30.3	1632.9				
L9-64	13.5	1638.0				
L9-65	57.6	1660.1				
L9-66	34.0	1674.0				
L9-67	15.0	1679.1				
L9-68	10.5	1690.9				
L9-69	78.5	1697.3				
L9-70	21.3	1710.3				
L9-71	22.0	1717.3				
L9-72	9.9	1725.6				
L9-73	10.7	1739.4				
L9-74	74.5	1748.7				
L9-75	41.1	1758.7				

Area 27 - Line 9 - LHAAP Anomaly Digsheet

00049393

Area	Transect			
27	9	EOD Team	1	
		Date of Excavation	6/30/2006	**Total MEC Scrap 35 lbs.**
		Start Time	11:00	Pg 1, Total MEC Scrap 32.5 lbs.
		Stop Time	13:00	Pg 4, Total MEC Scrap 2.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		
L9-76	15.1	1763.3						
L9-77	26.5	1766.1						
L9-78	22.4	1774.5						
L9-79	25.6	1819.2						
L9-80	18.4	1824.6				NOTE:	34 contacts from flag 79 to flag 80	
L9-81	30.3	1833.8					North Boarder of OB/OD, Lane 9	
L9-82	11.2	1853.0	1 ft.	0	N	.5 lb.	Scrap (Numerous small aluminum flakes)	13
L9-83	10.5	1964.2	1 ft.	4"	N	.25 lb.	Scrap	4
L9-84	10.2	1977.9	2 ft.	4"	N	.5 lb.	Scrap	5
L9-85	7.7	2032.3	2 ft.	6"	N	.25 lb.	Scrap	3
L9-86	13.3	2191.3	3 ft..	8"	N	1 lb.	Bomb Fragment	1

Area 27 - Line 10 - LHAAP Anomaly Digsheet 00049394

Area	Transect			
27	10	EOD Team	2	**Total MEC Items 1 ea. M-112 Photoflash Cartridge**
		Date of Excavation	6/29/2006	**Total MEC Scrap 68 lbs.**
				Pg. 1, Total MEC Scrap 43.5 lbs.
		Start Time	8:30	Pg. 2, Total MEC Scrap 21.25 lbs.
		Stop Time	16:30	Pg. 4, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L10-1	64.9	0.1	4 ft.	6"	N	1 lb.	Bomb Fragment	1
L10-2	569.0	76.7	0.0	8"	N	2 lbs.	Bomb Fragment	1
L10-3	13.2	106.8	1 ft.	4"	N	1 lb.	Bomb Fragment	1
L10-4	23.3	205.4	3 ft.	6"	N	2 lbs.	Bomb Fragment	1
L10-5	718.6	367.3	3 ft.	4"	N	2 lbs.	Bomb Fragment	1
L10-6	529.4	406.1	2 ft.	6"	N	3 lbs.	Bomb Fragment	1
L10-7	574.1	441.1	2 ft.	0	N	1 lb.	Bomb Fragment	2
L10-8	38.9	457.8	3 ft.	3"	N	1 lb.	Bomb Fragment	2
L10-9	193.2	540.3	4 ft.	6"	N	2 lbs.	Bomb Fragment	2
L10-10	40.6	553.2	2 ft.	4"	N	1 lb.	Bomb Fragment	3
L10-11	36.2	583.6	5 ft.	2"	N	2 lbs.	Bomb Fragment	2
L10-12	46.0	603.1	3 ft.	3"	N	3 lbs.	Bomb Fragment	3
L10-13	103.7	610.7	6 ft.	2"	N	5 lbs.	Bomb Fragment	2
L10-14	110.5	630.2	2 ft.	1"	N	2 lbs.	Bomb Fragment	2
L10-15	253.1	640.5	1 ft.	2"	N	1 lb.	Bomb Fragment	1
L10-16	141.6	654.9	1 ft.	3"	N	2 lbs.	Bomb Fragment	3
L10-17	63.4	662.2	2 ft.	3"	N	3 lbs.	Bomb Fragment	4
L10-18	12.6	695.5	2 ft.	2"	N	2 lbs.	Bomb Fragment	3
L10-19	20.7	713.5	4 ft.	6"	N	0.25 lb.	OE Scrap	2
L10-20	812.0	757.5	2 ft.	6"	N	1 lb.	Bomb Fragment	3
L10-21	19.9	775.7	1 ft.	4"	N	2 lbs.	Bomb Fragment	2
L10-22	13.5	781.9	0 ft.	6"	N	0.25 lb.	OE Scrap	3
L10-23	125.5	803.0	0 ft.	4"	N	1 lb.	Bomb Fragment	2
L10-24	250.8	827.1	3 ft.	2"	N	2 lbs.	Bomb Fragment	6
L10-25	367.1	841.6	2 ft.	4"	N	1 lb.	OE Scrap	5

Area 27 - Line 10 - LHAAP Anomaly Digsheet

00049395

Area	Transect			
27	10	EOD Team	2	**Total MEC Items 1 ea. M-112 Photoflash Cartridge**
		Date of Excavation	6/29/2006	**Total MEC Scrap 68 lbs.**
				Pg. 1, Total MEC Scrap 43.5 lbs.
		Start Time	8:30	Pg. 2, Total MEC Scrap 21.25 lbs.
		Stop Time	16:30	Pg. 4, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L10-26	129.2	877.1	3 ft.	6"	N	1 lb.	Bomb Fragment	6
L10-27	34.4	882.8	4 ft.	3"	**Y**	1 lb.	**M-112 Photoflash Cartridge**	**4**
L10-28	1182.3	914.3	3 ft.	3"	N	4 lbs.	Scrap	2
L10-29	49.0	931.8	3 ft.	6"	N	5 lbs.	Bomb Fragments/Scrap	10
L10-30	32.5	938.1	NOTE				South Boader OB/OD Area	
L10-31	9.9	958.8						
L10-32	113.0	979.2	0.0	0	N	4 lbs.	Scrap	Surface
L10-33	6.2	1000.0	2.0	2"	N	0.25 lb.	OE Scrap	3
L10-34	146.3	1019.6	1.0	3"	N	4 lbs.	Scrap	1
L10-35	139.1	1038.7	1.0	2"	N	2lbs.	Bomb Fragments, QC 172mv, 1 ft. offset	4
L10-36	36.2	1070.6					QC Coil Bump	
L10-37	43.3	1094.2					QC 52mv 1 ft. offset	
L10-38	8.4	1123.4					QC 11mv. 1 ft. offset	
L10-39	99.3	1140.6						
L10-40	6.4	1183.7						
L10-41	12.8	1206.9						
L10-42	46.2	1213.9						
L10-43	15.7	1228.1						
L10-44	17.3	1233.9						
L10-45	14.1	1239.4						
L10-46	25.1	1275.0						
L10-47	14.7	1281.9						
L10-48	32.3	1291.5						
L10-49	97.2	1302.0						
L10-50	373.9	1312.2						

Area 27 - Line 10 - LHAAP Anomaly Digsheet

00049396

Area	Transect			
27	10	EOD Team	2	**Total MEC Items 1 ea. M-112 Photoflash Cartridge**
		Date of Excavation	6/29/2006	**Total MEC Scrap 68 lbs.**
				Pg. 1, Total MEC Scrap 43.5 lbs.
		Start Time	8:30	Pg. 2, Total MEC Scrap 21.25 lbs.
		Stop Time	16:30	Pg. 4, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
L10-51	36.3	1361.2				**NOTE:** Lane 10: Distance from the South Boarder OB/OD to the North	
L10-52	36.2	1368.2				Boarder of the OB/OD is 870 feet.	
L10-53	27.0	1384.1					
L10-54	12.0	1404.5					
L10-55	59.3	1423.2					
L10-56	21.0	1430.1				**NOTE:** Site 27, L10: Flags 30 through 49, South West to North West	
L10-57	13.7	1440.2				Boarder of OB/OD Site. Density of fragmentation leads to a	
L10-58	24.7	1458.8				general characterization and identifies it for clearance before	
L10-59	87.3	1490.9				turn over to Fish And Wildlife. Lane requires the outline staked	
L10-60	46.7	1508.5				& Northern, Western, Southern boundaries be surveyed in and	
L10-61	50.6	1539.8				ploted on Site map. Further investigation of lanes 7, 8, 9,	
L10-62	25.0	1582.0				11 and 12 require the same consideration. The OB/OD is	
L10-63	15.5	1590.8				estimated to be 870 ft. diameter. Futher intrusive investigation	
L10-64	31.6	1607.8				of this lane has been suspended by the SUXOS. 6/30/2006	
L10-65	33.6	1621.6					
L10-66	46.3	1628.0					
L10-67	13.2	1632.1					
L10-68	26.3	1637.5					
L10-69	8.1	1656.8					
L10-70	27.1	1680.0					
L10-71	35.8	1685.2					
L10-72	15.8	1716.7					
L10-73	27.8	1726.1					
L10-74	14.9	1733.0					
L10-75	7.0	1783.0					

Area 27 - Line 10 - LHAAP Anomaly Digsheet

00049397

Area	Transect			
27	10	EOD Team	2	**Total MEC Items 1 ea. M-112 Photoflash Cartridge**
		Date of Excavation	6/29/2006	**Total MEC Scrap 68 lbs.**
				Pg. 1, Total MEC Scrap 43.5 lbs.
		Start Time	8:30	Pg. 2, Total MEC Scrap 21.25 lbs.
		Stop Time	16:30	Pg. 4, Total MEC Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L10-76	6.0	1803.8						
L10-77	12.4	1808.0				**NOTE:**	North Boarder of OB/OD, Lane 10	
L10-78	33.7	1877.6	2 ft.	2"	N	1 lb.	Bomb Fragment	3
L10-79	8.5	1928.5	1 ft.	3"	N	0.25 lb.	Scrap	5
L10-80	10.9	1954.6	1.5 ft.	2"	N	0.5 lb.	OE Scrap	4
L10-81	9.0	1966.9	2 ft.	2"	N	0.25 lb.	OE Scrap	3
L10-82	9.5	1983.9	3 ft.	6"	N	0.5 lb.	OE Scrap	5
L10-83	8.5	2017.7	4 ft.	0	N	0.25 lb.	Scrap	1
L10-84	159.3	2126.4	0.0	6"	N	0.25 lb.	Scrap	4
L10-85	11.1	2221.4	3 ft.	6"	N	.25 lb.	OE Scrap	2

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049398

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L11-1	1.7	9.1					No Contact	
27-L11-2	9.2	31.8					No Contact	
27-L11-3	9.2	61.1	7 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L11-4	2.3	72.5	4 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L11-5	8.3	92.6					No Contact	
27-L11-6	2.0	111.5	3 ft.	1"	N	.25 lb.	Fragment	1
27-L11-7	3.5	126.5	3 ft.	8"	N		HOT ROCK	
27-L11-8	7.1	179.3	4 ft.	6"	N	.25 lb.	Fragment	1
27-L11-9	35.4	200.7	8 ft.	10"	N	1 lb.	Fragment	1
27-L11-10	14.1	266.0	4 ft.	2"	N	1 lb.	Fragment	1
27-L11-11	5.3	323.8					No Contact	
27-L11-12	38.6	385.4					No Contact	
27-L11-13	68.7	408.6	9 ft.	3"	N	1 lb.	Bomb Fragment	1
27-L11-14	34.1	425.0	5 ft.	3"	N	1 lb.	OE Scrap	1
27-L11-15	3.8	491.9					No Contact	
27-L11-16	0.9	500.7					No Contact	
27-L11-17	57.4	511.7					No Contact	
27-L11-18	363.5	523.4	5 ft.	8"	N	1 lb.	Bomb Fragment	1
27-L11-19	230.1	543.3	3 ft.	5"	N	1 lb.	Bomb Fragment	4
27-L11-20	0.6	572.3	0.0	3"	N	2 lbs.	Bomb Fragment	2
27-L11-21	0.0	589.7	2 ft.	3"	N	2 lbs.	Bomb Fragment	1
27-L11-22	187.2	604.4	6 ft.	3"	N	.25 lb.	OE Scrap	1
27-L11-23	0.0	617.4	4 ft.	2"	N	1 lb.	OE Scrap	3
27-L11-24	6.8	629.0	2 ft.	1"	N	.25 lb.	OE Scrap	1
27-L11-25	64.3	637.0	4 ft.	0	N	1 lb.	Bomb Fragment	1

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049399

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L11-26	17.9	644.6	4 ft.	4"	N	.25 lb.	OE Scrap	3
27-L11-27	38.6	659.6	5 ft.	2"	N	.25 lb.	Scrap	2
27-L11-28	193.6	678.2	3 ft.	1"	N	.25 lb.	OE Scrap	3
27-L11-29	911.8	714.3	**Off Line at 700 ft.**	**0**	**Y**	**1 lb.**	**M-112 A-1 Photoflash cartridge**	
27-L11-30	12.0	739.3				NOTE:	Lane 11, South Boarder OB/OD Area.	
27-L11-31	107.6	756.8						
27-L11-32	55.1	765.1						
27-L11-33	25.8	780.0						
27-L11-34	0.0	793.8						
27-L11-35	144.0	812.0						
27-L11-36	88.3	826.7				NOTE:	Site 27, L11: Flags 30 through 125, South West to North West	
27-L11-37	2.3	833.3					Boarder of OB/OD Site. Density of fragmentation leads to a	
27-L11-38	0.0	841.5					general characterization and identifies it as an Open Burn/Open	
27-L11-39	0.0	847.3					Detonation area. Lane requires the outline staked, Northern	
27-L11-40	235.4	858.3					and Southern boundaries be surveyed in and ploted on Site	
27-L11-41	93.9	867.0					map. Further investigation of lanes 6, 7, 8, 9,1o and 12	
27-L11-42	8.7	872.2					require the same consideration. The OB/OD is estimated to	
27-L11-43	10.5	881.6					be 770 ft. From the South Boarder to the North Boarder.	
27-L11-44	53.4	896.5					Futher intrusive investigation of this lane has been suspended	
27-L11-45	7.6	911.1					by the SUXOS. 7/5/2006.	
27-L11-46	8.3	920.1						
27-L11-47	81.9	926.0						
27-L11-48	174.7	933.7						
27-L11-49	88.6	945.5						
27-L11-50	49.7	965.1						

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049400

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
27-L11-51	57.6	971.7					
27-L11-52	34.0	979.5					
27-L11-53	290.5	989.9					
27-L11-54	116.4	998.8					
27-L11-55	67.9	1007.3					
27-L11-56	15.0	1012.7					
27-L11-57	73.7	1016.7					
27-L11-58	18.3	1024.9					
27-L11-59	9.5	1032.5					
27-L11-60	15.5	1042.7					
27-L11-61	14.8	1064.7					
27-L11-62	3790.9	1069.5					
27-L11-63	50.0	1081.1					
27-L11-64	25.0	1096.0					
27-L11-65	842.0	1104.0					
27-L11-66	15.0	1109.6					
27-L11-67	5.9	1122.8					
27-L11-68	0.0	1127.6					
27-L11-69	12.5	1133.1					
27-L11-70	71.4	1138.2					
27-L11-71	26.9	1153.6					
27-L11-72	10.0	1169.2					
27-L11-73	0.0	1174.6					
27-L11-74	33.0	1193.4					
27-L11-75	21.8	1197.9					

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049401

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
27-L11-76	63.4	1213.5					
27-L11-77	25.0	1218.1					
27-L11-78	19.0	1225.7					
27-L11-79	10.0	1241.3					
27-L11-80	62.3	1257.2					
27-L11-81	7.1	1264.3					
27-L11-82	3.5	1269.5					
27-L11-83	3.8	1281.3					
27-L11-84	24.9	1285.7					
27-L11-85	27.2	1292.5					
27-L11-86	3.0	1319.1					
27-L11-87	3.8	1324.3					
27-L11-88	7.9	1330.9					
27-L11-89	8.3	1335.7					
27-L11-90	2.7	1342.6					
27-L11-91	2.8	1358.8					
27-L11-92	37.6	1364.7					
27-L11-93	6.5	1370.2					
27-L11-94	3.2	1384.0					
27-L11-95	56.4	1395.4					
27-L11-96	7.4	1402.6					
27-L11-97	2.0	1414.8					
27-L11-98	86.6	1444.5					
27-L11-99	2.9	1455.9					
27-L11-100	17.9	1465.6					

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049402

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
27-L11-101	10.3	1484.0					
27-L11-102	2.9	1503.1					
27-L11-103	3.7	1509.2					
27-L11-104	19.1	1516.8					
27-L11-105	5.7	1521.9					
27-L11-106	39.3	1525.7					
27-L11-107	1.0	1534.9					
27-L11-108	5.6	1559.8					
27-L11-109	3.1	1564.9					
27-L11-110	21.4	1568.6					
27-L11-111	6.8	1578.7					
27-L11-112	2.1	1592.9					
27-L11-113	3.6	1596.6					
27-L11-114	6.1	1616.8					
27-L11-115	6.6	1629.8					
27-L11-116	2.0	1651.6					
27-L11-117	5.1	1665.3					
27-L11-118	3.4	1672.9					
27-L11-119	8.1	1682.2					
27-L11-120	2.4	1698.1					
27-L11-121	3.3	1726.5					
27-L11-122	4.1	1734.6					
27-L11-123	1.2	1744.9					
27-L11-124	5.7	1782.5					
27-L11-125	4.1	1795.1				NOTE: Lane 11, Northern Boarder OB/OB Area	

Area 27 - Line 11 - LHAAP Anomaly Digsheet 00049403

Area	Transect				
27	11	EOD Team	1		**Total MEC Items: 1 ea. M-112 A-1 Photoflash Cartridge**
		Date of Excavation	7/3/2006	7/5/2006	**Total MEC Scrap 30.75 lbs.**
					Pg. 1, Total MEC Scrap 15 lbs.
		Start Time	12:15	7:00	Pg. 2, Total MEC Scrap .75 lb.
		Stop Time	15:30	10:00	Pg 6, Total MEC Scrap 15 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L11-126	109.6	1811.4	2 ft.	4"	N	.1 lb	Bomb Fragment	6
27-L11-127	44.5	1815.8	1 ft.	3"	N	.5 lb.	OE Scrap	6
27-L11-128	3.5	1825.5	0.0	4"	N	.5 lb.	OE Scrap	5
27-L11-129	11.4	1846.0	2 ft.	3"	N	.5 lb.	Scrap	5
27-L11-130	6.6	1856.5	2 ft.	4"	N	.5 lb.	OE Scrap	4
27-L11-131	1.9	1881.5	1 ft.	3"	N	.5 lb.	Scrap	5
27-L11-132	5.6	1888.5	2 ft.	4"	N	.25 lb.	Fragment	6
27-L11-133	20.2	1894.0	1 ft.	3"	N	1 lb.	Scrap	5
27-L11-134	18.6	1914.9	1 ft.	4"	N	1 lb.	Fragment	4
27-L11-135	3.0	1920.3	2 ft.	4"	N	1 lb.	Scrap	6
27-L11-136	3.4	1927.5	2 ft.	3"	N	1 lb.	Scrap	7
27-L11-137	32.0	1960.6	3 ft.	2"	N	1 lb.	Scrap	8
27-L11-138	2.9	1976.0	0.0	1"	N	.5 lb.	Scrap	6
27-L11-139	2.9	1984.7	2 ft.	0	N	.5 lb.	OE Scrap	3
27-L11-140	150.4	2031.8	2 ft.	1"	N	1 lb.	Bomb Fragment	1
27-L11-141	24.0	2065.3	5 ft.	2"	N	1 lb.	Bomb Fragment	1
27-L11-142	2.8	2087.3	3 ft.	1"	N	1 lb.	OE Scrap	1
27-L11-143	3.6	2108.2	2 ft.	2"	N	.5 lb.	Fragment	1
27-L11-144	0.0	2132.7	1 ft.	1"	N	.25 lb.	Scrap	1
27-L11-145	60.4	2146.2	1 ft.	2"	N	.25 lb.	Scrap	5
27-L11-146	8.3	2175.6	0.0	1"	N	.25 lb.	Fragment	1
27-L11-147	5.7	2320.0	1 ft.	2"	N	.5 lb.	Fragment	1
27-L11-148	3.6	2350.2	0.0	2"	N	.5 lb.	Fragment	1

Area 27 - Line 12 - LHAAP Anomaly Digsheet 00049404

Area	Transect						
27	12	EOD Team	2				**Total MEC Items: 1 M-112 Photoflash cartridge**
							Total MEC Scrap 132.5 lbs.
							Pg. 1, Total MEC Scrap 35.5 lbs.
		Date of Excavation	6/30/2006	7/3/2006			Pg. 2, Total MEC Scrap 42.5 lbs.
							Pg. 3, Total MEC Scrap 31.5 lbs.
		Start Time	10:00	6:45			Pg. 4, Total MEC Scrap 18 lbs.
		Stop time	16:00	12:00			Pg. 5, Total MEC Scrap 4.55 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L12-1	1.3	10.2	2.0	3"	N	.25 lb	Fragment	1
27-L12-2	4.8	17.8					No Contact	
27-L12-3	3.7	25.8					No Contact	
27-L12-4	2.8	126.8	7 ft.	4"	N	.25 lb.	OE Scrap	1
27-L12-5	525.5	169.3	4 ft.	3"	N	5 lbs.	Fragment	1
27-L12-6	2.4	315.6	2 ft.	3"	N	2 lbs.	Fragment	2
27-L12-7	1.3	330.3	5 ft.	6"	N	1 lb.	OE Scrap	1
27-L12-8	14.0	493.4	2 ft.	1"	N	1 lb.	OE Scrap	1
27-L12-9	241.0	526.0	2 ft.	3"	N	1 lb.	Fragment	1
27-L12-10	37.8	546.3	1 ft.	3"	N	1 lb.	Fragment	1
27-L12-11	66.9	563.1	6 ft.	4"	N	2 lbs.	Fragment	1
27-L12-12	3.1	577.8	4 ft.	3"	N	1 lb.	OE Scrap	2
27-L12-13	15.4	589.3	2 ft.	4"	N	1 lb.	OE Scrap	1
27-L12-14	214.5	601.2	4 ft.	3"	N	2 lbs.	OE Scrap	2
27-L12-15	295.7	626.7	1 ft.	2"	N	5 lbs.	OE Scrap	4
27-L12-16	12.9	636.4	3 ft.	4"	N	1 lb.	Fragment	1
27-L12-17	8.8	660.8	3 ft.	3"	N	2 lbs.	Fragment	2
27-L12-18	20.2	665.8	1 ft.	4"	N	1 lb.	OE Scrap	1
27-L12-19	3.0	673.0	2 ft.	6"	N	.25 lb.	OE Scrap	2
27-L12-20	119.9	679.3	2 ft.	4"	N	2 lbs.	OE Scrap	3
27-L12-21	12.1	685.1	3 ft.	6"	N	2 lbs.	OE Scrap	2
27-L12-22	40.9	710.0	3 ft.	4"	N	.25 lb.	Fragment	1
27-L12-23	103.3	715.0	5 ft.	3"	N	2 lbs.	Scrap	1
27-L12-24	31.2	721.5	5 ft.	3"	N	2 lbs.	OE Scrap	1
27-L12-25	12.9	744.2	3 ft.	4"	N	.5 lb.	Fragment	1

Area 27 - Line 12 - LHAAP Anomaly Digsheet 00049405

Area	Transect			
27	12	EOD Team	2	**Total MEC Items: 1 M-112 Photoflash cartridge**
				Total MEC Scrap 132.5 lbs.
				Pg. 1, Total MEC Scrap 35.5 lbs.
		Date of Excavation	6/30/2006 7/3/2006	Pg. 2, Total MEC Scrap 42.5 lbs.
				Pg. 3, Total MEC Scrap 31.5 lbs.
		Start Time	10:00 6:45	Pg. 4, Total MEC Scrap 18 lbs.
		Stop time	16:00 12:00	Pg. 5, Total MEC Scrap 4.55 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L12-26	10.5	764.5	2 ft.	3"	N	1 lb.	Fragment	1
27-L12-27	2.7	772.0	1 ft.	2"	N	2 lbs.	Fragment	2
27-L12-28	26.6	784.4	4 ft.	3"	N	1 lb.	Fragment	2
27-L12-29	36.9	795.4	1 ft.	2"	N	2 lb.	Fragment & OE Scrap	1
27-L12-30	184.0	805.4	3 ft.	4"	N	2 lb.	Fragment	2
27-L12-31	15.3	812.5	1 ft.	2"	N	1 lb.	Fragment	2
27-L12-32	1.5	822.1	3 ft.	5"	N	0.25 lb.	OE Scrap	1
27-L12-33	47.7	827.9	1 ft.	4"	N	3 lbs.	Fragment	4
27-L12-34	3.6	840.4	1 ft.	3"	N	1 lb.	OE Scrap & Fragment	3
27-L12-35	2.0	847.1	1 ft.	3"	N	0.25 lb.	OE Scrap	2
27-L12-36	26.2	864.8	2 ft.	3"	N	1 lb.	Fragment & OE Scrap	3
27-L12-37	26.9	883.2	1 ft.	2"	N	1 lb.	Fragment & OE Scrap	2
27-L12-38	221.4	894.5	1 ft.	3"	N	3 lbs.	Fragment	2
27-L12-39	6.3	905.5	6 ft.	4"	N	1 lb.	Fragment	2
27-L12-40	161.4	915.5	5 ft.	4"	N	2 lbs.	Fragment	2
27-L12-41	46.9	923.1	5 ft.	2"	N	2 lbs.	Fragment	1
27-L12-42	46.4	931.9	3 ft.	3"	N	0.25 lb.	OE Scrap	2
27-L12-43	5.6	938.2	3 ft.	2"	N	0.5 lb.	Fragment	1
27-L12-44	34.1	945.4	3 ft.	1"	N	1 lb.	Fragment	3
27-L12-45	6.3	952.7	2 ft.	3"	N	4 lbs.	Fragment	3
27-L12-46	76.2	965.8	1 ft.	4"	N	3 lbs.	Fragment	3
27-L12-47	80.5	972.3	2 ft.	3"	N	0.25 lb.	OE Scrap	1
27-L12-48	459.4	977.7	1 ft.	3"	N	6 lbs.	OE Scrap & Fragment	4
27-L12-49	30.8	996.9	1 ft.	6"	N	3 lbs.	Fragment	3
27-L12-50	83.0	1003.6	3 ft.	6"	N	1 lb.	Fragment	2

Area 27 - Line 12 - LHAAP Anomaly Digsheet 00049406

Area	Transect				
27	12	EOD Team	2		**Total MEC Items: 1 M-112 Photoflash cartridge**
					Total MEC Scrap 132.5 lbs.
					Pg. 1, Total MEC Scrap 35.5 lbs.
		Date of Excavation	6/30/2006	7/3/2006	Pg. 2, Total MEC Scrap 42.5 lbs.
					Pg. 3, Total MEC Scrap 31.5 lbs.
		Start Time	10:00	6:45	Pg. 4, Total MEC Scrap 18 lbs.
		Stop time	16:00	12:00	Pg. 5, Total MEC Scrap 4.55 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L12-51	64.8	1014.3	5 ft.	6"	N	2 lbs.	OE Scrap & Fragment	3
27-L12-52	64.7	1062.1	1 ft.	2"	N	1 lb.	OE Scrap & Fragment	3
27-L12-53	83.8	1069.0	2 ft.	2"	N	5 lbs.	Fragment	3
27-L12-54	76.2	1082.7	3 ft.	5"	N	3 lbs.	Fragment	3
27-L12-55	0.7	1107.3	2 ft.	4"	N	0.25 lb.	OE Scrap	2
27-L12-56	0.5	1119.3	2 ft.	3"	N	0.25 lb.	OE Scrap & Fragment	2
27-L12-57	3.5	1149.1	1 ft.	3"	N	0.25 lb.	OE Scrap	2
27-L12-58	4.8	1162.9	3 ft.	6"	N	0.25 lb.	OE Scrap	2
27-L12-59	26.0	1169.9	1 ft.	4"	N	0.5 lb.	OE Scrap & Fragment	3
27-L12-60	4.9	1186.3	1 ft.	3"	N	0.5 lb.	Fragment	1
27-L12-61	4.6	1193.4	1 ft.	4"	N	0.5 lb.	OE Scrap & Fragment	2
27-L12-62	3.4	1207.4						
27-L12-63	40.8	1216.0	1 ft.	8"	N	5 lbs.	Fragment	3
27-L12-64	31.2	1225.0	2 ft.	6"	N	0.5 lb.	OE Scrap	3
27-L12-65	7.2	1241.0	3 ft.	2"	N	0.25 lb.	OE Scrap	2
27-L12-66	13.4	1248.4	1 ft.	2"	N	0.5 lb.	OE Scrap	5
27-L12-67	39.4	1261.1	0.0	4"	N	0.5 lb.	OE Scrap	3
27-L12-68	24.4	1256.9	1 ft.	6"	N	2 lbs.	OE Scrap & Fragment	4
27-L12-69	52.9	1267.2	1 ft.	8"	N	2 lbs.	Fragment	1
27-L12-70	6.1	1276.7	1 ft.	1"	N	0.25 lb.	Scrap	1
27-L12-71	443.8	1290.5	1 ft.	5"	N	5 lbs.	Fragment	2
27-L12-72	7.3	1320.0	1 ft.	2"	N	0.5 lb.	OE Scrap	2
27-L12-73	4.8	1323.9	2 ft.	4"	**Y**	1 lb.	**M-112 Photoflash Cartridge**	**3**
27-L12-74	43.5	1328.7	1 ft.	6"	N	0.25 lb.	OE Scrap	1
27-L12-75	8.1	1336.1	1 ft.	4"	N	0.25 lb.	OE Scrap	1

Area 27 - Line 12 - LHAAP Anomaly Digsheet 00049407

Area	Transect				
27	12	EOD Team	2		**Total MEC Items: 1 M-112 Photoflash cartridge**
					Total MEC Scrap 132.5 lbs.
					Pg. 1, Total MEC Scrap 35.5 lbs.
		Date of Excavation	6/30/2006	7/3/2006	Pg. 2, Total MEC Scrap 42.5 lbs.
					Pg. 3, Total MEC Scrap 31.5 lbs.
		Start Time	10:00	6:45	Pg. 4, Total MEC Scrap 18 lbs.
		Stop time	16:00	12:00	Pg. 5, Total MEC Scrap 4.55 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L12-76	24.5	1352.8	1 ft.	3"	N	0.5 lb.	OE Scrap	3
27-L12-77	5.5	1369.1	3 ft.	4"	N	0.25 lb.	OE Scrap	3
27-L12-78	10.0	1374.0	2 ft.	5"	N	0.25 lb.	OE Scrap	3
27-L12-79	8.7	1378.5	2 ft.	4"	N	2 lbs.	Fragment	1
27-L12-80	49.8	1385.0	3 ft.	3"	N	2 lbs.	Fragment	2
27-L12-81	13.1	1392.3	1 ft.	4"	N	0.25 lb.	OE Scrap	1
27-L12-82	9.9	1402.9	1 ft.	3"	N	0.25 lb.	OE Scrap	1
27-L12-83	4.6	1425.6	2 ft.	3"	N	0.25 lb.	OE Scrap	1
27-L12-84	4.5	1429.3	1 ft.	2"	N	0.25 lb.	OE Scrap	1
27-L12-85	20.6	1439.3	1 ft.	2"	N	0.25 lb.	OE Scrap	2
27-L12-86	2.0	1468.4	2 ft.	4"	N	0.5 lb.	OE Scrap	3
27-L12-87	7.3	1496.5	2 ft.	2"	N	0.75 lb.	OE Scrap	3
27-L12-88	2.1	1511.1	4 ft.	3"	N	0.25 lb.	OE Scrap	2
27-L12-89	8.6	1533.2	3 ft.	2"	N	0.25 lb.	Scrap	2
27-L12-90	5.6	1545.1	3 ft.	3"	N	0.25 lb.	OE Scrap	2
27-L12-91	2.2	1554.1	2 ft.	3"	N	0.5 lb.	OE Scrap	3
27-L12-92	6.8	1579.8	2 ft.	6"	N	0.25 lb.	OE Scrap	3
27-L12-93	33.0	1648.8	2 ft.	5"	N	2 lbs.	OE Scrap	2
27-L12-94	8.3	1655.4	2 ft.	3"	N	0.25 lb.	OE Scrap	1
27-L12-95	4.6	1662.3	1 ft.	6"	N	0.75 lb.	OE Scrap	3
27-L12-96	6.9	1677.5	3 ft.	4"	N	0.25 lb.	OE Scrap	2
27-L12-97	10.6	1685.9	1 ft.	6"	N	0.5 lb.	Fragment	2
27-L12-98	4.5	1696.4	1 ft.	5"	N	0.25 lb.	OE Scrap	1
27-L12-99	161.8	1722.1	6 ft.	6"	N	2 lbs.	Fragment	1
27-L12-100	187.0	1738.8	6 ft.	3"	N	2 lbs.	Fragment	1

Area 27 - Line 12 - LHAAP Anomaly Digsheet 00049408

Area	Transect				
27	12	EOD Team	2		**Total MEC Items: 1 M-112 Photoflash cartridge**
					Total MEC Scrap 132.5 lbs.
					Pg. 1, Total MEC Scrap 35.5 lbs.
		Date of Excavation	6/30/2006	7/3/2006	Pg. 2, Total MEC Scrap 42.5 lbs.
					Pg. 3, Total MEC Scrap 31.5 lbs.
		Start Time	10:00	6:45	Pg. 4, Total MEC Scrap 18 lbs.
		Stop time	16:00	12:00	Pg. 5, Total MEC Scrap 4.55 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
27-L12-101	2.7	1781.9	3.0	5"	N	.1 lb.	Nail	2
27-L12-102	17.4	1805.7	1.0	4"	N	.5 lb.	OE Scrap	2
27-L12-103	9.9	1819.5	2.0	3"	N	.25 lb.	Fragment	1
27-L12-104	3.5	1852.8	3.0	4"	N	.1 lb.	Scrap	1
27-L12-105	4.0	1895.0	1.0	6"	N	.25 lb.	OE Scrap	2
27-L12-106	3.8	1910.7	1.0	4"	N	.1 lb.	12 Gage shotgun shell base	3
27-L12-107	3.1	1978.7	2.0	3"	N	.25 lb.	OE Scrap	1
27-L12-108	5.7	2099.6	3.0	1"	N	1 lb.	Steel Bucket	2
27-L12-109	128.5	2132.1	3.0	2"	N	1 lb.	Fragment	1
27-L12-110	22.9	2295.3	3.0	2"	N	1 lb.	Fragment	1
							125 feet to end of lane flag.	

Area 27 - Line 13 - LHAAP Anomaly Digsheet 00049409

Area	Transect				
27	13	EOD Team	2	**Total MEC Items 1 ea.**	
				Total MEC Scrap 69.5 lbs.	
		Date of Excavation	6/29/2006	6/30/2006	
				Pg. 1, Total MEC Scrap	52.3 lbs
		Start Time	12:30	6:45	Pg. 2, Total MEC Scrap 13.9 lbs.
		Stop Time	15:30	10:00	Pg. 3, Total MEC Scrap 3.3 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L13-1	8.5	6.6					No Contact	
L13-2	5.6	10.5					No Contact	
L13-3	15.8	240.2	6 ft.	3"	N	1 lb.	Scrap	1
L13-4	34.7	261.8					No Contact	
L13-5	11.7	278.6	1 ft.	2"	N	3 lbs.	Fragments & Scrap	3
L13-6	32.0	456.1	3 ft.	4"	N	2 lbs.	Fragments & Scrap	2
L13-7	5.5	495.7					No Contact	
L13-8	20.7	542.6	6 ft.	1"	N	10 lbs.	Scrap	1
L13-9	18.2	564.7	8 ft.	4"	N	5 lbs.	Scrap	1
L13-10	10.7	574.6	3 ft.	0	N	3 lbs.	Fragments	1
L13-11	4.3	579.8	6"	6"	N	.1 lb.	Scrap	1
L13-12	10.7	605.3	2 ft.	4"	N	.25 lb.	OE Scrap	1
L13-13	3.0	615.4	1 ft.	2"	N	.1 lb.	Aliminum Scrap	1
L13-14	8.5	622.5	6 ft.	4"	N	1 lb.	OE Scrap	1
L13-15	47.2	683.2	15 ft.	2"	N	3 lbs.	OE Scrap	1
L13-16	7.8	755.3	6 ft.	4"	N	.25 lb.	OE Scrap	1
L13-17	45.4	800.0	2 ft.	2"	N	.1 lb.	OE Scrap	1
L13-18	3.7	813.2	5 ft.	3"	N	.25 lb.	OE Scrap	1
L13-19	66.3	821.5	1 ft.	0	N	10 lbs.	Fragment	1
L13-20	28.9	908.0	4 ft.	4"	N	1 lb.	Fragment	1
L13-21	5.0	949.7	1 ft.	6"	N	2 lbs.	Fragment	1
L13-22	24.2	972.9	5 ft.	0	N	2 lbs.	Fragment	1
L13-23	4.1	983.2	1 ft.	3"	N	3 lbs.	Fragment	3
L13-24	6.4	990.7	3 ft.	3"	N	.25 lb.	Fragment	1
L13-25	5.9	1003.2	1 ft.	4"	N	5 lbs.	Fragment	2

Area 27 - Line 13 - LHAAP Anomaly Digsheet 00049410

Area	Transect				
27	13	EOD Team	2		**Total MEC Items 1 ea.**
					Total MEC Scrap 69.5 lbs.
		Date of Excavation	6/29/2006	6/30/2006	
					Pg. 1, Total MEC Scrap 52.3 lbs
		Start Time	12:30	6:45	Pg. 2, Total MEC Scrap 13.9 lbs.
		Stop Time	15:30	10:00	Pg. 3, Total MEC Scrap 3.3 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L13-26	4.3	1033.6	1 ft.	3"	N	2 lbs.	Fragment	1
L13-27	5.2	1038.0	1 ft.	3"	N	1 lb.	Fragment	1
L13-28	6.4	1072.3	0.0	2"	N	.25 lb.	OE Scrap	1
L13-29	5.7	1097.6	1 ft.	2"	N	.25 lb.	Scrap	1
L13-30	7.9	1128.5	1 ft.	2"	N	3 lbs.	Fragment & OE Scrap	3
L13-31	3.1	1135.0	4 ft.	4"	N	.5 lb.	Fragment	1
L13-32	17.7	1148.8	2 ft.	2"	N	.1 lb.	OE Scrap	1
L13-33	15.7	1154.1	1 ft.	3"	N	.25 lb.	OE Scrap	1
L13-34	2.6	1161.0	2 ft.	3"	N	.25 lb.	OE Scrap	1
L13-35	5.1	1174.1	3 ft.	2"	N	.1 lb.	Scrap	1
L13-36	6.9	1183.8	3 ft.	6"	N	.5 lb.	Fragment	1
L13-37	3.4	1192.8	1 ft.	4"	N	.25 lb.	OE Scrap	1
L13-38	27.3	1227.6	1 ft.	1"	N	.5 lb.	OE Scrap	2
L13-39	38.8	1263.7	2 ft.	3"	N	.1 lb.	OE Scrap	1
L13-40	4.6	1270.2	6"	3"	N	.25 lb.	OE Scrap	2
L13-41	20.2	1313.4	3 ft.	4"	N	.5 lb.	OE Scrap	2
L13-42	81.6	1323.6	3 ft.	2"	N	.5 lb.	OE Scrap	2
L13-43	249.6	1328.2	2 ft.	3"	N	.25 lb.	OE Scrap	2
L13-44	619.5	1348.2	6"	4"	N	.1 lb.	OE Scrap	2
L13-45	178.0	1370.9	1 ft.	2"	N	.5 lb.	OE Scrap	2
L13-46	49.4	1376.1	1 ft.	6"	N	.25 lb.	OE Scrap	1
L13-47	129.1	1382.0	5 ft.	6"	N	.25 lb.	OE Scrap	1
L13-48	13.5	1426.7	1 ft.	4"	N	.25 lb.	OE Scrap	2
L13-49	38.5	1482.7	2 ft.	4"	N	.5 lb.	Fragment	3
L13-50	17.9	1493.3	5 ft.	6"	N	2 lbs.	Fragment & OE Scrap	2

Area 27 - Line 13 - LHAAP Anomaly Digsheet 00049411

Area	Transect				
27	13	EOD Team	2	**Total MEC Items 1 ea.**	
				Total MEC Scrap 69.5 lbs.	
		Date of Excavation	6/29/2006 6/30/2006		
				Pg. 1, Total MEC Scrap	52.3 lbs
		Start Time	12:30 6:45	Pg. 2, Total MEC Scrap	13.9 lbs.
		Stop Time	15:30 10:00	Pg. 3, Total MEC Scrap	3.3 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
L13-51	3.1	1538.0	8 ft.	4"	N	.1 lb.	Scrap	1
L13-52	122.2	1564.3	1 ft.	3"	N	.5 lb.	Fragment	1
L13-53	97.1	1576.6	5 ft.	2"	Y		**M-112 Photoflash Cartridge**	2
L13-54	372.4	1619.9					No Contact	
L13-55	3.7	1630.4	2 ft.	2"	N	.25 lb.	OE Scrap	1
L13-56	391.0	1635.5					No Contact	
L13-57	156.5	1658.3	7 ft.	3"	N	.25 lb.	OE Scrap	1
L13-58	20.3	1667.1	2 ft.	4"	N	.25 lb.	OE Scrap	1
L13-59	149.2	1673.7	1 ft.	3"	N	.1 lb.	OE Scrap	1
L13-60	9.4	1740.6					No Contact	
L13-61	32.3	1747.4					No Contact	
L13-62	16.7	1829.4	4 ft.	3"	N	.25 lb.	OE Scrap	1
L13-63	48.3	1866.0	5 ft.	6"	N	.5 lb.	OE Scrap & Scrap	2
L13-64	14.1	1951.5	6 ft.	4"	N	.5 lb.	OE Scrap	1
L13-65	17.2	2016.8					No Contact	
L13-66	241.7	2048.4	1 ft.	5"	N	.1 lb.	Scrap	1
L13-67	397.2	2065.3					No Contact	
L13-68	364.2	2111.6	1 ft.	8"	N	.1 lb.	OE Scrap	1
L13-69	30.2	2117.3					No Contact	
L13-70	26.5	2127.7	2 ft.	6"	N	.5 lb.	Fragment	1
L13-71	280.1	2200.0					No Contact	
L13-72	142.1	2266.7					No Contact	

Area 27 - Line 14 - LHAAP Anomaly Digsheet 00049412

Area	Transect		
27	14	EOD Team	2
			Total MEC Scrap
		Date of Excavation	6/29/2006
			Pg. 1, Total MEC Scrap
		Start Time	6:45 Pg. 2, Total MEC Scrap
		Stop Time	12:00 Pg. 3, Total MEC Scrap

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		DIGS
27-L14-1	11.4	0.1	1 ft.	5"	N	10 lb.	Scrap	1
27-L14-2	5.6	143.2					No Contact	
27-L14-3	273.7	189.2					No Contact	
27-L14-4	2.1	402.7					No Contact	
27-L14-5	3.4	422.1	15 ft.	1"	N	10 lb.	Scrap	1
27-L14-6	4.4	536.1	1 ft.	1"	N	0.1 lb.	Scrap	1
27-L14-7	7.6	574.7	6 ft.	1"	N	5 lb.	Fragment	1
27-L14-8	4.7	648.9	4 ft.	1"	N	0.25 lb.	OE Scrap	1
27-L14-9	21.6	657.9	5 ft.	5"	N	1.5 lb.	Fragment	1
27-L14-10	8.4	928.6	6"	3"	N	1 lb.	Fragment	1
27-L14-11	11.0	947.0		4"	N	0.5 lb.	OE Scrap	3
27-L14-12	7.4	964.6	1 ft.	5"	N	1 lb.	Fragment	1
27-L14-13	62.5	1011.2	4 ft.	4"	N	0.25 lb.	OE Scrap	1
27-L14-14	7.5	1026.5	3 ft.	3"	N	0.25 lb.	OE Scrap	1
27-L14-15	11.1	1035.1					No Contact	
27-L14-16	22.5	1067.5	2 ft.	0	N	0.1 lb.	Scrap	1
27-L14-17	8.4	1078.9	6"	2"	N	0.5 lb.	OE Scrap	1
27-L14-18	13.1	1089.6	4 ft.	3"	N	0.25 lb.	Fragment	1
27-L14-19	6.4	1119.8	3 ft.	4"	N	1 lb.	Fragment	3
27-L14-20	2.4	1132.7	3 ft.	6"	N	0.75 lb.	Fragment	1
27-L14-21	6.3	1152.8	1 ft.	4"	N	1 lb.	Fragment & OE Scrap	3
27-L14-22	49.8	1165.6	6 ft.	6"	N	0.5 lb.	OE Scrap	1
27-L14-23	5.0	1175.6	6 ft.	3"	N	0.25 lb.	OE Scrap	3
27-L14-24	2.1	1194.0	4 ft.	3"	N	0.1 lb.	Scrap	2
27-L14-25	7.6	1200.8	3.5 ft.	1"	N	5 lbs.	Fragment	1

Area 27 - Line 14 - LHAAP Anomaly Digsheet

00049413

Area	Transect		
27	14	EOD Team	2
			Total MEC Scrap
		Date of Excavation	6/29/2006
			Pg. 1, Total MEC Scrap
		Start Time	6:45 Pg. 2, Total MEC Scrap
		Stop Time	12:00 Pg. 3, Total MEC Scrap

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		DIGS
27-L14-26	8.0	1206.1	3.5 ft.	3"	N	0.1 lb.	Scrap	1
27-L14-27	8.7	1219.5	3 ft.	2"	N	0.5 lb.	OE Scrap	1
27-L14-28	2.3	1247.7	2 ft.	2"	N	0.1 lb.	Scrap	1
27-L14-29	7.0	1268.7	6"	1"	N	1 lb.	Fragment	1
27-L14-30	3.8	1294.8	4"	3"	N	0.25 lb.	Scrap	1
27-L14-31	30.4	1403.1	3 ft.	4"	N	1 lb.	Fragment	1
27-L14-32	100.9	1405.5	4"	4"	N	3 lbs.	Fragments	2
27-L14-33	5.4	1409.8	6"	2"	N	0.1 lb.	Scrap	1
27-L14-34	29.3	1413.4	3 ft.	3"	N	2 lbs.	Fragments	3
27-L14-35	46.5	1424.7					No Contact	
27-L14-36	6.3	1428.7	5 ft.	2"	N	0.25 lb.	OE Scrap	1
27-L14-37	31.7	1453.9	3 ft.	5"	N	1 lb.	Scrap	1
27-L14-38	5.7	1462.1	4 ft.	4"	N	0.1 lb.	Scrap	1
27-L14-39	6.0	1475.8	4 ft.	6"	N	0.1 lb.	Scrap	1
27-L14-40	8.3	1482.4	4 ft.	6"	N	0.25 lb.	OE Scrap	1
27-L14-41	88.9	1489.5	4 ft.	6"	N	0.1 lb.	Scrap	1
27-L14-42	39.5	1507.9	6 ft.	6"	N	0.25 lb.	OE Scrap	1
27-L14-43	464.2	1533.8	4 ft.	6"	N	0.5 lb.	OE Scrap	1
27-L14-44	200.8	1543.5					No Contact	
27-L14-45	301.3	1614.8	2.5 ft.	6"	N	0.25 lb.	OE Scrap	1
27-L14-46	34.7	1631.6	2 ft.	4"	N	0.5 lb.	OE Scrap	1
27-L14-47	121.1	1684.4	4 ft.	3"	N	0.1 lb.	Scrap	1
27-L14-48	6.5	1755.9	4 ft.	2"	N	0.1 lb.	Scrap	1
27-L14-49	8.1	1772.0	3 ft.	2"	N	5 lbs.	OE Scrap	1
27-L14-50	4.7	1801.3	3.5 ft.	3"	N	0.1 lb.	Scrap	1

Area 27 - Line 14 - LHAAP Anomaly Digsheet

00049414

Area	Transect		
27	14	EOD Team	2
			Total MEC Scrap
		Date of Excavation	6/29/2006
			Pg. 1, Total MEC Scrap
		Start Time	6:45 Pg. 2, Total MEC Scrap
		Stop Time	12:00 Pg. 3, Total MEC Scrap

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		DIGS
27-L14-51	74.0	1829.1					No Contact	
27-L14-52	6.5	1862.9	3 ft.	4"	N	0.1 lb.	Scrap	1
27-L14-53	28.6	1867.7					No Contact	
27-L14-54	264.1	1913.8					No Contact	
27-L14-55	17.9	1959.1	7 ft.	3"	N	1 lb.	OE Scrap	1
27-L14-56	96.5	1967.2	3 ft.	4"	N	1 lb.	OE Scrap	1
27-L14-57	12.0	2002.9					No Contact	
27-L14-58	11.2	2046.7					No Contact	
27-L14-59	99.6	2056.5					No Contact	
27-L14-60	19.8	2079.4					No Contact	
27-L14-61	278.4	2216.5					No Contact	
27-L14-62	3.7	2233.8					No Contact	
27-L14-63	2.1	2241.9					No Contact	
27-L14-64	198.6	2343.7	1 ft.	3"	N	.1 lb	Scrap Nail	2
							6.3 feet to end of lane	

Area 27 - Line 15 - LHAAP Anomaly Digsheet 00049415

Area	Transect						
27	15	EOD Team	1				
						Total MEC Scrap	**37.25 lbs.**
		Date of Excavation	6/22/2006	6/23/2006			
						Pg. 1: MEC Scrap	20.5 lbs
		Start Time	10:00	10:30		Pg. 2: MEC Scrap	16.25 lbs.
		Stop Time	11:10	13:35		Pg. 3: MEC Scrap	0.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment (lbs)	
27-L15-1	349.4	24.9	3 ft.	6"	N	1	OE Scrap
27-L15-2	56.6	41.2	4 ft.	8"	N	0.25	Fragment
27-L15-3	24.0	59.4	6 ft.	2"	N	0.5	Fragment
27-L15-4	6.5	89.8	3 ft.	1"	N	0.25	Fragment
27-L15-5	12.1	109.8	1 ft.	0	N	0.25	Fragment
27-L15-6	15.2	173.2	4 ft.	2"	N	0.25	Fragment
27-L15-7	5.7	179.8	10 ft.	1"	N	1	Fragment
27-L15-8	4.8	193.9	8 ft.	2"	N	2	Bomb Fragment
27-L15-9	16.3	218.5	2 ft.	1"	N	0.5	Fragment
27-L15-10	6.1	246.2	1 ft.	3"	N	0.25	Fragment
27-L15-11	21.6	264.3	4 ft.	1"	N	0.5	Bomb Fragment
27-L15-12	23.3	312.3	3 ft.	2"	N	0.25	Fragment
27-L15-13	63.9	358.9	5 ft.	0	N	1	Bomb Fragment
27-L15-14	17.9	426.5	4 ft.	1"	N	0.5	Bomb Fragment
27-L15-15	108.8	434.1	2 ft.	0	N	2	Bomb Fragment
27-L15-16	17.5	443.1	1.5 ft.	3"	N	0.5	Bomb Fragment
27-L15-17	2.6	468.0	3 ft.	4"	N	0.25	OE Scrap
27-L15-18	823.4	501.7	1 ft.	0	N	3	Bomb Fragment
27-L15-19	10.6	571.5	5 ft.	2"	N	1	Bomb Fragment
27-L15-20	223.8	581.0	2 ft.	1"	N	1	Bomb Fragment
27-L15-21	89.6	595.4	1 ft.	0	N	1	Bomb Fragment
27-L15-22	56.0	623.3	3 ft.	2"	N	1	Bomb Fragment
27-L15-23	17.8	658.0	2 ft.	1"	N	0.5	Bomb Fragment
27-L15-24	222.8	704.6	2.5 ft.	1"	N	2	Bomb Fragment
27-L15-25	5.6	737.4	1 ft.	4"	N	0.25	Fragment

Area 27 - Line 15 - LHAAP Anomaly Digsheet 00049416

Area	Transect						
27	15	EOD Team	1				
						Total MEC Scrap	**37.25 lbs.**
		Date of Excavation	6/22/2006	6/23/2006			
						Pg. 1: MEC Scrap	20.5 lbs
		Start Time	10:00	10:30		Pg. 2: MEC Scrap	16.25 lbs.
		Stop Time	11:10	13:35		Pg. 3: MEC Scrap	0.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment (lbs)	
27-L15-26	11.9	747.7	6"	3"	N	0.25	Fragment
27-L15-27	99.0	768.5	4.0	1"	N	0.5	Bomb Fragment
27-L15-28	20.8	784.6	4.0	4"	N	0.25	Fragment
27-L15-29	62.0	794.2	2.0	1"	N	0.5	Bomb Fragment
27-L15-30	233.7	816.6	4.0	6"	N	3	Bomb Fragment
27-L15-31	46.5	827.0	1.0	2"	N	0.5	Bomb Fragment
27-L15-32	3.3	837.1	2.0	3"	N	0.25	Scrap
27-L15-33	2.0	864.8	3.0	1"	N	0.5	Fragment
27-L15-34	156.8	881.2	4.0	6"	N	1	Bomb Fragment
27-L15-35	2.0	897.3	5.0	3"	N	1	Bomb Fragment
27-L15-36	79.0	1063.1	1.5	0	N	0.5	Bomb Fragment
27-L15-37	99.2	1081.1	5.0	1"	N	1.5	Bomb Fragment
27-L15-38	15.3	1142.4	3.0	6"	N	0.25	Bomb Fragment
27-L15-39	8.2	1157.1	6.0	4"	N	0.25	OE Scrap
27-L15-40	7.2	1230.8	2.0	5"	N	0.25	Scrap
27-L15-41	6.5	1267.9	2.0	4"	N	0.25	OE Scrap
27-L15-42	277.1	1274.4	1.5	3"	N	2	Bomb Fragment
27-L15-43	10.2	1278.9	2.0	5"	N	0.25	Bomb Fragment
27-L15-44	93.2	1284.6	8.0	3"	N	0.5	OE Scrap
27-L15-45	10.9	1322.0	6.0	0	N	0.25	Scrap
27-L15-46	11.2	1408.1	1.5	6"	N	0.25	Fragment
27-L15-47	**122.7**	**1416.2**	**2.0**	**3"**	**Y**	**1**	**M-112 Photoflash Cartridge**
27-L15-48	21.3	1519.2	4.0	2"	N	0.5	Bomb Fragment
27-L15-49	27.5	1571.6	3.5	4"	N	0.5	Bomb Fragment
27-L15-50	6.3	1631.5	1.0	5"	N	0.25	Fragment

Area 27 - Line 15 - LHAAP Anomaly Digsheet 00049417

Area	Transcect			
27	15	EOD Team	1	
				Total MEC Scrap **37.25 lbs.**
		Date of Excavation	6/22/2006 6/23/2006	
				Pg. 1: MEC Scrap 20.5 lbs
		Start Time	10:00 10:30	Pg. 2: MEC Scrap 16.25 lbs.
		Stop Time	11:10 13:35	Pg. 3: MEC Scrap 0.5 lbs.

Target ID	Target Response *(mV)*	*NAD83-Texas CS83 North Central* ***Distance*** U.S.Survey Feet	Target Offset *(ft)*	Depth to item *(in)*	OE Item? *(Y or N)*	Item Description Comment *(lbs)*
27-L15-51	20.3	1756.8	2.0	1"	N	0.25 Fragment
27-L15-52	33.3	2068.8	1.5	2"	N	0.25 Scrap

Area 27 - Line 16 - LHAAP Anomaly Digsheet 00049418

Area	Transect				
27	16	EOD Team	1		
		Date of Excavation	6/22/2006	6/23/2006	**Total MEC Scrap 17 lbs.**
		Start Time	9:20	8:10	Pg 1, MEC Scrap 13.75 lbs.
		Stop Time	10:00	10:30	Pg 2, Mec Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L16-1	44.0	47.1	2 ft.	4"	N	.25 lb.	Bomb Fragment
27-L16-2	10.6	82.6	4 ft	0	N	.5 lb.	Fragment
27-L16-3	12.1	124.4	3 ft.	1"	N	.25 lb.	Fragment
27-L16-4	3.2	288.3	3 ft.	2"	N	.5 lb.	Fragment
27-L16-5	158.8	326.3	2 ft.	3"	N	.25 lb.	Fragment
27-L16-6	17.8	338.2	1.5 ft.	2"	N	.5 lb.	Fragment
27-L16-7	105.3	387.7	1 ft.	1"	N	1 lb.	Bomb Fragment
27-L16-8	239.2	407.0	0.0	1"	N	1 lb.	Bomb Fragment
27-L16-9	311.3	427.0	0.0	1"	N	1 lb.	Bomb Fragment
27-L16-10	17.2	450.7	2 ft.	0	N	1 lb.	Bomb Fragment
27-L16-11	1.8	537.9	6 ft.	4"	N	.5 lb.	Bomb Fragment
27-L16-12	0.1	555.3	2 ft.	1"	N	.25 lb.	Fragment
27-L16-13	69.7	573.3	3 ft.	0	N	1 lb.	Bomb Fragment
27-L16-14	41.8	585.5	2 ft.	3"	N	.25 lb.	Fragment
27-L16-15	104.6	599.6	3 ft.	3"	N	.25 lb.	OE Scrap
27-L16-16	0.0	610.3	1.5 ft.	2"	N	.25 lb.	OE Scrap
27-L16-17	0.0	618.6	3 ft.	3"	N	.25 lb.	OE Scrap
27-L16-18	29.4	632.8	2 ft.	0	N	1 lb.	Bomb Fragment
27-L16-19	5.3	662.7	2 ft.	4"	N	.25 lb.	Fragment
27-L16-20	109.9	740.4	4 ft.	2"	N	1 lb.	Bomb Fragment
27-L16-21	13.8	747.3	2 ft.	5"	N	.5 lb.	Fragment
27-L16-22	14.4	784.6	2.5 ft.	4"	N	.25 lb.	Scrap
27-L16-23	11.2	789.6	3 ft.	2"	N	1 lb.	Bomb Fragment
27-L16-24	36.5	794.2	3 ft.	3"	N	.5 lb.	Fragment
27-L16-25	7.2	845.7	4 ft.	3"	N	.25 lb.	OE Scrap

Area 27 - Line 16 - LHAAP Anomaly Digsheet

00049419

Area	Transect				
27	16	EOD Team	1		
		Date of Excavation	6/22/2006	6/23/2006	**Total MEC Scrap 17 lbs.**
		Start Time	9:20	8:10	Pg 1, MEC Scrap 13.75 lbs.
		Stop Time	10:00	10:30	Pg 2, Mec Scrap 3.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L16-26	39.4	997.6	8"	1"	N	.5 lb.	OE Scrap
27-L16-27	44.9	1097.8	3 ft.	1"	N	1 lb.	Bomb Fragment
27-L16-28	9.0	1112.2	2.5 ft.	4"	N	.25 lb.	OE Scrap
27-L16-29	9.6	1126.8	1.5 ft.	3"	N	.5 lb.	Bomb Fragment
27-L16-30	7.1	1152.9	1 ft.	2"	N	.25 lb.	Bomb Fragment
27-L16-31	6.7	1238.1	2 ft.	4"	N	.25 lb.	Bomb Fragment
27-L16-32	7.4	1283.5	3.5 ft.	4"	N	.25 lb.	Bomb Fragment
27-L16-33	8.1	1592.2	2 ft.	12"	N	.25 lb.	Bomb Fragment

Area 27 - Line 17 - LHAAP Anomaly Digsheet 00049420

Area	Transect			
27	17	EOD Team	1	
		Date of Excavation	6/22/2006 6/23/2006	**Total MEC Scrap: 30 lbs**
		Start Time	8:10 9:05	Pg 1, MEC Scrap: 27.5 lbs
		Stop Time	7:45 8:10	Pg 2. MEC Scrap: 2.5 lbs

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L17-1	310.8	21.1	3 ft.	3"	N	2 lbs.	Bomb Frament
27-L17-2	15.8	160.2	4 ft.	5"	N	2 lbs.	Bomb Frament
27-L17-3	126.1	216.4	2 ft.	3"	N	1 lb.	Bomb Frament
27-L17-4	2.2	254.7	0.0	4"	N	0.25 lb.	Fragment
27-L17-5	265.1	280.7	1.5 ft.	1"	N	1 lb.	Bomb Frament
27-L17-6	36.9	289.4	2 ft.	3"	N	1 lb.	Bomb Frament
27-L17-7	29.4	390.5	3 ft.	5"	N	2 lbs.	Bomb Frament
27-L17-8	28.2	536.0	2 ft.	3"	N	1 lb.	Bomb Frament
27-L17-9	2.8	548.0	3 ft.	6"	N	1 lb.	Bomb Frament
27-L17-10	36.8	580.4	1 ft.	3"	N	0.5 lb.	Fragment
27-L17-11	12.3	593.1	1 ft.	8"	N	1 lb.	Bomb Frament
27-L17-12	2.8	614.2	6 ft.	2"	N	1 lb.	Bomb Frament
27-L17-13	8.3	634.6	5 ft.	1"	N	1 lb.	Bomb Frament
27-L17-14	4.1	658.5	3.5 ft.	2"	N	0.25 lb.	Fragment
27-L17-15	5.4	669.1	4 ft.	1"	N	2 lbs.	Bomb Frament
27-L17-16	528.1	684.6	1.5 ft.	1"	N	3 lbs.	Bomb Frament
27-L17-17	9.8	694.7	1 ft.	1"	N	0.5 lb.	Fragment
27-L17-18	15.5	705.1	1 ft.	4"	N	1.25 lbs.	Fragment
27-L17-19	122.2	710.0	1.5 ft.	3"	N	1 lb.	Bomb Frament
27-L17-20	10.3	719.9	8"	2"	N	0.25 lb.	OE Scrap
27-L17-21	184.2	839.4	2 ft.	6"	N	1 lb.	Bomb Frament
27-L17-22	62.9	874.5	2 ft.	3"	N	0.5 lb.	Bomb Frament
27-L17-23	14.6	974.4	2.5 ft.	4"	N	0.5 lb.	Bomb Frament
27-L17-24	40.4	999.1	2 ft.	1"	N	0.5 lb.	Bomb Frament
27-L17-25	231.7	1033.2	7ft.	2"	N	2 lbs.	Bomb Frament

Area 27 - Line 17 - LHAAP Anomaly Digsheet

00049421

Area	Transect				
27	17	EOD Team	1		
		Date of Excavation	6/22/2006 6/23/2006		Total MEC Scrap: 30 lbs
		Start Time	8:10	9:05	Pg 1, MEC Scrap: 27.5 lbs
		Stop Time	7:45	8:10	Pg 2. MEC Scrap: 2.5 lbs

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
27-L17-26	6.2	1313.2	2 ft.	2"	N	0.25 lb. Bomb Frament
27-L17-27	213.4	1398.3	2 ft.	0	N	2 lbs. Fragment
27-L17-28	71.6	1485.2	5.5 ft.	3"	N	.5 lb. Marker Nail

Area 27 - Line 18 - LHAAP Anomaly Digsheet

00049422

Area	Transect		
27	18	EOD Team	1
		Date of Excavation	6/22/2006
		Start Time 12:50	**Total MEC Fragment 24 lbs**
		Stop Time 14:50	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		
27-L18-1	4.0	109.6	f ft.	2"	N	Bomb Fragment	2 lbs.	
27-L18-2	206.7	132.4	5 ft.	0	N	Bomb Fragment	3 lbs.	
27-L18-3	13.7	219.0	1.5 ft.	2"	N	Scrap	0 .25 lbs.	
27-L18-4	4.3	230.2	3 ft.	5"	N	Bomb Fragment	1 lb.	
27-L18-5	333.4	256.1	2 ft.	4"	N	Bomb Fragmant	2 lbs.	
27-L18-6	11.2	288.2	0.0	1"	N	Fragment	0.25 lb.	
27-L18-7	9.2	328.8	5 ft.	1"	N	Bomb Fragment	1 lb.	
27-L18-8	40.4	365.5	8 ft.	2"	N	Bomb Fragmant	0.5 lb.	
27-L18-9	122.8	410.3	5 ft.	1"	N	Bomb Fragment	0.5 lb.	
27-L18-10	52.0	454.8	5 ft.	0	N	Bomb Fragment	1 lb.	
27-L18-11	32.2	464.0	8 ft.	2"	N	Bomb Fragment	1 lb.	Flag off to left
27-L18-12	1.3	479.8	2 ft.	1"	N	Bomb Fragment	0.5 lb.	
27-L18-13	293.0	501.2	1.5 ft.	1"	N	Bomb Fragment	1 lb.	
27-L18-14	998.1	511.0	3 ft.	1"	N	Bomb Fragment	1 lb.	
27-L18-15	19.1	533.5	6 ft.	0	N	Bomb Fragment	0.5 lb.	
27-L18-16	275.3	547.2	3 ft.	0	N	Bomb Fragment	0.5 lb.	
27-L18-17	48.7	657.5	7 ft.	3"	N	Fragment	0.5 lb.	
27-L18-18	27.0	673.3	3 ft.	0	N	Bomb Fragment	3 lbs.	
27-L18-19	57.4	677.9	3.5 ft.	7"	N	Bomb Fragment	1 lb.	
27-L18-20	109.8	706.6	5 ft.	4"	N	Bomb Fragment	1 lb.	
27-L18-21	9.5	719.8	1 ft.	6"	N	Fragment	0.5 lb.	
27-L18-22	28.3	727.4	3 ft.	12"	N	Bomb Fragment	2 lbs.	
27-L18-23	48.3	734.0				No Anomaly Detected		
27-L18-24	6.7	740.3				No Anomaly Detected		
27-L18-25	6.6	745.8				No Anomaly Detected		

Area 27 - Line 18 - LHAAP Anomaly Digsheet

00049423

Area	Transect		
27	18	EOD Team	1
		Date of Excavation	6/22/2006
		Start Time 12:50	**Total MEC Fragment 24 lbs**
		Stop Time 14:50	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L18-26	5.6	770.4				No Anomaly Detected	
27-L18-27	190.3	785.0	15"	3"	N	Bomb Fragment	1 lb.
27-L18-28	5.3	827.9				No Anomaly Detected	
27-L18-29	5.6	831.9				No Anomaly Detected	
27-L18-30	103.9	841.7	2 Ft.	4"	N	Bomb Fragment	1 lb.
27-L18-31	4.9	849.3				No Anomaly Detected	

Site 27 - Line 19 - LHAAP Anomaly Digsheet

00049424

Area	Transect		
27	19	EOD Team	1
		Date of Excavation	6/21/2006
		Start Time	14:45
		Stop Time	15:15

50 Lbs MEC frag recovered in the lane

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
L19-1	225.3	123.5	2 ft. South	4	N	
L19-2	232.6	181.2	1 ft. South	2	N	
L19-3	21.0	230.6				No anomaly Detected (Root adjacent to the flag)
L19-4	168.6	252.9	1 ft. South	1	N	

Area 27 - Line 20 - LHAAP Anomaly Digsheet

00049425

Area	Transect		
27	20	EOD Team	1
		Date of Excavation	6/26/2006
		Start Time	10:30
		Stop Time	10:55

Total Scrap 0.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central **Distance** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment
27-L20-1	2.2	9.8	3 ft.	8"	N	.25 lb. Scrap
27-L20-2	2.7	66.5	3 ft.	2"	N	.25 lb. Scrap
27-L20-3	2.8	382.6				No Contact

Area 27 - Line 21 - LHAAP Anomaly Digsheet

00049426

Area	Transect		
27	21	EOD Team	1
		Date of Excavation	6/26/2006
		Start Time	10:55
		Stop Time	11:10

Total MEC Scrap 1 lb.

Total scrap (other) .5 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L21-1	3.5	56.9	3 ft.	1"	N	1 lb.	Bomb Fragment
27-L21-2	0.5	80.6	4 ft.	4"	N	.25 lb.	Wire
27-L21-3	0.5	375.3	6 ft.	6"	N	.25 lb.	Nail

Area 27 - Line 22 - LHAAP Anomaly Digsheet

00049427

Area	Transect		
27	22	EOD Team	1
		Date of Excavation	6/26/2006
		Start Time	11:10
		Stop Time	11:30

Total MEC Scrap 3 lbs.
Total Scrap (Other) 3 lbs.
Total Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	
27-L22-1	184.9	145.7	0.0	1"	N	2 lbs.	Bomb Fragment
27-L22-2	9.6	157.1	6 ft.	3"	N	1 lb.	Barbed Wire
27-L22-3	15.2	173.2	2 ft.	4"	N	1 lb.	Bomb Fragment
27-L22-4	5.7	337.2	1 ft.	4"	N	1 lb.	Barbed Wire
27-L22-5	9.9	369.7	4 ft.	5"	N	1 lb.	Barbed Wire

Area 54 - Line 1 - LHAAP Anomaly Digsheet

00049428

Area	Transect		
54	1	EOD Team	2
			Total Scrap 2.2 lbs.
		Date of Excavation	7/11/2006
		Start Time	12:30
		Stop Time	13:10

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L1-1	2.4	75.0					No Contact	
54-L1-2	3.0	165.0	1 ft.	1"	N	.1 lb.	Scrap	1
54-L1-3	8.9	201.2	3 ft.	6"	N	1 lb.	Scrap	2
54-L1-4	2.6	223.6					No Contact	
54-L1-5	121.7	257.3	4 ft.	4"	N	1 lb.	Scrap	1
54-L1-6	2.8	519.6	4 ft.	8"	N	.1 lb.	Scrap	1
54-L1-7	1.3	583.8					No Contact	

Area 54 - Line 2 - LHAAP Anomaly Digsheet

00049429

Area	Transect		
54	2	EOD Team	2
			Total MEC Scrap 4.3 lbs.
		Date of Excavation	7/11/2006
		Start Time	13:20
		Stop Time	14:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-2-1	2.5	9.9	6"	1"	N	.1 lb	OE Scrap	2
54-2-2	151.5	62.7	1 ft.	3"	N	.1 lb.	Scrap & Pipe	3
54-2-3	5.5	131.7	1 ft.	2"	N	.5 lb.	Scrap	1
54-2-4	4.2	199.6	1 ft.	3"	N	.1 lb.	Scrap	2
54-2-5	15.1	265.1	2 ft.	1"	N	1 lb.	OE Scrap	2
54-2-6	105.2	291.5	2 ft.	1"	N	2 lbs.	OE Scrap	2
54-2-7	3.0	307.9	6 ft.	2"	N	5 lbs.	Scrap	1
54-2-8	2.5	338.9	6 "	1"	N	.1 lb.	OE Scrap	1
54-2-9	28.1	385.8	5 ft.	3"	N	1 lb.	OE Scrap	2
54-2-10	6.0	579.6	0.0	0	N	.1 lb.	Survey Nail	

Area 54 - Line 3 - LHAAP Anomaly Dig sheet

00049430

Area	Transect			
54	3	EOD Team	2	
		Date of Excavation	7/11/2006 7/12/2006	**Total MEC Scrap 2.75 lbs.**
		Start Time	14:25 6:50	Pg.1, Total MEC Scrap 2.65 lbs.
		Stop Time	15:45 7:15	Pg.2, Total MEC Scrap 0.1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-3-1	1.8	7.9	3 ft.	6"	N	.25 lb.	Copper rod	QC Verified	1
54-3-2	1.6	186.0	3 ft.	3"	N	.1 lb.	Nail & Washer		2
54-3-3	3.2	233.2	2 ft.	0	N	.	2 x 4 with Nails		
54-3-4	3.5	254.4					No Contact	QC Verified	
54-3-5	17.2	468.9	3 ft.	6"	N	.1 lb	Hot Rock		1
54-3-6	5.3	656.6	6 ft.	1"	N	.1 lb.	OE Scrap		1
54-3-7	168.8	664.1					Ditch Bump	QC Verified	
54-3-8	0.2	672.3	3 ft.	18"	N	.1 lb.	Sardine Can		1
54-3-9	15.4	677.3	6 ft.	3"	N	.1 lb.	OE Scrap		1
54-3-10	4.8	697.9	6"	2"	N	.1 lb.	OE Scrap	4.2" Illumination Mortar, 12' off lane	1
54-3-11	0.6	705.8	6 ft.	4"	N	.1 lb.	OE Scrap		1
54-3-12	3.4	717.3	6"	3"	N	.1 lb.	Scrap		1
54-3-13	4.1	721.7	1 ft.	1"	N	.1 lb.	OE Scrap		1
54-3-14	1.6	765.1	3 ft.	3"	N	.1 lb.	Scrap		1
54-3-15	9.4	775.9	6 ft.	4"	N	.1 lb.	Scrap		1
54-3-16	1.0	788.8					No Contact	QC Verified	
54-3-17	3.4	833.3	4 ft.	3"	N	.1 lb.	Scrap		1
54-3-18	3.0	856.3	2 ft.	4"	N	.1 lb.	Scrap		1
54-3-19	2.2	869.6	4 ft.	3"	N	.5 lb.	OE Scrap		2
54-3-20	3.1	888.8	2 ft.	4"	N	.1 lb.	OE Scrap		1
54-3-21	2.5	900.8	5 ft.	3"	N	.1 lb.	OE Scrap		1
54-3-22	0.0	916.8	6 ft.	2"	N	.1 lb.	OE Scrap	Parachute Chain QC Verified	1
54-3-23	7.3	932.8	5 ft.	1"	N	.1 lb.	OE Scrap		1
54-3-24	3.7	1033.8	2 ft.	1"	N	.1 lb.	Scrap		1
54-3-25	1.4	1056.3	4 ft.	1"	N	.1 lb.	Scrap		1

Area 54 - Line 3 - LHAAP Anomaly Dig sheet

00049431

Area	Transect			
54	3	EOD Team	2	
		Date of Excavation	7/11/2006 7/12/2006	**Total MEC Scrap 2.75 lbs.**
		Start Time	14:25 6:50	Pg.1, Total MEC Scrap 2.65 lbs.
		Stop Time	15:45 7:15	Pg.2, Total MEC Scrap 0.1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-3-26	2.9	1066.8	2 ft.	1"	N	.1 lb.	Scrap		1
54-3-27	6.4	1084.3					No Contact	QC Verified	
						NOTE:	Lane was extended 100 feet to accommodate characterization		
							of the mortar pit area and the overshoot of the target mean		
100 ft,	Extension	North end of	lane stake.				point. 7/17/2006		
54-3-28		14.5 ft.		2"	N	.1 lb.	Old can	QC Verified	1
54-3-29		57 ft.		4"	N	.1 lb.	Small Scrap	QC Verified	1
54-3-30		78 ft.		0	N	.1 lb.	Flare chain	QC Verified	1
54-3-31		100 ft.		1"	N	.1 lb.	OE Scrap	QC Verified	1

Area 54 - Line 3 - LHAAP Anomaly Dig sheet

00049432

Area	Transect		
54	3	EOD Team	2
		Date of Excavation 7/11/2006 7/12/2006	**Total MEC Scrap 2.75 lbs.**
		Start Time 14:25 6:50	Pg.1, Total MEC Scrap 2.65 lbs.
		Stop Time 15:45 7:15	Pg.2, Total MEC Scrap 0.1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment Digs

Area 54 - Line 4B Grid 1 - LHAAP Anomaly Digsheet

00049433

Area	Transect		
54	4B	EOD Team	2
	Grid 1		**Total MEC Scrap . 7.35 lbs.**
		Date of Excavation	7/17/2006
			Pg. 1, Total MEC Scrap 4.95 lbs.
		Start Time	12:30 Pg. 2, Total MEC Scrap 2.4 lbs.
		Stop Time	15:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* X Axis (ft.)	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G1-1		25 ft.	1 ft.	4"	N	.1 lb.	OE Scrap	1
4B-G1-2		30 ft.	6 ft.	5"	N	.1 lb.	OE Scrap	1
4B-G1-3		30 ft.	26 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-4		30 ft.	65 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-5		30 ft.	73 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-6		30 ft.	86 ft.	6"	N	.5 lb.	OE Scrap	1
4B-G1-7		35 ft.	80 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-8		39 ft.	1 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-9		40 ft.	85 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-10		39 ft.	85 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-11		44 ft.	1 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-12		41 ft.	46 ft.	1"	N	.1 lb.	OE Scrap	1
4B-G1-13		45 ft.	46 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-14		41 ft.	99 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-15		49 ft.	52 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-16		49.0	81 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-17		53.0	1 ft.	4"	N	.2 lb	OE Scrap	1
4B-G1-18		52.0	49 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-19		55.0	64 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-20		53.0	85 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-21		58.5	48.5 ft.	5"	N	.1 lb.	OE Scrap	1
4B-G1-22		60 ft.	83 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-23		64 ft.	1 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-24		61 ft.	26 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-25		60.5 ft.	58 ft.	2"	N	.25 lb.	OE Scrap	1

Area 54 - Line 4B Grid 1 - LHAAP Anomaly Digsheet 00049434

Area	Transect		
54	4B	EOD Team	2
	Grid 1		**Total MEC Scrap . 7.35 lbs.**
		Date of Excavation	7/17/2006
			Pg. 1, Total MEC Scrap 4.95 lbs.
		Start Time	12:30 Pg. 2, Total MEC Scrap 2.4 lbs.
		Stop Time	15:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* X Axis (ft.)	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G1-26		64 ft.	77 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-27		60 ft.	85 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-28		66 ft.	32 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-29		71 ft.	19 ft.	4"	N	.1 lb.	OE Scrap	1
4B-G1-30		74 ft.	19 ft.	1"	N	.1 lb.	OE Scrap	1
4B-G1-31		70 ft.	49 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-32		71.5 ft.	76 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-33		79 ft.	1 ft.	3"	N	.5 lb.	OE Scrap	1
4B-G1-34		89 ft.	1 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-35		94 ft.	1 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-36		99 ft.	1 ft.	3"	N	.25 lb.	OE Scrap	1

Area 54 - Line 4B Grid 2 - LHAAP Anomaly Digsheet 00049435

Area	Transect			
54	4B	EOD Team	2	**Total MEC Items: 12 each**
	Grid 2			**Total MEC Scrap . 20.75 lbs.**
		Date of Excavation	7/18/2006	
				Pg. 1, Total MEC Scrap 11.05 lbs.
		Start Time	7:00	Pg. 2, Total MEC Scrap 9.7 lbs.
		Stop Time	10:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* X Axis (ft.)	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G1-1		28 ft	4 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-2		28 ft.	9 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-3		26.5 ft.	29 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-4		29 ft.	54.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-5		28 ft.	59.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-6		27 ft.	69 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-7		32.5 ft.	21 ft.	4"	N	1 lb.	OE Scrap	1
4B-G1-8		34 ft.	30 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-9		34 ft.	41 ft.	3"	N	.5 lb.	OE Scrap	1
4B-G1-10		33.5 ft.	77 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-11		**32 ft.**	**92 ft.**	**0**	**Y**	**2 lbs.**	**60 mm. Illumination Mortar**	**1**
4B-G1-12		**36 ft.**	**61 ft.**	**4"**	**Y**	**3 lbs.**	**81 mm. Illumination Mortar**	**1**
4B-G1-13		37.5 ft.	76.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-14		39 ft.	75.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-15		43.5 ft.	6 ft.	4"	N	.1 lb.	OE Scrap	1
4B-G1-16		43.5 ft.	12.5 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-17		43.5 ft.	32 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-18		43 ft.	42 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-19		47 ft.	22 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-20		48 ft.	43 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-21		43.5 ft.	67 ft.	3"	N	.2 lb.	OE Scrap	1
4B-G1-22		42.5 ft.	94 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-23		53.5 ft.	1.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-24		54 ft.	8.5 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-25		54 ft.	17.5 ft.	3"	N	.25 lb.	OE Scrap	1

Area 54 - Line 4B Grid 2 - LHAAP Anomaly Digsheet 00049436

Area	Transect			
54	4B	EOD Team	2	**Total MEC Items: 12 each**
	Grid 2			**Total MEC Scrap . 20.75 lbs.**
		Date of Excavation	7/18/2006	
				Pg. 1, Total MEC Scrap 11.05 lbs.
		Start Time	7:00	Pg. 2, Total MEC Scrap 9.7 lbs.
		Stop Time	10:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* X Axis (ft.)	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G1-26		52.5 ft.	66 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-27		52 ft.	88 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-28		58 ft.	32 ft.	3"	N	.5 lb.	OE Scrap	1
4B-G1-29		57.5 ft.	42.5 ft.	3 "	N	.25 lb.	OE Scrap	1
4B-G1-30		57 ft.	52.5 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-31		58 ft.	57 ft.	2"	N	.1 lb.	OE Scrap	1
4B-G1-32		58 ft.	79 ft.	3"	N	.1 lb.	OE Scrap	1
4B-G1-33		57 ft.	93.5 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-34		61 ft.	4.5 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-35		64 ft.	14 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-36		63.5 ft.	34"	2"	N	.25 lb.	OE Scrap	1
4B-G1-37		**64 ft.**	**56.5 ft.**	**4"**	**Y**	**3.5 lbs.**	**7 ea. Misc. Fuzes, 3 ea. Illumination Candles**	**8**
4B-G1-38		63.5 ft.	89 ft.	3"	N	1 lb.	OE Scrap	1
4B-G1-39		63.5 ft.	96 ft.	2"	N	.25 lb.	OE Scrap	1
4B-G1-40		68 ft.	3.5 ft.	5"	N	.5 lb.	OE Scrap	1
4B-G1-41		68 ft.	21 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-42		67 ft.	44 ft.	4"	N	.25 lb.	OE Scrap	1
4B-G1-43		66 ft.	67 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-44		67.5 ft.	78.5 ft.	3"	N	.25 lb.	OE Scrap	1
4B-G1-45		74 ft.	32 ft.	4"	N	.25 lbs	OE Scrap	1
4B-G1-46		74 ft.	76 ft.	3"	N	.5 lb.	OE Scrap	1

Area 54 - Line 4B Grid 3 - LHAAP Anomaly Digsheet 00049437

Area	Transect			
54	4B	EOD Team	2	**Total MEC Items 2 ea.**
	Grid 3			**Total MEC Scrap 13.17 lbs.**
		Date of Excavation	7/17/2006	
		Start Time	9:00	
		Stop Time	10:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance X Axis (ft.	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G3-1		4 ft.	0.0	2"	N	.1 lb.	Flare Chain	1
4B-G3-2		7 ft.	0.0	2"	N	.1 lb.	Flare Chain	1
4B-G3-3		18 ft.	0.0	0	N	.5 lb.	Fuze Body	
4B-G3-4		24 ft.	0.0	0	N	1 lb.	4.2 inch Mortar Boom	
4B-G3-5		57 ft.	0.0	0	Y	**3 lbs.**	**Flare Candle, 4.2 " Illumination Mortar**	
4B-G3-6		72 ft.	0.0	0	N	.5 lb.	Fuze Body	
4B-G3-7		86 ft.	0.0	2"	N	.1 lb.	Flare Chain	1
4B-G3-8		50 ft.	8 ft.	2"	N	.25 lb.	Scrap	1
4B-G3-9		50 ft.	21 ft.	3"	N	1 lb.	81 mm. Mortar fin & flare chain	1
4B-G3-10		50 ft.	26 ft.	0	N	1.5 lb.	81 mm. Illumination, Mortar Body	1
4B-G3-11		50 ft.	27 ft.	0	Y	**1 lb.**	**60 mm. Illumination Mortar flare candle**	
4B-G3-12		50 ft.	28 ft.	0	N	2 lbs.	81 mm. Illumination, Mortar Body	
4B-G3-13		50 ft.	29 ft.	0	N	1 lbs.	60 mm. Illumination, Mortar body	
4B-G3-14		50 ft.	31 ft.	0	N	.5 lb.	4.2" Mortar Boom	
4B-G3-15		50 ft.	32 ft.	0	N	.5 lb.	4.2" Mortar Boom	
4B-G3-16		50 ft.	36 ft.	2"	N	.1 lb.	Chain Disc.	1
4B-G3-17		50 ft.	42.5 ft.	2"	N	.1 lb.	Chain Disc.	1
4B-G3-18		50 ft.	54 ft.	3"	N	.01 lb.	OE Scrap (Aliminum)	1
4B-G3-19		50 ft.	60 ft.	2"	N	.01 lb.	OE Scrap (Aliminum)	1
4B-G3-20		50 ft.	81 ft.	2"	N	.1 lb.	Flare Chain	1
4B-G3-21		50 ft.	97 ft	0	N	.5 lb.	4.2" Boom	
4B-G3-22		87 ft.	100 ft.	2"	N	.1 lb.	Flare Chain	1
4B-G3-23		93 ft.	100 ft.	3"	N	.1 lb.	Flare Chain	1
4B-G3-24		96 ft.	100 ft.	2"	N	.1 lb.	Flare Chain	1

Area 54 - Line 4B Grid 3 - LHAAP Anomaly Digsheet

00049438

Area	Transect			
54	4B	EOD Team	2	**Total MEC Items 2 ea.**
	Grid 3			**Total MEC Scrap 13.17 lbs.**
		Date of Excavation	7/17/2006	
		Start Time	9:00	
		Stop Time	10:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance X Axis (ft.	Target Offset Y Axis (ft)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment	Digs

Area 54 - Line 4B Grid 4 - LHAAP Anomaly Digsheet

00049439

Area	Transect		
54	4B	EOD Team	2
	Grid 4		**Total MEC Scrap .43 lb.**
		Date of Excavation	7/17/2006
		Start Time	10:30
		Stop Time	10:50

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** X Axis (ft.)	Target Offset Y Axis (ft.)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment		Digs
4B-G4-1		50 ft.	5 ft.	2"	N	.1 lb.	Flare Chain	1
4B-G4-2		50 ft.	13 ft.	2"	N	.01 lb.	Washer	1
4B-G4-3		50 ft.	26.5 ft.	0	N	.1 lb.	Flare Chain	1
4B-G4-4		50 ft.	62 ft.	1"	N	.1 lb.	Spring	1
4B-G4-5		27 ft.	100 ft.	0	N	.1 lb.	Flare Chain	1
4B-G4-6		46 ft.	100 ft.	2"	N	.01 lb.	Washer	1
4B-G4-7		66 ft.	100 ft.	1"	N	.01 .lb.	Washer	1
						NOTE:	See Attachment gridsheet Site 54-L4B-G4	

Area 54 - Line 4B Grid 4 - LHAAP Anomaly Digsheet 00049440

Area	Transect		
54	4B	EOD Team	2
	Grid 4		**Total MEC Scrap .43 lb.**
		Date of Excavation	7/17/2006
		Start Time	10:30
		Stop Time	10:50

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* X Axis (ft.)	Target Offset Y Axis (ft.)	Depth to item Z (in)	OE Item? (Y or N)	Item Description Comment	Digs

Area 54 - Line 4 - LHAAP Anomaly Digsheet

00049441

Area	Transect		
54	4	EOD Team	2
			Total MEC Scrap 6.55 lbs.
		Date of Excavation	7/12/2006
		Start Time	7:20
		Stop Time	8:45

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L4-1	2.4	29.1	5.0	1"	N	.1 lb.	Scrap	1
54-L4-2	1.7	142.9	1.0	3"	N	.1 lb.	Scrap	2
54-L4-3	2.0	168.5	1.0	3"	N	.1 lb.	Scrap	3
54-L4-4	1.6	211.3	2.0	4"	N	.1 lb.	Scrap	1
54-L4-5	8.6	288.1	1.0	2"	N	.1 lb.	Soda Can	1
54-L4-6	8.8	297.9	2.0	3"	N	.25 lb.	Scrap & OE Scrap	4
54-L4-7	72.5	412.9	1.0	30"	N	3 lbs.	Underground Pipe	1
54-L4-8	3.6	466.4	2.0	2"	N	.25 lb.	Scrap QC Verified	1
54-L4-9	63.2	581.7	1.0	2"	N	1 lb.	OE Scrap	3
54-L4-10	2.7	664.1	1.0	2"	N	.1 lb.	Scrap	1
54-L4-11	3.0	817.4	3.0	2"	N	.25 lb.	Scrap QC Verified	1
54-L4-12	2.6	1011.4	5.0	2"	N	.1 lb.	OE Scrap	2
54-L4-13	3.1	1017.7	5.0	2"	N	.1 lb.	Scrap	1
54-L4-14	2.4	1075.8					No Contact QC Verified	
54-L4-15	23.6	1304.6	5.0	1"	N	1 lb.	OE Scrap 60mm. Illumination Mortar (Exp.) 72.4 ft. from flag 1	

Area 54 - Line 5 - LHAAP Anomaly Digsheet

00049442

Area	Transect	
54	5	EOD Team
		Total MEC Scrap .1 lb.
		Date of Excavation 7/12/2006
		Start Time 8:50
		Stop Time 9:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-5-1	1.8	299.6					No Contact	
54-5-2	112.0	654.6	1 ft.	24"			Underground Pipe	1
54-5-3	1.3	1076.6	3 ft.	3"	N	.1 lb.	Scrap	1
54-5-4	3.0	1255.1	6 ft.	1"	N	.1 lb.	Nail	1
54-5-5	2.1	1271.4	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-5-6	1.6	1341.0					No Contact	
54-5-7	2.2	1527.8					No Contact	
54-5-8	69.0	1575.0	4 ft.		N		Survey Nail	

Area 54 - Line 6 - LHAAP Anomaly Digsheet

00049443

Area	Transect		
54	6	EOD Team	2
			Total MEC Scrap 2.65 lbs.
		Date of Excavation	7/11/2006
		Start Time	10:15
		Stop Time	11:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L6-1	4.0	230.1	3 ft.	3"	N	.5 lb.	Scrap	1
54-L6-2	2.8	239.8	3 ft.	1"	N	.1 lb.	OE Scrap	1
54-L6-3	3.1	515.6	3 ft.	1"	N	.1 lb.	OE Scrap	1
54-L6-4	2.7	582.0	5 ft.	1"	N	.1 lb.	Scrap	1
54-L6-5	62.3	608.4	6"	1"	N	.5 lb.	Barbed Wire	3
54-L6-6	20.6	634.8	1 ft.	4"	N	.1 lb.	Scrap	2
54-L6-7	4.6	643.2	1 ft.	2"	N	.25 lb.	Barbed Wire	2
54-L6-8	1.1	658.8					No Contact	
54-L6-9	2.5	684.2					No Contact	
54-L6-10	2.2	688.2	3 ft.	3"	N	.1 lb.	Scrap	1
54-L6-11	4.3	718.1	6"	2"	N	.1 lb.	OE Scrap	2
54-L6-12	2.8	745.0	1 ft.	1'	N	.25 lb.	OE Scrap	2
54-L6-13	374.6	922.3	3 ft.	8"	N		Underground Pipe	2
54-L6-14	9.8	1043.4	1 ft.	1"	N	.25 lb.	Barbed Wire	5
54-L6-15	4.1	1141.2	1 ft.	3"	N	.25 lb.	OE Scrap	1
54-L6-16	1.9	1153.2	3 ft.	2"	N	.1 lb.	OE Scrap	1
54-L6-17	1.8	1215.9	2 ft.	2"	N	.1 lb.	OE Scrap	1
54-L6-18	19.0	1226.4	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L6-19	2.3	1394.2	9 ft.	4"	N	.1 lb.	OE Scrap	1
54-L6-20	3.3	1483.3					No Contact	
54-L6-21	6.9	1740.0	0.0	0	N		Survey Nail	

Area 54 - Line 7 - LHAAP Anomaly Digsheet

00049444

Area	Transect		
54	7	EOD Team	2
			Total MEC Scrap 1.15 lbs.
		Date of Excavation	7/12/2006
		Start Time	11:30
		Stop Time	12:05

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L7-1	12.1	48.0	2 ft.	0	N		Survey Nail	
54-L7-2	1.4	76.5	2 ft.	1"	N	.1 lb.	Scrap	1
54-L7-3	2.1	164.1	2 ft.	1"	N	.1 lb.	Scrap	1
54-L7-4	1.8	529.2					No Contact	
54-L7-5	1.5	594.4	6 ft.	2"	N	.1 lb.	OE Scrap	1
54-L7-6	2.1	905.4	1 ft.	3"	N	.1 lb.	OE Scrap	1
54-L7-7	2.1	961.8					No Contact	
54-L7-8	556.7	1071.8	2 ft.	6"	N		Underground Pipe	
54-L7-9	2.7	1161.4					No Contact	
54-L7-10	2.8	1190.0	4 ft.	2"	N	.25 lb.	Scrap	1
54-L7-11	18.2	1364.3	4 ft.	2"	N	.25 lb.	OE Scrap	1
54-L7-12	2.5	1636.8	3 ft.	3"	N	.25 lb.	OE Scrap & Barbed Wire	3
54-L7-13	6.7	1753.1	1 ft.	2"	N	.25 lb.	Old Can	4
54-L7-14	2.4	1800.9	3 ft.	2"	N	.25 lb.	Barbed Wire	1

Area 54 - Line 8 - LHAAP Anomaly Digsheet 00049445

Area	Transect			
54	8	EOD Team	2	
		Date of Excavation	7/12/2006 7/13/2006	**Total MEC Scrap 3.35 lbs.**
		Start Time	13:50 7:00	
		Stop time	15:45 8:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L8-1	1.7	4.0					No Contact	
54-L8-2	1.5	92.0	2 ft.	2"	N	.1 lb.	Scrap	1
54-L8-3	5.5	125.8	1 ft.	3"	N	.1 lb.	Scrap (Beer can)	2
54-L8-4	2.1	254.2	3 ft.	3"	N	.1 lb.	OE Scrap	1
54-L8-5	1.7	544.3	3 ft.	3'	N	.1 lb.	OE Scrap	1
54-L8-6	2.6	631.3	8 ft.	2"	N	.1 lb.	OE Scrap	1
54-L8-7	2.1	680.9	1 ft.	2"	N	.1 lb.	Scrap (wire)	2
54-L8-8	2.4	885.8	6 ft.	2"	N	.1 lb.	OE Scrap	1
54-L8-9	8.1	1060.8	5 ft.	3"	N	.1 lb.	Scrap (12 gage Shotgun shell Base)	1
54-L8-10	5.0	1198.1	4 ft.	4"	N	.1 lb.	OE Scrap	1
54-L8-11	80.0	1213.0	6"	24"	N	3 lbs.	Underground Pipe	1
54-L8-12	3.7	1230.3	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L8-13	19.9	1274.1	3 ft.	1"	N	.5 lb.	OE Scrap	1
54-L8-14	1.8	1286.8					No Contact QC Verified	
54-L8-15	2.3	1334.3	5 ft.	1"	N	.25 lb.	OE Scrap	2
54-L8-16	9.1	1439.6	2 ft.	1"	N	.1 lb.	OE Scrap	1
54-L8-17	2.7	1538.0	3 ft.	3"	N	.1 lb.	OE Scrap	1
54-L8-18	2.5	1597.8	1 ft.	1"	N	.1 lb.	OE Scrap	1
54-L8-19	2.0	1705.1	1 ft.	1"	N	.1 lb.	OE Scrap	1
54-L8-20	2.2	1742.8	5 ft.	2"	N	.1 lb.	Scrap QC Verified	1
54-L8-21	2.6	1830.8	1 ft.	3"	N	.25 lb.	Scrap	1
54-L8-22	1.8	1884.0	3 ft.	5"	N	.25 lb.	Scrap	1
54-L8-23	3.9	1905.3	3 ft.	2"	N	.1 lb.	Scrap	3
54-L8-24	96.4	1911.5	1 ft.	4"	N	.25 lb.	Scrap (wire)	5
54-L8-25	8.0	1933.6	1 ft.	2"	N	.2 lb.	Scrap (Big Nail)	1

Area 54 - Line 8 - LHAAP Anomaly Digsheet

00049446

Area	Transect		
54	8	EOD Team	2
		Date of Excavation	7/12/2006 7/13/2006
		Start Time	13:50 7:00
		Stop time	15:45 8:00

Total MEC Scrap 3.35 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment Digs
54-L8-26	42.9	1969.0	0.0		N	Survey Nail

Area 54 - Line 9 - LHAAP Anomaly Digsheet

00049447

Area	Transect		
54	9	EOD Team	2
			Total MEC Scrap 12.9 lbs.
		Date of Excavation	7/13/2006
			Pg. 1, Total MEC Scrap 2.38 lbs.
		Start Time	8:45 Pg. 2, Total MEC Scrap 10.52 lbs.
		Stop Time	11:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-L9-1	0.5	19.5	0.0	2"			Hot Rocks		
54-L9-2	28.7	38.2	10 ft.				Culvert		
54-L9-3	10.5	50.4	0.0				Survey Nail		
54-L9-4	0.0	72.7					Ground clutter		
54-L9-5	0.0	84.9	5 ft.	1"	N		Chain	QC Verified	
54-L9-6	2.8	189.1					No Contact	QC Verified	
54-L9-7	1.7	235.7					No Contact	QC Verified	
54-L9-8	2.0	271.8					No Contact	QC Verified	
54-L9-9	2.2	354.2					No Contact	QC Verified	
54-L9-10	1.9	410.2					No Contact	QC Verified	
54-L9-11	1.9	465.4	3 ft.	3"	N	.1 lb.	Scrap	QC Verified	1
54-L9-12	2.3	583.6					No Contact	QC Verified	
54-L9-13	3.9	652.0	2 ft.	1"	N	.12 lb.	Scrap (wire)		3
54-L9-14	3.7	695.5	2 ft.	2"	N	.1 lb.	OE Scrap	QC Verified	1
54-L9-15	2.8	818.9	2 ft.	1"	N	.12 lb.	OE Scrap		1
54-L9-16	10.9	904.6	4 ft.	3"	N	.25 lb.	OE Scrap		2
54-L9-17	5.0	933.8	6 ft.	2"	N	.25 lb.	OE Scrap		1
54-L9-18	2.1	959.7	5 ft.	2"	N	.1 lb.	OE Scrap	QC Verified	1
54-L9-19	20.6	998.8	1 ft.	3"	N	.12 lb.	OE Scrap		1
54-L9-20	3.5	1008.6	5 ft.	4"	N	.25 lb.	OE Scrap		1
54-L9-21	2.9	1045.9	6 ft.	2"	N	.1 lb.	OE Scrap	QC Verified	1
54-L9-22	22.1	1076.9	3 ft.	2"	N	.25 lb.	OE Scrap		1
54-L9-23	3.4	1127.1	3 ft.	4"	N	.25 lb.	OE Scrap		2
54-L9-24	12.5	1171.8	5 ft.	2"	N	.25 lb.	OE Scrap		1
54-L9-25	56.4	1196.3	3 ft.	2"	N	.12 lb.	OE Scrap		2

Area 54 - Line 9 - LHAAP Anomaly Digsheet

00049448

Area	Transect		
54	9	EOD Team	2
			Total MEC Scrap 12.9 lbs.
		Date of Excavation	7/13/2006
			Pg. 1, Total MEC Scrap 2.38 lbs.
		Start Time	8:45
			Pg. 2, Total MEC Scrap 10.52 lbs.
		Stop Time	11:30

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L9-26	1.7	1257.2	3 ft..	1"	N	.12 lb.	OE Scrap	1
54-L9-27	5.5	1312.0	5 ft.	6"	N	.25 lb.	OE Scrap	1
54-L9-28	35.9	1343.2	3 ft.	3"	N	.25 lb.	OE Scap	1
54-L9-29	89.9	1360.2	2 ft.	24"	N		Underground Pipe	
54-L9-30	59.7	1405.5	3 ft.	2"	N	.25 lb.	OE Scrap	2
54-L9-31	14.0	1433.9	2 ft.	3"	N	.5 lb.	OE Scrap	3
54-L9-32	69.7	1464.0	3 ft.	2"	N	.5 lb.	OE Scrap	3
54-L9-33	29.6	1507.1	5 ft.	2"	N	.25 lb.	OE Scrap	2
54-L9-34	1.4	1537.6	6 ft.	1"	N	.1 lb.	OE Scrap	1
54-L9-35	20.9	1619.2	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L9-36	11.6	1677.7	2 ft.	3"	N	2 lbs.	OE Scrap & Scrap	2
54-L9-37	1.5	1701.3					No Contact QC Verified	
54-L9-38	4.2	1862.4	2"	2"	N	.25 lb.	OE Scrap	2
54-L9-39	8.4	1877.0	1 ft.	2"	N	1 lb.	Scrap (Iron Spike)	1
54-L9-40	5.5	1885.0	3 ft.	2"	N		Scrap (In Root)	2
54-L9-41	2.4	1941.1	4 ft.	2"	N		Scrap (In Root)	1
54-L9-42	14.8	1954.9	5 ft.	4"	N	1 lb.	Scrap (Iron Bar)	1
54-L9-43	82.2	1973.2	2 ft.	2"	N	2 lbs.	Scrap (Iron Bar)	1
54-L9-44	13.9	1998.7	2 ft.	2"	N	.1 lb.	Scrap	1
54-L9-45	2.5	2035.4	2 ft.	3"	N	.1 lb.	Scrap	1

Area 54 - Line 10 - LHAAP Anomaly Digsheet 00049449

Area	Transect				
54	10	EOD Team	2		**Total MEC Scrap 22.49 lbs**
					Pg. 1, Total MEC Scrap 1.49
		Date of Excavation	7/13/2006	7/14/2006	Pg. 2, Total MEC Scrap 6.55 lbs.
					Pg. 3, Total MEC Scrap 12.5 lbs.
		Start Time	13:00	7:00	Pg. 4, Total MEC Scrap 11.24 lbs.
		Stop Time	15:45	11:45	Pg. 5, Total MEC Scrap .61 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L10-1	2.5	1.3					No Contact	
54-L10-2	0.9	21.9					No Contact	
54-L10-3	11.1	32.6	5 ft.	0	N	.12 lb.	Scrap	1
54-L10-4	7.5	39.7					No Contact	
54-L10-5	2.6	49.2					No Contact	
54-L10-6	5.4	60.2	3 ft.	1"	N	.01 lb.	Scrap (Nail)	1
54-L10-7	0.4	66.2	3 ft.	1"	N	.01 lb.	Scrap	1
54-L10-8	0.0	74.1	6 ft.	1"	N	.12 lb.	Scrap	1
54-L10-9	3.1	97.2					No Contact	
54-L10-10	1.9	102.1					No Contact	
54-L10-11	1.2	108.5	5 ft.	1"	N	.01 lb.	OE Scrap	1
54-L10-12	8.3	120.8	5 ft.	1"	N	.01 lb.	OE Scrap	1
54-L10-13	8.4	125.3	5 ft.	1"	N	.01 lb.	OE Scrap	1
54-L10-14	3.6	143.7	6 ft.	2"	N	.01 lb.	OE Scrap	1
54-L10-15	3.4	170.1	8 ft.	0	N	.5 lb.	Scrap (Pipe)	0
54-L10-16	3.7	177.8					No Contact	
54-L10-17	3.1	199.6	5 ft.	1"	N	.12 lb.	OE Scrap	1
54-L10-18	5.2	222.2	6 ft.	1"	N	.12 lb.	OE Scrap	1
54-L10-19	11.7	250.4					No Contact	
54-L10-20	4.6	321.8					No Contact	
54-L10-21	3.0	439.0	5 ft.	2"	N	.12 lb.	OE Scrap	1
54-L10-22	2.7	449.6					No Contact	
54-L10-23	19.7	465.3	4 ft.	2"	N	.25 lb.	OE Scrap	1
54-L10-24	6.1	472.3	3 ft.	2"	N	.1 lb.	OE Scrap	1
54-L10-25	5.4	534.7					No Contact	

Area 54 - Line 10 - LHAAP Anomaly Digsheet 00049450

Area	Transect				
54	10	EOD Team	2		**Total MEC Scrap 22.49 lbs**
					Pg. 1, Total MEC Scrap 1.49
		Date of Excavation	7/13/2006	7/14/2006	Pg. 2, Total MEC Scrap 6.55 lbs.
					Pg. 3, Total MEC Scrap 12.5 lbs.
		Start Time	13:00	7:00	Pg. 4, Total MEC Scrap 11.24 lbs.
		Stop Time	15:45	11:45	Pg. 5, Total MEC Scrap .61 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L10-26	66.0	563.9	1 ft.	3"	N	.25 lb.	OE Scrap	1
54-L10-27	9.8	570.4	2 ft.	2"	N	.1 lb.	Scrap (wire)	2
54-L10-28	3.4	578.1	2 ft.	2"	N	.1 lb.	OE Scrap	1
54-L10-29	1.9	595.6					No Contact	
54-L10-30	3.6	604.7					No Contact	
54-L10-31	2.4	624.1					No Contact	
54-L10-32	8.8	649.1	1 ft.	4"	N	.25 lb.	Scrap	1
54-L10-33	2.3	658.0					No Contact	
54-L10-34	12.6	673.2	2 ft.	5"	N	.25 lb.	OE Scrap	1
54-L10-35	2.7	691.1	0.0	4"	N	.25 lb.	Scrap	1
54-L10-36	5.0	859.8					No Contact	
54-L10-37	4.2	865.4	6 ft.	2"	N	.1 lb.	Scrap	1
54-L10-38	7.8	884.2	3 ft.	4"	N	.5 lb.	OE Scrap	4
54-L10-39	38.6	934.8	1 ft.	3"	N	.25 lb.	OE Scrap	3
54-L10-40	3.1	944.4	2 ft.	4"	N	.25 lb.	OE Scrap	2
54-L10-41	15.2	972.4	3 ft.	3"	N	.5 lb.	OE Scrap	2
54-L10-42	11.3	992.1	4 ft.	1"	N	.25 lb.	OE Scrap	1
54-L10-43	49.7	1009.3	3 ft.	2"	N	.5 lb.	OE Scrap	3
54-L10-44	60.0	1015.9	3 ft.	3"	N	.5 lb.	OE Scrap	3
54-L10-45	4.2	1051.8	1 ft.	4"	N	.5 lb.	OE Scrap	3
54-L10-46	12.2	1080.7	1 ft.	2"	N	.5 lb.	OE Scrap	2
54-L10-47	6.6	1086.0	1 ft.	3"	N	.25 lb.	OE Scrap	2
54-L10-48	62.2	1105.7	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L10-49	122.5	1111.8	1 ft.	3"	N	.5 lb.	OE Scrap	3
54-L10-50	13.2	1126.4	1 ft.	4"	N	.5 lb.	OE Scrap	3

Area 54 - Line 10 - LHAAP Anomaly Digsheet 00049451

Area	Transect				
54	10	EOD Team	2		**Total MEC Scrap 22.49 lbs**
					Pg. 1, Total MEC Scrap 1.49
		Date of Excavation	7/13/2006	7/14/2006	Pg. 2, Total MEC Scrap 6.55 lbs.
					Pg. 3, Total MEC Scrap 12.5 lbs.
		Start Time	13:00	7:00	Pg. 4, Total MEC Scrap 11.24 lbs.
		Stop Time	15:45	11:45	Pg. 5, Total MEC Scrap .61 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
54-L10-51	54.8	1132.1	1 ft.	1"	N	.5 lb. OE Scrap	3
54-L10-52	73.8	1150.4	1 ft.	3"	N	.5 lb. OE Scrap	3
54-L10-53	333.2	1157.5	1 ft.	4"	N	.5 lb. OE Scrap	3
54-L10-54	55.6	1166.2	1 ft.	3"	N	.5 lb. OE Scrap	2
54-L10-55	4.8	1170.6	1 ft.	3"	N	.5 lb. OE Scrap	3
54-L10-56	94.8	1183.8	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-57	65.1	1220.3	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-58	52.6	1230.2	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-59	47.1	1234.5	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-60	15.2	1242.2	1 ft.	3"	N	.5 lb. OE Scrap	2
54-L10-61	67.0	1250.0	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-62	50.2	1254.6	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-63	51.5	1263.2	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-64	20.9	1271.1	1 ft.	3"	N	.5 lb. OE Scrap	1
54-L10-65	9.8	1283.9	1 ft.	1"	N	.5 lb. OE Scrap	1
54-L10-66	27.6	1289.7	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-67	75.3	1300.9	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-68	8.9	1307.4	1 ft.	1"	N	.5 lb. OE Scrap	3
54-L10-69	25.5	1312.2	1 ft.	3"	N	.5 lb. OE Scrap	2
54-L10-70	7.1	1332.6	1 ft.	2"	N	.5 lb. OE Scrap	3
54-L10-71	10.3	1336.1	1 ft.	2"	N	.5 lb. OE Scrap	2
54-L10-72	27.4	1343.5	1 ft.	1"	N	.5 lb. OE Scrap	2
54-L10-73	48.6	1347.4	1 ft.	3"	N	.5 lb. OE Scrap	1
54-L10-74	51.1	1354.6	1 ft.	1"	N	.5 lb. OE Scrap	2
54-L10-75	25.1	1361.3	1 ft.	1"	N	.5 lb. OE Scrap	2

Area 54 - Line 10 - LHAAP Anomaly Digsheet 00049452

Area	Transect				
54	10	EOD Team	2		**Total MEC Scrap 22.49 lbs**
					Pg. 1, Total MEC Scrap 1.49
		Date of Excavation	7/13/2006	7/14/2006	Pg. 2, Total MEC Scrap 6.55 lbs.
					Pg. 3, Total MEC Scrap 12.5 lbs.
		Start Time	13:00	7:00	Pg. 4, Total MEC Scrap 11.24 lbs.
		Stop Time	15:45	11:45	Pg. 5, Total MEC Scrap .61 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L10-76	118.8	1366.8	1 ft.	2"	N	.5 lb.	OE Scrap	2
54-L10-77	45.4	1378.6	1 ft.	3"	N	.5 lb.	OE Scrap	2
54-L10-78	26.4	1383.2	1 ft.	2"	N	.5 lb.	OE Scrap	2
54-L10-79	5.2	1398.7	1 ft.	1"	N	.5 lb.	OE Scrap	1
54-L10-80	19.2	1407.8	1 ft.	1"	N	.5 lb.	OE Scrap	2
54-L10-81	37.3	1430.2	1 ft.	2"	N	.5 lb.	OE Scrap	3
54-L10-82	18.1	1434.3	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L10-83	56.5	1438.4	1 ft.	0	N	1 lb.	Survey Nail	1
54-L10-84	79.3	1447.1	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L10-85	13.2	1464.2	1 ft.	3"	N	.5 lb.	OE Scrap	2
54-L10-86	27.1	1481.4	1 ft.	1"	N	.5 lb.	OE Scrap	2
54-L10-87	8.8	1502.7	1 ft.	1"	N	.5 lb.	OE Scrap	3
54-L10-88	28.9	1514.6	1 ft.	3"	N	.5 lb.	OE Scrap	2
54-L10-89	12.9	1520.3	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L10-90	17.8	1530.5	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L10-91	18.4	1555.9	2 ft.	2"	N	.5 lb.	OE Scrap	1
54-L10-92	4.0	1562.2	1 ft.	1"	N	.5 lb.	OE Scrap	1
54-L10-93	44.6	1580.6	2 ft.	3"	N	.5 lb.	OE Scrap	1
54-L10-94	2.7	1610.3	5 ft.	3"	N	.5 lb.	OE Scrap	1
54-L10-95	4.6	1622.0	2 ft.	2"	N	.5 lb.	OE Scrap	2
54-L10-96	12.1	1643.0	2 ft.	2"	N	.5 lb.	OE Scrap	2
54-L10-97	8.9	1664.3	2 ft.	3"	N	.5 lb.	OE Scrap	1
54-L10-98	24.9	1677.0	1 ft.	4"	N	.5 lb.	OE Scrap	2
54-L10-99	84.2	1719.5	2 ft.	2"	N	.12 lb.	OE Scrap	2
54-L10-100	9.7	1778.1	2 ft.	2"	N	.12 lb.	OE Scrap	1

Area 54 - Line 10 - LHAAP Anomaly Digsheet

00049453

Area	Transect				
54	10	EOD Team	2		**Total MEC Scrap 22.49 lbs**
					Pg. 1, Total MEC Scrap 1.49
		Date of Excavation	7/13/2006	7/14/2006	Pg. 2, Total MEC Scrap 6.55 lbs.
					Pg. 3, Total MEC Scrap 12.5 lbs.
		Start Time	13:00	7:00	Pg. 4, Total MEC Scrap 11.24 lbs.
		Stop Time	15:45	11:45	Pg. 5, Total MEC Scrap .61 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L10-101	10.6	1791.1	1.0	2"	N	.12 lb.	OE Scrap	1
54-L10-102	3.1	1810.5	3.0	2"	N	.12 lb.	OE Scrap	1
54-L10-103	70.3	1833.8	2.0	0	N		Scrap (wire)	
54-L10-104	3.1	1939.3	0.0	0	N		Scrap (wire)	
54-L10-105	5.9	1970.9	6.0	2"	N		Scrap (wire)	1
54-L10-106	3.0	1994.8	6.0	2"	N	.25 lb.	OE Scrap	1
54-L10-107	3.7	2026.1	6.0	2"	N	.12 lb.	OE Scrap	1
54-L10-108	4.3	2078.7	3.0	3"	N	.01 lb.	Scrap (Nail)	1
54-L10-109	4.3	2094.8	3.0	1"	N	.01 lb.	Scrap (Nail)	1

Area 54 - Line 11 - LHAAP Anomaly Digsheet

00049454

Area	Transect				
54	11	EOD Team	2		**Total MEC Scrap 34.7 lbs.**
		Date of Excavation	7/5/2006	7/6/2006	Pg. 1, Total MEC Scrap 1.64 lbs.
					Pg. 2, Total MEC Scrap 23.26 lbs.
		Srart Time	8:00	6:45	Pg. 3, Total MEC Scrap 9.8 lbs.
		Stop Time	15:30	10:00	Pg. 4, Total MEC Scrap .95 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L11-1	4.0	3.7	1 ft.	2"	N	1 lb.	7.62 & 5.56 mm. Blank casings	1
54-L11-2	4.1	74.2					No Contact	
54-L11-3	4.2	77.5					No Contact	
54-L11-4	2.8	82.9					No Contact	
54-L11-5	2.4	90.7					No Contact	
54-L11-6	4.6	98.5					No Contact	
54-L11-7	2.6	135.5					No Contact	
54-L11-8	4.9	183.5					No Contact	
54-L11-9	6.9	189.4					No Contact	
54-L11-10	5.3	219.1					No Contact	
54-L11-11	6.2	228.5					No Contact	
54-L11-12	8.7	234.5					No Contact	
54-L11-13	4.3	240.1					No Contact	
54-L11-14	2.6	261.8					No Contact	
54-L11-15	6.7	309.8					No Contact	
54-L11-16	4.2	336.6					No Contact	
54-L11-17	3.2	434.7	1 ft.	2"	N	.1 lb.	Hot rocks in asphalt	1
54-L11-18	5.9	509.1					No Contact	
54-L11-19	8.1	535.2	6"	3"	N	.1 lb.	Hot rocks in asphalt	1
54-L11-20	8.1	549.9	1 ft.	3"	N	.1 lb.	Nail	1
54-L11-21	4.4	570.3	1"	4"	N		Hot rock	1
54-L11-22	42.5	586.3	2"	3"	N	.25 lb	40 mm. Flare Casing	1
54-L11-23	50.0	610.5	3"	2"	N	.25 lb.	40 mm. Flare Casing	1
54-L11-24	6.0	679.5	3 ft.	1"	N	.1 lb.	Scrap Aluminum	1
54-L11-25	3.2	687.6	4 ft.	3"	N	.1 lb.	Coaxual Cable	1

Area 54 - Line 11 - LHAAP Anomaly Digsheet

00049455

Area	Transect				
54	11	EOD Team	2		**Total MEC Scrap 34.7 lbs.**
		Date of Excavation	7/5/2006	7/6/2006	Pg. 1, Total MEC Scrap 1.64 lbs.
					Pg. 2, Total MEC Scrap 23.26 lbs.
		Srart Time	8:00	6:45	Pg. 3, Total MEC Scrap 9.8 lbs.
		Stop Time	15:30	10:00	Pg. 4, Total MEC Scrap .95 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L11-26	7.5	702.9	2 ft.	3"	N	.01 lb.	.30 caliber Cabine Bullet	1
54-L11-27	5.0	713.9	3 ft.	2"	N	1.5 lb.	Safety Point from Mower	1
54-L11-28	1.9	742.6					No Contact	
54-L11-29	2.9	763.3					No Contact	
54-L11-30	7.0	844.5	1 ft.	4"	N	1 lb.	Scrap Aluminum & Slap flare	2
54-L11-31	2.5	877.3	1 ft.	3"	N	1 lb.	OE Scrap & Slap Flare	2
54-L11-32	22.7	916.7	2 ft.	3"	N	.25 lb.	Copper disc.	1
54-L11-33	36.0	952.0	3 ft.	2"	N	1 lb.	Fragment	1
54-L11-34	10.0	959.8	1 ft.	3"	N	.01 lb.	Scrap	2
54-L11-35	10.5	1056.0	1 ft.	1"	N	.25 lb.	Scrap	2
54-L11-36	2.1	1079.5	6 ft.	1"	N	.1 lb.	Slap Flare Chain	1
54-L11-37	5.2	1122.2	3 ft.	2"	N	3 lbs.	OE Scrap & Plow Share	2
54-L11-38	4.9	1150.9	0.0	2"	N	.1 lbs.	OE Scrap	2
54-L11-39	2.5	1166.8					No Contact	
54-L11-40	7.4	1197.8	3 ft.	4"	N	.5 lb.	OE Scrap	2
54-L11-41	2.5	1218.5	2 ft.	3"	N	.1 lb.	OE Scrap	2
54-L11-42	2.7	1225.2	1 ft.	4"	N	.1 lb.	OE Scrap	1
54-L11-43	148.1	1240.3	3 ft.	3"	N	2 lbs.	OE Scrap	3
54-L11-44	25.7	1270.8	4 ft.	1"	N	1 lb.	OE Scrap	3
54-L11-45	9.7	1281.1	3 ft.	2"	N	.1 lb.	OE Scrap	5
54-L11-46	49.7	1295.8	1 ft.	2"	N	5 lbs.	OE Scrap	10
54-L11-47	43.7	1322.1	1 ft.	2"	N	5 lbs.	OE Scrap	10
54-L11-48	85.4	1356.0	1 ft.	2"	N	1 lb.	OE Scrap	9
54-L11-49	47.1	1365.1	1 ft.	2"	N	.5 lb	OE Scrap	8
54-L11-50	5.3	1389.7	1 ft.	2"	N	.25 lb.	OE Scrap	5

Area 54 - Line 11 - LHAAP Anomaly Digsheet 00049456

Area	Transect				
54	11	EOD Team	2		**Total MEC Scrap 34.7 lbs.**
		Date of Excavation	7/5/2006	7/6/2006	Pg. 1, Total MEC Scrap 1.64 lbs.
					Pg. 2, Total MEC Scrap 23.26 lbs.
		Srart Time	8:00	6:45	Pg. 3, Total MEC Scrap 9.8 lbs.
		Stop Time	15:30	10:00	Pg. 4, Total MEC Scrap .95 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L11-51	55.3	1400.9	1 ft.	2"	N	.5 lb.	.	
54-L11-52	35.7	1406.5	1 ft.	3"	N	1 lb.	OE Scrap	4
54-L11-53	18.9	1417.8	2 ft.	3"	N	.25 lb.	OE Scrap	5
54-L11-54	5.0	1424.8	2 ft.	2"	N	.25 lb.	OE Scrap	3
54-L11-55	24.6	1432.7	1 ft.	2"	N	.5 lb.	OE Scrap	3
54-L11-56	56.8	1461.6	1 ft.	2"	N	.25 lb.	OE Scrap	4
54-L11-57	32.1	1475.9	2 ft.	3"	N	.5 lb.	OE Scrap	5
54-L11-58	1.4	1490.2	2 ft.	2"	N	.25 lb.	OE Scrap	2
54-L11-59	12.9	1513.6	1 ft.	3"	N	.25 lb.	OE Scrap	2
54-L11-60	3.6	1544.3	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-L11-61	3.9	1557.8	1 ft.	2"	N	.25 lb.	OE Scrap	3
54-L11-62	1.9	1579.3	3 ft.	4"	N	.25 lb.	OE Scrap	2
54-L11-63	5.5	1591.0	2 ft.	2"	N	.25 lb	OE Scrap	2
54-L11-64	3.2	1598.7	4 ft.	4"	N	.25 lb.	OE Scrap	2
54-L11-65	19.8	1630.8	0.0	4"	N	.25 lb.	OE Scrap	2
54-L11-66	5.6	1644.9	2 ft.	3"	N	.5 lb.	Chain	3
54-L11-67	0.9	1657.7	2 ft.	4"	N	.1 lb.	OE Scrap	4
54-L11-68	1.6	1664.9	3 ft.	2"	N	.25 lb.	OE Scrap	3
54-L11-69	3.0	1686.0	4 ft.	5"	N	.25 lb.	OE Scrap	1
54-L11-70	2.3	1694.1	3 ft.	4"	N	.5 lb.	OE Scrap	2
54-L11-71	3.2	1703.4	1 ft.	3"	N	2 lbs.	OE Scrap	4
54-L11-72	2.8	1711.1					No Contact	
54-L11-73	1.7	1727.3	3 ft.	3"	N	.5 lb.	OE Scrap	1
54-L11-74	5.1	1745.7	5 ft.	2"	N	.1 lb.	OE Scrap	2
54-L11-75	2.0	1775.0	1 ft.	4"	N	.5 lb.	OE Scrap	4

Area 54 - Line 11 - LHAAP Anomaly Digsheet

00049457

Area	Transect				
54	11	EOD Team	2		**Total MEC Scrap 34.7 lbs.**
		Date of Excavation	7/5/2006	7/6/2006	Pg. 1, Total MEC Scrap 1.64 lbs.
					Pg. 2, Total MEC Scrap 23.26 lbs.
		Srart Time	8:00	6:45	Pg. 3, Total MEC Scrap 9.8 lbs.
		Stop Time	15:30	10:00	Pg. 4, Total MEC Scrap .95 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L11-76	3.5	1789.9	4 ft.	2"	N	.1 lb.	OE Scrap	1
54-L11-77	225.1	1824.8	3 ft.	2.5 ft.	N		Pipe	13
54-L11-78	1.0	1855.6	2 ft.	4"	N	.1 lb.	OE Scrap	1
54-L11-79	2.3	1900.9	5 ft.	3"	N	.1 lb.	OE Scrap	2
54-L11-80	5.2	1914.5	3 ft.	2"	N	.1 lb.	OE Scrap	3
54-L11-81	2.6	1956.8	3 ft.	4"	N	.1 lb.	OE Scrap	1
54-L11-82	5.3	1980.3	2 ft.	2"	N	.1 lb.	OE Scrap	1
54-L11-83	6.5	1997.0	1 ft.	4"	N	.1 lb.	OE Scrap	1
54-L11-84	2.3	2059.9					No Contact	
54-L11-85	4.0	2098.2					No Contact	
54-L11-86	3.0	2115.1	1 ft.	8"	N	.25 lb.	Scrap	1
54-L11-87	13.5	2135.0	1 ft.	0	N	.1 lb.	Survey Nail	0

Area 54 - Line 12 - LHAAP Anomaly Digsheet 00049458

Area	Transect				
54	12	EOD Team	2		
					Total MEC Scrap 27.27 lbs.
		Date of Excavation	7/6/2006	7/7/2006	Pg. 1, Total MEC Scrap 1.87 lbs.
					Pg. 2, Total MEC Scrap 13.4 lbs.
		Start Time	10:00	13:00	Pg. 3, Total MEC Scrap 8.3 lbs.
		Stop Time	15:25	15:00	Pg. 4, Total MEC Scrap 3.7 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L12-1	3.5	1.6					No Contact	
54-L12-2	2.6	18.1					No Contact	
54-L12-3	4.0	22.3	3 ft.	4"	N	.1 lb.	Scrap	1
54-L12-4	20.2	29.6					No Contact	
54-L12-5	3.2	43.9					No Contact	
54-L12-6	4.7	81.6	1 ft.	4"	N	.01 lb	5.56 mm. Blank Cartridge (Exp.)	1
54-L12-7	2.6	100.0					No Contact	
54-L12-8	1.4	165.2	3 ft.	0	N	0.01	5.56 mm. Blank Cartridge (Exp.)	2
54-L12-9	6.7	185.9					No Contact	
54-L12-10	4.1	198.8					No Contact	
54-L12-11	6.3	234.4					No Contact	
54-L12-12	4.6	329.5					No Contact	
54-L12-13	4.2	336.2					No Contact	
54-L12-14	4.2	345.7					No Contact	
54-L12-15	6.2	378.7	3 ft.	2"	N	.1 lb.	Scrap	1
54-L12-16	3.0	402.2	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-L12-17	2.3	477.9	2 ft.	3"	N	.1 lb.	Scrap	1
54-L12-18	2.4	487.5	1 ft.	2"	N	.5 lb.	Barbed Wire	3
54-L12-19	1.2	510.2					No Contact	
54-L12-20	8.9	525.6					No Contact	
54-L12-21	4.4	562.0					No Contact	
54-L12-22	10.9	597.2	3 ft.	3"	N	.1 lb.	OE Scrap	1
54-L12-23	2.6	644.1	3 ft.	4"	N	.25 lb.	OE Scrap	1
54-L12-24	2.4	658.9	4 ft.	1"	N	.1 lb.	Scrap	1
54-L12-25	0.3	680.1	6 ft.	3"	N	.5 lb.	Scrap	1

Area 54 - Line 12 - LHAAP Anomaly Digsheet

00049459

Area	Transect				
54	12	EOD Team	2		
					Total MEC Scrap 27.27 lbs.
		Date of Excavation	7/6/2006	7/7/2006	Pg. 1, Total MEC Scrap 1.87 lbs.
					Pg. 2, Total MEC Scrap 13.4 lbs.
		Start Time	10:00	13:00	Pg. 3, Total MEC Scrap 8.3 lbs.
		Stop Time	15:25	15:00	Pg. 4, Total MEC Scrap 3.7 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central ***Distance*** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L12-26	38.4	712.1	5 ft.		N		Underground Utilities	
54-L12-27	1.0	873.3	0.0	0	N		Road	
54-L12-28	109.3	1000.0	0.0	0	N		Underground Utilities	
54-L12-29	5.5	1013.8	2 ft.	4"	N	.1 lb.	OE Scrap	2
54-L12-30	5.0	1027.1	2 ft.	3"	N	.5 lb.	OE Scrap	4
54-L12-31	2.4	1034.3	1 ft.	2"	N	.1 lb.	OE Scrap & Scrap	4
54-L12-32	76.7	1046.2	1 ft.	2"	N	.1 lb.	OE Scrap	5
54-L12-33	11.5	1087.9	1 ft.	2"	N	.5 lb.	OE Scrap & Scrap	2
54-L12-34	5.2	1099.5	4 ft.	0	N		Steel Picket	
54-L12-35	14.2	1108.7	1 ft.	0	N	.1 lb.	OE Scrap & Scrap	3
54-L12-36	9.9	1114.3	1 ft.	0	N		Concrete & Corregated Metal	
54-L12-37	1599.0	1152.0	1 ft.	03"	N		Concrete & Corregated Metal	
54-L12-38	62.0	1158.1	1 ft.	2"	N	.5 lb.	OE Scrap	6
54-L12-39	0.0	1167.0	1 ft.	2"	N	.5 lb.	OE Scrap	7
54-L12-40	120.4	1183.6	1 ft.	2"	N	.25 lb.	OE Scrap	5
54-L12-41	28.3	1188.3	1 ft.	4"	N	.25 lb.	OE Scrap	5
54-L12-42	36.1	1195.5	1 ft.	2"	N	.25 lb.	OE Scrap	5
54-L12-43	11.6	1198.2	1 ft.	4"	N	.5 lb.	OE Scrap	4
54-L12-44	0.0	1201.8	1 ft.	3"	N	1 lb.	OE Scrap	5
54-L12-45	5.3	1212.0	1 ft.	3"	N	2 lbs.	OE Scrap	5
54-L12-46	1.5	1223.2	1 ft.	4"	N	.5 lb.	OE Scrap	5
54-L12-47	0.0	1232.9	1 ft.	3"	N	.5 lb.	OE Scrap	4
54-L12-48	0.0	1241.7	1 ft.	2"	N	.25 lb.	OE Scrap	3
54-L12-49	69.5	1253.9	1 ft.	4"	N	.5 lb.	OE Scrap	3
54-L12-50	41.5	1268.7	1 ft.	3"	N	5 lbs.	Hinge & OE Scrap	4

Area 54 - Line 12 - LHAAP Anomaly Digsheet 00049460

Area	Transect				
54	12	EOD Team	2		
					Total MEC Scrap 27.27 lbs.
		Date of Excavation	7/6/2006	7/7/2006	Pg. 1, Total MEC Scrap 1.87 lbs.
					Pg. 2, Total MEC Scrap 13.4 lbs.
		Start Time	10:00	13:00	Pg. 3, Total MEC Scrap 8.3 lbs.
		Stop Time	15:25	15:00	Pg. 4, Total MEC Scrap 3.7 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L12-51	211.8	1295.7					Conduit Pipe	
54-L12-52	96.4	1315.8					Conduit Pipe	
54-L12-53	23.0	1329.7					Conduit Pipe	
54-L12-54	30.1	1341.0					Conduit Pipe	
54-L12-55	15.2	1355.2					Conduit Pipe	
54-L12-56	0.0	1367.9	1 ft.	6"	N	1 lb.	OE Scrap, Scrap & Conduit	3
54-L12-57	8.6	1375.0	1 ft.	3"	N	.5 lb.	OE Scrap	4
54-L12-58	5.5	1395.8	1 ft.	4"	N	.25 lb.	OE Scrap	6
54-L12-59	4.6	1409.4	1 ft.	6"	N	.5 lb.	OE Scrap	5
54-L12-60	56.8	1417.0	1 ft.	4"	N	..5 lb.	OE Scrap	6
54-L12-61	4.5	1430.4	2 ft.	4"	N	.5 lb.	OE Scrap	4
54-L12-62	12.9	1435.7	1 ft.	2"	N	1 lb.	OE Scrap & Hot Rocks	3
54-L12-63	3.7	1451.8					Hot Rocks	
54-L12-64	4.9	1458.6					Hot Rocks	
54-L12-65	12.8	1462.7	1 ft.	3"	N	.1 lb.	Hot Rocks	3
54-L12-66	49.9	1475.5	1 ft.	2"	N	.5 lb.	OE Scrap	4
54-L12-67	54.8	1490.0	1 ft.	6"	N	.5 lb.	OE Scrap	6
54-L12-68	9.9	1501.9	1 ft.	2"	N	.1 lb.	OE Scrap	4
54-L12-69	1.8	1519.1	1 ft.	2"	N	.25 lb.	OE Scrap	5
54-L12-70	15.3	1530.5	1 ft.	3"	N	1 lb.	OE Scrap	8
54-L12-71	47.6	1559.6	2 ft.	2"	N	.25 lb.	OE Scrap	2
54-L12-72	31.0	1568.6	2 ft.	3"	N	.25 lb.	OE Scrap	3
54-L12-73	13.1	1583.2	2 ft.	2"	N	.5 lb.	OE Scrap	6
54-L12-74	35.3	1595.9	3 ft.	2"	N	.1 lb.	OE Scrap	1
54-L12-75	47.1	1608.6	1 ft.	3"	N	.5 lb.	OE Scrap	7

Area 54 - Line 12 - LHAAP Anomaly Digsheet

00049461

Area	Transect				
54	12	EOD Team	2		
					Total MEC Scrap 27.27 lbs.
		Date of Excavation	7/6/2006	7/7/2006	Pg. 1, Total MEC Scrap 1.87 lbs.
					Pg. 2, Total MEC Scrap 13.4 lbs.
		Start Time	10:00	13:00	Pg. 3, Total MEC Scrap 8.3 lbs.
		Stop Time	15:25	15:00	Pg. 4, Total MEC Scrap 3.7 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L12-76	8.8	1623.0	2 ft.	3"	N	.25 lb.	OE Scrap	4
54-L12-77	24.8	1627.0	1 ft.	2"	N	.5 lb.	OE Scrap	3
54-L12-78	8.0	1631.1	0.0	2"	N	.5 lb.	OE Scrap	4
54-L12-79	75.3	1634.7	3 ft.	1"	N	.1 lb.	OE Scrap	1
54-L12-80	14.2	1645.1	3 ft.	3"	N	.5 lb.	OE Scrap	2
54-L12-81	1.1	1662.1	2 ft.	2"	N	.1 lb.	OE Scrap	2
54-L12-82	6.5	1702.7	2 ft.	2"	N	.1 lb.	OE Scrap	3
54-L12-83	84.6	1720.0	2 ft.	2"	N	.5 lb.	OE Scrap	4
54-L12-84	12.3	1733.6	1 ft.	2"	N	.1 lb.	OE Scrap	2
54-L12-85	19.9	1743.6	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-L12-86	46.3	1752.4	1 ft.	3"	N	.5 lb.	OE Scrap	5
54-L12-87	4.3	1803.7	2 ft.	3"	N	.25 lb.	OE Scrap	2
54-L12-88	2.5	1828.7	2 ft.	4"	N	.1 lb.	OE Scrap	3
54-L12-89	4.4	1883.2	1 ft.	2"	N	.1 lb.	OE Scrap	4
54-L12-90	0.0	1927.5	1 ft.	2"	N	.1 lb.	OE Scrap	4
54-L12-91	143.9	1948.5	6"	2"	N	.1 lb.	OE Scrap	3
54-L12-92	2.7	1975.2	6"	1"	N	.1 lb.	OE Scrap	2
54-L12-93	7.4	2045.9	2 ft.	2"	N	.1 lb.	OE Scrap	1
54-L12-94	3.8	2088.5	3 ft.	3"	N	.1 lb.	OE Scrap	1
54-L12-95	8.5	2139.9	1"	0	N	0	Survey Marking Nail	

Area 54 - Line 13 - LHAAP Anomaly Digsheet

00049462

Area	Transect				
54	13	EOD Team	2		**Total MEC Scrap 40.27 lbs.**
					Pg. 1, Total MEC Scrap 4.55 lbs
		Date of Excavation	7/10/2006	7/11/2006	Pg. 2, Total MEC Scrap 20.5 lbs.
					Pg. 3, Total MEC Scrap 8.12 lbs.
		Start time	6:45	6:45	Pg. 4, Total MEC Scrap 7 lbs.
		Stop Time	15:45	11:40	Pg. 5, Total MEC Scrap .1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L13-1	4.3	14.5	5 ft.	2"	N	.1 .lb	OE Scrap	1
54-L13-2	4.7	48.3	2 ft.	0	N	0	Survey Nail	
54-L13-3	4.2	67.1	3 ft.	2"	N	.1 lb.	Scrap	1
54-L13-4	3.1	119.3					No Contact	
54-L13-5	8.7	151.8	3 ft.	3"	N	.25 lb.	Bolt	1
54-L13-6	3.0	198.7					No Contact	
54-L13-7	2.1	245.1					No Contact	
54-L13-8	13.3	304.2					No Contact	
54-L13-9	6.3	312.9					No Contact	
54-L13-10	2.1	326.3					No Contact	
54-L13-11	2.5	340.4					No Contact	
54-L13-12	1.7	348.8	5 ft.	3"	N	.1 lb.	OE Scrap	1
54-L13-13	1.5	359.4					No Contact	
54-L13-14	1.7	376.8	5 ft.	2"	N	.1 lb.	Barbed Wire	1
54-L13-15	4.6	435.8	1 ft.	3"	N	2 lbs.	Barbed Wire	1
54-L13-16	153.0	454.4	6 ft.	2"	N	.1 lb.	OE Scrap	1
54-L13-17	0.1	487.8	3 ft.	3"	N	.1 lb.	OE Scrap	1
54-L13-18	2.6	512.9					No Contact	
54-L13-19	4.3	519.4	3 ft.	1"	N	.1 lb.	OE Scrap	1
54-L13-20	5.6	573.2	1 ft.	2"	N	.1 lb.	OE Scrap	2
54-L13-21	2.7	606.0					No Contact	
54-L13-22	7.4	616.5					No Contact	
54-L13-23	5313.2	662.4	4 ft.	8"	N		Back Hole Dig	
54-L13-24	4.9	847.8	5 ft.	3"	N	.5 lb	OE Scrap	1
54-L13-25	14.9	889.1	1 ft.	2"	N	1 lb.	OE Scrap	8

Area 54 - Line 13 - LHAAP Anomaly Digsheet 00049463

Area	Transect				
54	13	EOD Team	2		**Total MEC Scrap 40.27 lbs.**
					Pg. 1, Total MEC Scrap 4.55 lbs
		Date of Excavation	7/10/2006	7/11/2006	Pg. 2, Total MEC Scrap 20.5 lbs.
					Pg. 3, Total MEC Scrap 8.12 lbs.
		Start time	6:45	6:45	Pg. 4, Total MEC Scrap 7 lbs.
		Stop Time	15:45	11:40	Pg. 5, Total MEC Scrap .1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L13-26	22.2	932.1	1 ft.	2"	N	.25 lb.	OE Scrap	5
54-L13-27	68.4	938.2	1 ft.	2"	N	2 lbs.	OE Scrap & Scrap	6
54-L13-28	22.1	950.5	1 ft.	2"	N	.25 lb.	OE Scrap	8
54-L13-29	4.6	960.9	1 ft.	2"	N	.1 lb.	OE Scrap	6
54-L13-30	204.1	993.2	3 ft.	1"	N	3 lbs.	Scrap	3
54-L13-31	3.5	1007.9	0.0	2"	N	1 lb.	OE Scrap	6
54-L13-32	5.5	1019.3	3 ft.	3"	N	.25 lb.	OE Scrap	5
54-L13-33	2.7	1038.6	2 ft.	3"	N	.1 lb.	OE Scrap	3
54-L13-34	3.5	1066.5	2 ft.	2"	N	.1 lb.	OE Scrap	1
54-L13-35	14.3	1079.3	1 ft.	8"	N	2 lbs.	OE Scrap	1
54-L13-36	47.2	1098.6	1 ft.	3"	N	1 lb.	OE Scrap	6
54-L13-37	10.3	1115.0	1 ft..	2"	N	.1 lb.	OE Scrap	1
54-L13-38	12.6	1119.2	4 ft.	3"	N	2 lbs.	OE Scrap	2
54-L13-39	8.0	1136.5	1 ft.	2"	N	.5 lb.	OE Scrap	5
54-L13-40	10.5	1152.4	1 ft.	3"	N	.25 lb.	OE Scrap	5
54-L13-41	53.2	1162.6	1 ft.	4"	N	1 lb.	OE Scrap	8
54-L13-42	43.9	1172.8	1 ft.	3"	N	.25 lb.	OE Scrap	7
54-L13-43	11.8	1183.5	1 ft.	3"	N	.25 lb.	OE Scrap	9
54-L13-44	102.7	1192.7	1 ft.	8"	N	1 lb.	OE Scrap	7
54-L13-45	11.5	1200.0	1 ft.	5"	N	.5 lb	OE Scrap	10
54-L13-46	29.4	1206.3	1 ft.	2"	N	2 lbs.	OE Scrap	7
54-L13-47	17.6	1210.1	1 ft.	2"	N	1 lb.	OE Scrap	6
54-L13-48	64.8	1214.9	1 ft.	4"	N	.1 lb.	OE Scrap	3
54-L13-49	12.8	1221.6	1 ft.	4"	N	.5 lb.	OE Scrap	7
54-L13-50	5.9	1226.0	1 ft.	3"	N	.25 lb.	OE Scrap	8

Area 54 - Line 13 - LHAAP Anomaly Digsheet

00049464

Area	Transect				
54	13	EOD Team	2		**Total MEC Scrap 40.27 lbs.**
					Pg. 1, Total MEC Scrap 4.55 lbs
		Date of Excavation	7/10/2006	7/11/2006	Pg. 2, Total MEC Scrap 20.5 lbs.
					Pg. 3, Total MEC Scrap 8.12 lbs.
		Start time	6:45	6:45	Pg. 4, Total MEC Scrap 7 lbs.
		Stop Time	15:45	11:40	Pg. 5, Total MEC Scrap .1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L13-51	11.4	1255.9	1 ft.	3"	N	.2 lb.	OE Scrap	6
54-L13-52	20.3	1262.8	2 ft.	6"	N	.25 lb.	OE Scrap	5
54-L13-53	47.6	1267.7	1 ft.	4"	N	.25 lb.	OE Scrap	3
54-L13-54	29.7	1270.6	2 ft.	3"	N	.25 lb.	OE Scrap	6
54-L13-55	89.5	1281.9	2 ft.	4"	N	.25 lb.	OE Scrap	7
54-L13-56	127.8	1295.1	2 ft.	3"	N	.2 lb.	OE Scrap	5
54-L13-57	21.9	1310.6	1 ft.	2"	N	.25 lb.	OE Scrap	3
54-L13-58	32.0	1315.4	2 ft.	4"	N	.25 lb.	OE Scrap	3
54-L13-59	95.7	1323.1	1 ft.	0	N		Scrap Back hole	
54-L13-60	60.5	1329.3	3 ft.	0	N		Scrap Back bole	
54-L13-61	15.3	1335.6	1 ft.	2"	N	.02 lb.	OE Scrap	3
54-L13-62	28.7	1342.8	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L13-63	37.5	1347.1	1 ft.	3"	N	.25 lb.	OE Scrap	3
54-L13-64	38.0	1352.1	1 ft.	4"	N	.25 lb.	OE Scrap	3
54-L13-65	71.7	1358.6	2 ft.	2"	N	.25 lb.	OE Scrap	3
54-L13-66	50.0	1362.8	1 ft.	6"	N	.5 lb.	OE Scrap	4
54-L13-67	143.1	1376.1	1 ft.	3"	N	.5 lb	OE Scrap	5
54-L13-68	32.9	1396.6	1 ft,	4"	N	.25 lb.	OE Scrap	2
54-L13-69	68.0	1403.2	1 ft.	6"	N	.5 lb.	OE Scrap	4
54-L13-70	14.9	1409.3	1 ft.	4"	N	.5 lb.	OE Scrap	6
54-L13-71	15.1	1424.1	1 ft.	3"	N	.1 lb.	OE Scrap	3
54-L13-72	7.0	1428.7	1 ft.	4"	N	.1 lb.	OE Scrap	3
54-L13-73	11.9	1434.7	1 ft.	4"	N	.5 lb.	OE Scrap	2
54-L13-74	193.7	1446.3	1 ft.	3"	N	2 lbs.	OE Scrap	1
54-L13-75	10.4	1460.3	1 ft.	4"	N	.25 lb.	OE Scrap	3

Area 54 - Line 13 - LHAAP Anomaly Digsheet 00049465

Area	Transect				
54	13	EOD Team	2		**Total MEC Scrap 40.27 lbs.**
					Pg. 1, Total MEC Scrap 4.55 lbs
		Date of Excavation	7/10/2006	7/11/2006	Pg. 2, Total MEC Scrap 20.5 lbs.
					Pg. 3, Total MEC Scrap 8.12 lbs.
		Start time	6:45	6:45	Pg. 4, Total MEC Scrap 7 lbs.
		Stop Time	15:45	11:40	Pg. 5, Total MEC Scrap .1 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L13-76	71.4	1466.4	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L13-77	33.2	1470.7	1 ft.	6"	N	.25 lb.	OE Scrap	3
54-L13-78	77.6	1478.5	2 ft.	6"	N	2 lbs.	OE Scrap	3
54-L13-79	4.0	1486.6	6"	3"	N	.25 lb.	OE Scrap	3
54-L13-80	5.1	1496.6	1 ft.	2"	N	.1 lb.	OE Scrap	3
54-L13-81	9.8	1511.4	1 ft.	3"	N	.1 lb.	OE Scrap	3
54-L13-82	65.5	1520.0	1 ft.	4"	N	.25 lb.	OE Scrap	3
54-L13-83	1.6	1531.4	1 ft.	2"	N	.1 lb.	OE Scrap	2
54-L13-84	3.2	1556.7	1 ft.	2"	N	.1 lb.	OE Scrap	3
54-L13-85	19.3	1566.7	1 ft.	4"	N	.5 lb.	OE Scrap	3
54-L13-86	3.8	1579.5	1 ft.	3"	N	.5 lb.	OE Scrap	2
54-L13-87	8.0	1600.0	3 ft.	6"	N	.5 lb.	OE Scrap	2
54-L13-88	28.0	1610.3	2 ft.	4"	N	.1 lb.	OE Scrap	3
54-L13-89	17.2	1634.6	2 ft.	2"	N	.25 lb.	OE Scrap	5
54-L13-90	38.1	1666.0	1 ft.	6"	N	.25 lb.	Scrap (Wire)	3
54-L13-91	25.5	1679.6	2 ft.	8"	N	.25 lb.	Scrap (Wire)	4
54-L13-92	4.1	1700.5	1 ft.	2"	N	.1 lb.	OE Scrap	2
54-L13-93	10.1	1751.3	2 ft.	6"	N	.1 lb.	OE Scrap	3
54-L13-94	7.7	1790.6	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-L13-95	7.1	1795.1	1 ft.	2"	N	.1 lb.	OE Scrap	1
54-L13-96	5.5	1801.1	1 ft.	3"	N	.25 lb.	OE Scrap	2
54-L13-97	5.2	1817.2	1 ft.	4"	N	.25 lb.	OE Scrap	1
54-L13-98	2.8	1824.1	1 ft.	10"	N	.25 lb.	OE Scrap	1
54-L13-99	3.3	1843.9	2 ft.	4"	N	.1 lb.	OE Scrap	2
54-L13-100	7.1	1896.7	0.0	0	N		Road	

Area 54 - Line 13 - LHAAP Anomaly Digsheet 00049466

Area	Transect					
54	13	EOD Team	2			**Total MEC Scrap 40.27 lbs.**
						Pg. 1, Total MEC Scrap 4.55 lbs
		Date of Excavation	7/10/2006	7/11/2006		Pg. 2, Total MEC Scrap 20.5 lbs.
						Pg. 3, Total MEC Scrap 8.12 lbs.
		Start time	6:45	6:45		Pg. 4, Total MEC Scrap 7 lbs.
		Stop Time	15:45	11:40		Pg. 5, Total MEC Scrap .1 lb.

Target ID	**Target Response** *(mV)*	*NAD83-Texas CS83 North Central* ***Distance*** U.S.Survey Feet	**Target Offset** *(ft)*	**Depth to item** *(in)*	**OE Item?** *(Y or N)*	**Item Description Comment**		**Digs**
54-L13-101	3.8	1964.2					Road	
54-L13-102	8.0	1969.0					Road	
54-L13-103	308.4	2026.6	1 ft.	3"	N	.1 lb.	Scrap	2

Area 54 - Line 14 - LHAAP Anomaly Digsheet

00049467

Area	Transect		
54	14	EOD Team	1
			Total MEC Scrap 37.25 lbs.
		Date of Excavation 7/18/2006	Pg. 1, Total MEC Scrap 6.25 lbs.
			Pg. 2, Total MEC Scrap 21.25 lbs.
		Start Time 7:15	Pg. 3, Total MEC Scrap 4.25 lbs.
		Stop Time 16:30	Pg. 4, Total MEC Scrap 7.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-L14-1	4.6	0.0					No Contact	QC Verified	
54-L14-2	4.5	56.7	1 ft.	1"	N	.25 lb.			
54-L14-3	3.1	62.1	1 ft.	0	N		Hub Marking Nail		1
54-L14-4	5.9	80.4					No Contact	QC Verified	
54-L14-5	2.5	152.2					No Contact	QC Verified	
54-L14-6	3.3	162.3					No Contact	QC Verified	
54-L14-7	1.9	180.7					No Contact	QC Verified	
54-L14-8	3.1	197.4	4 ft.	1"	N	.25 lb.	OE Scrap		1
54-L14-9	3.0	236.1	5 ft.	2"	N	.25 lb.	OE Scrap		1
54-L14-10	2.7	274.3					No Contact	QC Verified	
54-L14-11	2.9	298.6	4 ft.	2"	N	.25 lb.	OE Scrap		1
54-L14-12	67.4	360.5	3 ft.	1"	N		Barbed wire		1
54-L14-13	5.9	401.8	3 ft.	3"	N	.5 lb.	Scrap		1
54-L14-14	7.5	440.8	1 ft.	4"	N	.25 lb.	Scrap		1
54-L14-15	3.2	485.0	2 ft.	6"	N	1 lb.	Scrap		1
54-L14-16	6.5	504.3	4 ft.	4"	N	.5 lb.	Scrap		1
54-L14-17	9.3	535.6	2 ft.	4"	N	.25 lb.	Scrap		1
54-L14-18	11.4	548.9	2 ft.	4"	N	.25 lb.	Scrap		1
54-L14-19	15.7	572.4	4 ft.	1"	N	1 lb.	Scrap		1
54-L14-20	6.8	606.5	3 ft.	2"	N	.25 lb.	Scrap		1
54-L14-21	2.8	663.6	4 ft.	4"	N	.25 lb.	Scrap		1
54-L14-22	6.0	751.4	0.0	2"	N	.25 lb.	Scrap		1
54-L14-23	2.4	780.4					No Contact	QC Verified	
54-L14-24	2.7	858.4	0.0	4"	N	.25 lb.	Scrap		2
54-L14-25	19.3	875.7	1 ft.	3"	N	.25 lb.	OE Scrap		2

Area 54 - Line 14 - LHAAP Anomaly Digsheet

00049468

Area	Transect		
54	14	EOD Team	1
			Total MEC Scrap 37.25 lbs.
		Date of Excavation 7/18/2006	Pg. 1, Total MEC Scrap 6.25 lbs.
			Pg. 2, Total MEC Scrap 21.25 lbs.
		Start Time 7:15	Pg. 3, Total MEC Scrap 4.25 lbs.
		Stop Time 16:30	Pg. 4, Total MEC Scrap 7.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L14-26	23.3	887.4	3 ft.	2"	N	.25 lb.	OE Scrap	2
54-L14-27	2.4	917.3	3 ft.	3"	N	.25 lb.	OE Scrap	2
54-L14-28	18.8	931.8	1 ft.	4"	N	.25 lb.	OE Scrap	2
54-L14-29	18.4	944.9	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L14-30	62.1	954.3	1 ft.	3"	N	.25 lb.	OE Scrap	2
54-L14-31	59.6	984.6	2 ft.	1"	N	2 lbs.	OE Scrap	2
54-L14-32	34.2	989.4	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L14-33	16.2	994.2	2 ft.	6"	N	.5 lb.	OE Scrap	2
54-L14-34	13.3	1008.7	2 ft.	12"	N	2 lbs.	OE Scrap	2
54-L14-35	46.5	1016.4	2 ft.	9"	N	2 lbs.	OE Scrap	2
54-L14-36	47.5	1057.8	2 ft.	10"	N	4 lbs.	OE Scrap	2
54-L14-37	1.9	170.4	3 ft.	2"	N	.25 lb.	OE Scrap	2
54-L14-38	2.6	1085.0	4 ft.	3"	N	.25 lb.	OE Scrap	1
54-L14-39	2.5	1090.3	2 ft.	3"	N	.25 lb.	OE Scrap	2
54-L14-40	40.7	1102.5	2 ft.	8"	N	2 lbs.	OE Scrap	2
54-L14-41	133.2	1124.5	1 ft.	6"	N	2 lbs.	OE Scrap	2
54-L14-42	76.7	1136.8	1 ft.	6"	N	2 lbs.	OE Scrap	2
54-L14-43	6.8	1166.2	2 ft.	4"	N	1 lb.	OE Scrap	2
54-L14-44	89.7	1179.4	0.0	2"	N	.25 lb.	Scrap	2
54-L14-45	70.5	1193.1	0.0	2"	N	.25 lb.	Scrap	2
54-L14-46	9.8	1200.5	1 ft.	3"	N	.25 lb.	Scrap	2
54-L14-47	137.9	1210.8	2 ft.	2"	N	1 lb.	OE Scrap	2
54-L14-48	11.3	1217.5	0.0	2"	N	.25 lb.	Scrap	2
54-L14-49	15.3	1226.3	1 ft.	2"	N	.25 lb.	Scrap	2
54-L14-50	14.9	1237.6	1 ft.	3"	N	.25 lb.	Scrap	2

Area 54 - Line 14 - LHAAP Anomaly Digsheet 00049469

Area	Transect		
54	14	EOD Team	1
			Total MEC Scrap 37.25 lbs.
		Date of Excavation 7/18/2006	Pg. 1, Total MEC Scrap 6.25 lbs.
			Pg. 2, Total MEC Scrap 21.25 lbs.
		Start Time 7:15	Pg. 3, Total MEC Scrap 4.25 lbs.
		Stop Time 16:30	Pg. 4, Total MEC Scrap 7.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L14-51	142.3	1244.3	0.0	2"	N	.25 lb.	OE Scrap	2
54-L14-52	50.6	1255.9				NOTE:	Saturated from 52 though 67. 120 feet of flare, countermeasure	
54-L14-53	63.5	1259.9					and aluminum scrap. QC Verified 7/18/2006	
54-L14-54	42.9	1265.2						
54-L14-55	108.6	1271.2						
54-L14-56	106.7	1279.7						
54-L14-57	40.0	1289.6						
54-L14-58	295.7	1296.4						
54-L14-59	63.2	1305.9						
54-L14-60	114.4	1311.8						
54-L14-61	66.0	1321.4						
54-L14-62	23.1	1330.0						
54-L14-63	38.4	1336.8						
54-L14-64	32.5	1344.1						
54-L14-65	75.6	1348.6						
54-L14-66	109.1	1356.5						
54-L14-67	121.2	1367.8					End of saturation area.	
54-L14-68	54.1	1371.5	2 ft.	3"	N	2 lbs.	OE Scrap Base Plate	2
54-L14-69	25.8	1375.7	0.0	2"	N	.25 lb.	OE Scrap	2
54-L14-70	26.4	1381.8	1 ft.	2"	N	.25 lb.	OE Scrap	2
54-L14-71	53.7	1385.5	2 ft.	3"	N	.25 lb.	OE Scrap	2
54-L14-72	114.8	1398.1	1 ft.	4"	N	.5 lb.	OE Scrap	2
54-L14-73	94.2	1405.2	1 ft.	3"	N	.25 lb.	Scrap	2
54-L14-74	391.4	1414.8	1 ft.	2"	N	2 lbs.	OE Scrap	2
54-L14-75	72.9	1451.4	0.0	0	N	.25 lb.	Slap Flare Scrap	2

Area 54 - Line 14 - LHAAP Anomaly Digsheet 00049470

Area	Transect		
54	14	EOD Team	1
			Total MEC Scrap 37.25 lbs.
		Date of Excavation 7/18/2006	Pg. 1, Total MEC Scrap 6.25 lbs.
			Pg. 2, Total MEC Scrap 21.25 lbs.
		Start Time 7:15	Pg. 3, Total MEC Scrap 4.25 lbs.
		Stop Time 16:30	Pg. 4, Total MEC Scrap 7.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L14-76	8.9	1462.0	0.0	4"	N	.25 lb.	Scrap	2
54-L14-77	28.2	1474.5	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L14-78	16.7	1484.6	1 ft.	2"	N	.25 lb.	Scrap	2
54-L14-79	60.2	1498.1	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L14-80	17.7	1509.8	1 ft.	3"	N	.25 lb.	Scrap	2
54-L14-81	34.0	1529.5	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L14-82	3.7	1543.0	2 ft.	2"	N	.25 lb.	Slap Flare Scrap	2
54-L14-83	9.4	1550.9	1 ft.	6"	N	2 lbs.	OE Scrap	2
54-L14-84	3.8	1554.6	0.0	6"	N	.25 lb.	Scrap	2
54-L14-85	9.2	1596.3	1 ft.	3"	N	.25 lb.	Scrap	2
54-L14-86	2.5	1649.5	3 ft.	4"	N	.25 lb.	OE Scrap	1
54-L14-87	29.4	1664.7	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L14-88	3.3	1687.2	1 ft.	4"	N	.25 lb.	OE Scrap	1
54-L14-89	2.0	1705.0	4 ft.	4"	N	.25 lb.	Scrap	1
54-L14-90	1.8	1712.9	3 ft.	3"	N	.25 lb.	Scrap	1
54-L14-91	10.5	1730.7	4 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L14-92	4.4	1772.5	5 ft.	3"	N	.25 lb.	40 mm. Flare Scrap	1
54-L14-93	7.1	1839.3	4 ft.	3"	N	.25 lb.	Scrap	1
54-L14-94	7.2	1869.8	3 ft.	4"	N	.25 lb.	Scrap	1
54-L14-95	10663.6	1902.5	0.0	0	N		Cement slab	
54-L14-96	0.8	1969.0	2 ft.	7"	N	.25 lb.	Scrap	1
54-L14-97	0.0	1981.5	3 ft.	4"	N	.25 lb.	Scrap	1
54-L14-98	18.6	2001.4	0.0	1"	N	.25 lb.	Scrap	1
54-L14-99	48.7	2015.0	2 ft.	1"	N		Nail , Survey Marker	1
54-L14-100	55.8	2021.5	2 ft.	3"	N	.25 lb.	Scrap	1

Area 54 - Line 14 - LHAAP Anomaly Digsheet

00049471

Area	Transect		
54	14	EOD Team	1
			Total MEC Scrap 37.25 lbs.
		Date of Excavation 7/18/2006	Pg. 1, Total MEC Scrap 6.25 lbs.
			Pg. 2, Total MEC Scrap 21.25 lbs.
		Start Time 7:15	Pg. 3, Total MEC Scrap 4.25 lbs.
		Stop Time 16:30	Pg. 4, Total MEC Scrap 7.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central **Distance** U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-L14-101	30.1	2030.4	2 ft.	2"	N	.25 lb.	Scrap		1
54-L14-102	22.4	2038.3	0.0	0	N	.01 lb.	Screw		1
54-L14-103	557.3	2058.9					Construction Debris	QC Verified	
54-L14-104	52.3	2072.6					Cement slab	QC Verified	
54-L14-105	20.9	2085.9					Construction Debris	QC Verified	
54-L14-106	259.7	2104.4					Survey Nail		

Area 54 - Line 15 - LHAAP Anomaly Digsheet 00049472

Area	Transect				
54	15	EOD Team	1		**Total MEC Scrap 46.25 lbs**
		Date of Excavation	7'14'2006	7/17/2006	Pg. 1, Total MEC Scrap 11 lbs.
					Pg. 2, Total MEC Scrap 20.75 lbs.
		Start Time	11:30	7:30	Pg. 3, Total MEC Scrap 8.5 lbs.
		Stop Time	12:30	15:40	Pg. 4, Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment			Digs
54-L15-1	5.7	7.3					No Contact	QC Verified	
54-L15-2	2.7	23.0					No Contact	QC Verified	
54-L15-3	1.8	30.6					No Contact	QC Verified	
54-L15-4	3.1	148.6	5 ft.	2"	N	.25 lb.	Scrap		1
54-L15-5	7.4	190.1	1 ft.	6"	N	.25 lb.	Wire in hole		1
54-L15-6	4.1	197.8	2 ft.	3"	N	.25 lb.	Wire in hole		1
54-L15-7	2.5	220.6	2 ft.	3"	N	.25 lb.	Wire in hole		1
54-L15-8	4.2	320.3	1 ft.	6"	N	.25 lb.	Scrap		2
54-L15-9	2.0	334.7	1 ft.	6"	N	.25 lb.	Scrap		1
54-L15-10	16.5	371.4	1 ft.	4"	N	.25 lb.	Scrap		1
54-L15-11	7.6	483.5	3 ft.	6"	N	1 lb.	Railroad Spike		1
54-L15-12	6.7	525.7	4 ft.	3"	N	.25 lb.	Scrap		1
54-L15-13	2.4	530.7	3 ft.	2"	N	.25 lb.	Scrap		1
54-L15-14	2.1	550.0	5 ft.	2"	N	.5 lb.	CDU-10 Scrap		1
54-L15-15	8.7	566.4					No Contact	QC Verified	
54-L15-16	3.1	571.5					No Contact	QC Verified	
54-L15-17	2.8	607.0	5 ft.	3"	N	.25 lb.	Scrap		1
54-L15-18	2.6	618.9					No Contact	QC Verified	
54-L15-19	7.9	628.1	3 ft.	3"	N	.25 lb.	Scrap		1
54-L15-20	9.8	707.4	2 ft.	4"	N	.25 lb.	Scrap		1
54-L15-21	3.6	716.7	5 ft.	3"	N	.5 lb.	Scrap	QC Verified	1
54-L15-22	18.4	803.8	2 ft.	4"	N	2 lbs.	Scrap		1
54-L15-23	48.7	824.3	0.0	2"	N	.25 lb.	40 mm. Scrap		3
54-L15-24	491.0	835.7	4 ft.	8"	N	5 lbs.	105 mm. Illumination Candle (Exp)		1
54-L15-25	63.1	860.9	3 ft.	4"	N	.25 lb.	Scrap		2

Area 54 - Line 15 - LHAAP Anomaly Digsheet

00049473

Area	Transect				
54	15	EOD Team	1		**Total MEC Scrap 46.25 lbs**
		Date of Excavation	7'14'2006	7/17/2006	Pg. 1, Total MEC Scrap 11 lbs.
					Pg. 2, Total MEC Scrap 20.75 lbs.
		Start Time	11:30	7:30	Pg. 3, Total MEC Scrap 8.5 lbs.
		Stop Time	12:30	15:40	Pg. 4, Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L15-26	52.2	907.0	1 ft.	6"	N	1 Lb.	Scrap	2
54-L15-27	2.1	925.0	5 ft.	4"	N	.25 lb.	Scrap	1
54-L15-28	51.6	975.0	0.0	3"	N	.25 lb.	40 mm. Scrap	2
54-L15-29	93.1	1010.5	2 ft.	2"	N	.25 lbs.	Slap Flare Scrap	2
54-L15-30	9.9	1017.5	3 ft.	2"	N	2 lbs.	Scrap	2
54-L15-31	47.2	1025.0	1 ft.	2"	N	.25 lb.	Scrap	2
54-L15-32	19.7	1034.0	0.0	2"	N	.25 lb.	Scrap	2
54-L15-33	109.9	1058.2	1 ft.	4"	N	2 lbs.	Scrap	2
54-L15-34	6.0	1071.2	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L15-35	68.2	1076.9	1 ft.	2"	N	2 lbs.	Scrap	2
54-L15-36	75.8	1093.3	1 ft.	3"	N	.25 lb.	Scrap	2
54-L15-37	23.0	1107.3	1 ft.	4"	N	2 lbs.	Scrap	2
54-L15-38	33.3	1115.5	2 ft.	6"	N	2 lbs.	Scrap	2
54-L15-39	132.9	1136.4	2 ft.	1"	N	2 lbs.	Scrap	2
54-L15-40	56.2	1150.9	1 ft.	2"	N	2 lbs.	Scrap	2
54-L15-41	19.9	1159.3	1 ft.	3"	N	1 lb.	Scrap	2
54-L15-42	7.7	1164.5	1 ft.	3"	N	.25 lb.	Scrap	2
54-L15-43	8.0	1169.6	1 ft.	3"	N	.25 lb.	Scrap	2
54-L15-44	0.0	1182.7	0.0	2"	N	.25 lb.	Scrap	2
54-L15-45	12.4	1200.0	0.0	6"	N	1 lb.	Scrap	2
54-L15-46	35.4	1211.1	1 ft.	4"	N	.25 lb.	Scrap	2
54-L15-47	16.1	1217.6	0.0	6"	N	.25 lb.	Scrap	2
54-L15-48	62.6	1222.7	0.0	3"	N	.25 lb.	Scrap	2
54-L15-49	6.3	1227.3	0.0	4"	N	.25 lb.	Scrap	2
54-L15-50	1.8	1233.8	0.0	4"	N	.25 lb.	Scrap	3

Area 54 - Line 15 - LHAAP Anomaly Digsheet

00049474

Area	Transect			
54	15	EOD Team	1	**Total MEC Scrap 46.25 lbs**
		Date of Excavation	7'14'2006 7/17/2006	Pg. 1, Total MEC Scrap 11 lbs.
				Pg. 2, Total MEC Scrap 20.75 lbs.
		Start Time	11:30 7:30	Pg. 3, Total MEC Scrap 8.5 lbs.
		Stop Time	12:30 15:40	Pg. 4, Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L15-51	41.9	1244.4	1 ft.	3"	N	2 lbs.	Scrap	2
54-L15-52	71.8	1254.5	0.0	3"	N	.25 lb.	Scrap	2
54-L15-53	8.2	1268.8	1 ft.	4"	N	.25 lb.	Scrap	1
54-L15-54	0.0	1277.2	0.0	2"	N	.25 lb.	Scrap	2
54-L15-55	0.0	1283.0	0.0	3"	N	.25 lb.	Scrap	2
54-L15-56	46.0	1290.2	0.0	3"	N	.25 lb.	Scrap	2
54-L15-57	34.0	1305.5	0.0	2"	N	.25 lb.	Scrap	2
54-L15-58	34.0	1311.0	0.0	2'	N	.25 lb.	Scrap	2
54-L15-59	31.0	1329.4	0.0	2"	N	.25 lb.	Scrap	2
54-L15-60	4.1	1339.9	0.0	3"	N	.25 lb.	Scrap	2
54-L15-61	66.9	1345.4	0.0	3"	N	.25 lb.	Scrap	2
54-L15-62	129.4	1352.7	0.0	4"	N	.25 lb.	Scrap	2
54-L15-63	73.6	1358.2	0.0	3"	N	.25 lb.	Scrap	2
54-L15-64	0.0	1365.9	0.0	4"	N	.25 lb.	40 mm. Scrap	2
54-L15-65	64.6	1378.6	0.0	4"	N	.25 lb.	Scrap	2
54-L15-66	154.0	1390.9	0.0	4"	N	.25 lb.	Scrap	2
54-L15-67	17.1	1398.2	0.0	6"	N	.25 lb.	Slap Flare Scrap	2
54-L15-68	0.0	1405.7	0.0	5"	N	.25 lb.	Scrap	2
54-L15-69	63.9	1413.4	1 ft.	3"	N	.25 lb.	Scrap	2
54-L15-70	44.3	1425.8	2 ft.	4"	N	.25 lb.	Scrap	2
54-L15-71	23.8	1441.2	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L15-72	3.0	1447.9	2 ft.	4"	N	.25 lb.	Scrap	2
54-L15-73	23.7	1462.6	2 ft.	3"	N	.5 lb.	Slap Flare Scrap	2
54-L15-74	27.9	1470.9	3 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L15-75	33.6	1490.3	3 ft.	6"	N	.5 lb.	Slap Flare Scrap	2

Area 54 - Line 15 - LHAAP Anomaly Digsheet

00049475

Area	Transect				
54	15	EOD Team	1		**Total MEC Scrap 46.25 lbs**
		Date of Excavation	7'14'2006	7/17/2006	Pg. 1, Total MEC Scrap 11 lbs.
					Pg. 2, Total MEC Scrap 20.75 lbs.
		Start Time	11:30	7:30	Pg. 3, Total MEC Scrap 8.5 lbs.
		Stop Time	12:30	15:40	Pg. 4, Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L15-76	5.8	1500.5	2 ft.	6'	N	.25 lb.	Slap Flare Scrap	2
54-L15-77	68.2	1507.6	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L15-78	10.8	1521.2	2 ft.	3'	N	.25 lb.	Slap Flare Scrap	2
54-L15-79	33.8	1530.7	2 ft.	4"	N	.25 lb.	Scrap	2
54-L15-80	0.0	1537.7	1 ft.	4"	N	1 lb.	Slap Flare Scrap	2
54-L15-81	0.8	1545.8	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L15-82	32.8	1568.8	1 ft.	4"	N	.25 lb.	Scrap	2
54-L15-83	12.2	1577.4	3 ft.	2"	N	.25 lb.	Slap Flare Scrap	2
54-L15-84	111.6	1594.7	1 ft.	0	N	.25 lb.	Slap Flare Scrap	2
54-L15-85	18.1	1606.7	3 ft.	6"	N	.25 lb.	Scrap	2
54-L15-86	5.2	1638.0	3 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L15-87	4.1	1650.0	2 ft.	4"	N	.25 lb.	Scrap	2
54-L15-88	3.4	1699.0	0.0	2"	N	.25 lb.	Scrap	2
54-L15-89	16.5	1709.9	2 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L15-90	3.9	1759.7	2 ft.	2"	N	.25 lb.	Slap Flare Scrap	1
54-L15-91	3.7	1779.6	5 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L15-92	2.6	1865.7	0.0	3"	N	.25 lb.	Scrap	2
54-L15-93	5.1	1890.4	1 ft.	2"	N	.25 lb.	Scrap	2
54-L15-94	7.9	1932.1	5 ft.	2"	N	.25 lb.	Slap Flare Scrap	1
54-L15-95	5.8	1986.0	2 ft.	1"	N	.25 lb.	Scrap	1
54-L15-96	16.9	1996.3	0.0	0	N		Construction Debris	1
54-L15-97	25.4	2008.0	2 ft.	4"	N	.25 lb.	Scrap	1

Area 54 - Line 15 - LHAAP Anomaly Digsheet						00049476
Area	**Transect**					
54	15	EOD Team	1			**Total MEC Scrap 46.25 lbs**
		Date of Excavation	7'14'2006	7/17/2006		Pg. 1, Total MEC Scrap 11 lbs.
						Pg. 2, Total MEC Scrap 20.75 lbs.
		Start Time	11:30	7:30		Pg. 3, Total MEC Scrap 8.5 lbs.
		Stop Time	12:30	15:40		Pg. 4, Total MEC Scrap 6 lbs.

Target ID	**Target Response** *(mV)*	*NAD83-Texas CS83 North Central* ***Distance*** U.S.Survey Feet	**Target Offset** *(ft)*	**Depth to item** *(in)*	**OE Item?** *(Y or N)*	**Item Description Comment** **Digs**

Area 54 - Line 16 - LHAAP Anomaly Digsheet 00049477

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L16-1	13.3	11.9				No Contact	QC Verified	
54-L16-2	62.3	61.3	3 ft.	0	N	Hub Marker Nail		
54-L16-3	5.4	101.4				No Contact	QC Verified	
54-L16-4	4.0	118.3	5 ft.	4"	N	Wire		1
54-L16-5	7.0	125.7	3 ft.	2"	N	Wire		3
54-L16-6	2.9	135.3	3 ft.	2"	N	Wire		2
54-L16-7	2.3	162.0				No Contact	QC Verified	
54-L16-8	6.9	325.7	1 ft.	6"	N			
54-L16-9	3.8	366.0	1 ft.	3"	N			
54-L16-10	2.6	462.7	1 ft.	4"	N			
54-L16-11	16.8	480.9	0.0	1"	N			
54-L16-12	8.9	509.9	3 ft.	6"	N			
54-L16-13	3.7	529.2	6 ft.	3"	N			
54-L16-14	3.7	542.6				No Contact	QC Verfied	
54-L16-15	3.0	548.4				No Contact	QC Verfied	
54-L16-16	10.1	658.4				No Contact	QC Verfied	
54-L16-17	4.8	672.1	2 ft.	4"	N			
54-L16-18	6.6	681.7	5 ft.	2"	N			
54-L16-19	7.8	693.5				No Contact	QC Verfied	
54-L16-20	3.6	708.8	4 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L16-21	12.5	717.1	3 ft.	4"	N	.25 lb.	40 mm. Flare Scrap	1
54-L16-22	3.4	774.0	4 ft.	3"	N	1 lb.	Scrap (wire)	2
54-L16-23	9.3	787.8	2 ft.	3"	N	1 lb.	Scrap	1
54-L16-24	2.9	793.3						
54-L16-25	8.1	799.6						

Area 54 - Line 16 - LHAAP Anomaly Digsheet 00049478

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
						NOTE:	Discount all flags between Flag 700 through 800. All numbers	
54-L16-26			Deleted				do not match flags 20 through 27. Show items located without	
54-L16-27			Deleted				flags. Targets 1 - 19 are okay, 20 through 25 corrected and	
							26 & 27 deleted, targets 28 through 127 okay	
54-L16-28	15.5	804.8	0.0	3"	N	.25 lb.	Scrap	2
54-L16-29	39.9	812.3	2 ft.	3"	N	.25 lb.	40 mm. Flare Scrap	2
54-L16-30	25.8	825.0	5 ft.	6"	N	1 lb.	Scrap	2
54-L16-31	25.9	834.6	3 ft.	8"	N	1 lb.	Scrap	2
54-L16-32	22.2	846.9	4 ft.	6"	N	1 lb.	Scrap	3
54-L16-33	41.0	868.6	3 ft.	12"	N	1 lb.	Scrap	3
54-L16-34	6.7	875.9	2 ft.	4"	N	.25 lb.	Scrap	3
54-L16-35	21.2	882.7	3 ft.	6"	N	.25 lb.	Scrap	2
54-L16-36	9.4	892.3	4 ft.	12"	N	.25 lb.	40 mm. Flare Scrap	3
54-L16-37	90.2	902.0	0.0	7"	N	.25 lb.	40 mm. Flare Scrap	5
54-L16-38	49.7	913.0	2 ft.	8"	N	.25 lb.	40 mm. Flare Scrap	3
54-L16-39	17.1	920.1	0.0	6"	N	.25 lb.	40 mm. Flare Scrap	5
54-L16-40	56.9	928.4	2 ft.	8"	N	.25 lb.	Scrap	3
54-L16-41	10.5	935.4	0.0	6"	N	.25 lb.	Scrap	5
54-L16-42	9.8	940.9	1 ft.	4"	N	.25 lb.	Scrap	6
54-L16-43	61.9	954.4	0.0	4"	N	.25 lb.	Scrap	4
54-L16-44	113.7	965.9	0.0	6"	N	.25 lb.	Scrap	6
54-L16-45	60.4	972.6	2 ft.	8"	N	.25 lb.	Scrap	2
54-L16-46	16.9	977.0	1 ft.	6"	N	.25 lb.	Scrap	4
54-L16-47	47.4	983.2	2 ft.	8"	N	.25 lb.	Scrap	3
54-L16-48	15.0	990.3	0.0	2"	N	.25 lb.	Scrap	5

Area 54 - Line 16 - LHAAP Anomaly Digsheet

00049479

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L16-49	18.7	999.6	0.0	0	N	.25 lb.	Scrap	1
54-L16-50	47.1	1005.6	1 ft.	2"	N	.25 lb.	Scrap	4
54-L16-51	7.8	1013.0	1 ft..	3"	N	.25 lb.	Scrap	3
54-L16-52	152.4	1018.5	2 ft.	4"	N	2 lbs.	Scrap	4
54-L16-53	25.5	1027.8	2 ft.	3"	N	.5 lb.	Scrap	3
54-L16-54	16.1	1033.3	2 ft.	1"	N	2 lbs.	Scrap	2
54-L16-55	54.9	1039.8	2 ft.	6"	N	.25 lbs	40 mm. Flare Scrap	2
54-L16-56	44.0	1050.5	0.0	10"	N	2 lbs.	Scrap	3
54-L16-57	26.1	1060.8	1 ft.	6"	N	2 lbs.	Scrap	3
54-L16-58	7.6	1074.8	1 ft.	2"	N	.25 lb.	Scrap	3
54-L16-59	9.5	1092.5	3 ft.	2"	N	2 lbs.	Scrap	2
54-L16-60	55.1	1099.5	0.0	2"	N	.25 lb.	Scrap	2
54-L16-61	7.2	1107.4	1 ft.	4"	N	2 lbs.	Scrap	3
54-L16-62	25.9	1113.4	1 ft.	4"	N	.25 lb.	Scrap	3
54-L16-63	61.7	1118.1	2 ft.	5"	N	.25 lb.	40 mm. Flare Scrap	2
54-L16-64	163.2	1127.8	2 ft.	4"	N	2 bs.	Scrap	3
54-L16-65	15.6	1138.0	0.0	6"	N	2 lbs.	Scrap	4
54-L16-66	72.1	1141.7	0.0	2"	N	.5 lb.	Scrap	3
54-L16-67	96.1	1147.2	2 ft.	2"	N	2 lbs.	Scrap	3
54-L16-68	113.4	1152.9	0.0	3"	N	1 lb.	Scrap	2
54-L16-69	103.9	1171.8	2 ft.	2"	N	.25 lb.	Scrap	2
54-L16-70	50.8	1178.6	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-71	21.2	1183.5	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-72	81.6	1188.8	1 ft.	4"	N	.25 lb.	Scrap	2
54-L16-73	60.9	1199.0	1 ft.	6"	N	2 lbs.	Scrap	2

Area 54 - Line 16 - LHAAP Anomaly Digsheet 00049480

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L16-74	111.7	1207.5	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L16-75	22.5	1214.5	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L16-76	68.7	1224.8	1 ft.	6"	N	.25 lb.	Scrap	2
54-L16-77	95.3	1235.5	0.0	3"	N	.25 lb.	Scrap	2
54-L16-78	12.6	1251.6	1 ft.	2"	N	.25 lb.	Scrap	2
54-L16-79	31.5	1256.3	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-80	94.9	1261.8	1 ft.	4"	N	.25 lb	Scrap	2
54-L16-81	59.7	1270.1	0.0	8"	N	.25 lb.	Scrap	2
54-L16-82	174.3	1286.6	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-83	126.7	1294.5	0.0	3"	N	.25 lb.	Scrap	2
54-L16-84	53.5	1299.2	2 ft.	0	N	.25 lb.	Scrap	2
54-L16-85	142.7	1308.0	0.0	6"	N	.25 lb	Scrap	2
54-L16-86	108.8	1317.7	0.0	6"	N	.25 lb.	Scrap	2
54-L16-87	97.0	1326.1	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-88	50.4	1333.2	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-89	71.6	1339.8	0.0	3"	N	.25 lb.	Scrap	2
54-L16-90	68.3	1347.8	0.0	4"	N	.25 lb	Slap Flare Scrap	1
54-L16-91	51.5	1360.0	0.0	6"	N	.25 lb.	Slap Flare Scrap	2
54-L16-92	46.6	1363.6	1 ft.	6"	N	.25 lb.	Scrap	2
54-L16-93	99.1	1372.7	1 ft.	2"	N	.25 lb.	Scrap	2
54-L16-94	31.5	1382.7	2 ft.	4"	N	.25 lb.	Scrap	2
54-L16-95	11.0	1400.4	1 ft.	3"	N	.25 lb	Scrap	2
54-L16-96	56.1	1408.4	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L16-97	34.7	1419.9	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L16-98	12.1	1423.5	1 ft.	3"	N	.25 lb.	Scrap	2

Area 54 - Line 16 - LHAAP Anomaly Digsheet 00049481

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L16-99	25.5	1429.2	2 ft.	1"	N	.25 lb.	Scrap	2
54-L16-100	133.5	1437.6	1 ft.	2"	N	.25 lb	Slap Flare Scrap	2
54-L16-101	46.9	1450.5	2 ft.	1"	N	.25 lb.	Slap Flare Scrap	2
54-L16-102	21.4	1461.1	2 ft.	2"	N	.25 lb.	Scrap	2
54-L16-103	32.9	1468.3	2 ft.	2"	N	.25 lb.	Scrap	2
54-L16-104	29.1	1475.5	2 ft.	3"	N	.25 lb.	Scrap	2
54-L16-105	40.5	1480.8	2 ft.	4"	N	.25 lb	Scrap	2
54-L16-106	32.0	1488.0	2 ft.	4"	N	.25 lb.	Scrap	2
54-L16-107	12.2	1495.7	2 ft.	6"	N	.25 lb.	Scrap	2
54-L16-108	11.2	1499.0	2 ft.	4"	N	.25 lb.	Scrap	2
54-L16-109	16.8	1505.7	1 ft.	4"	N	.25 lb.	Scrap	2
54-L16-110	31.6	1519.1	2 ft.	3"	N	1 lb.	Scrap	2
54-L16-111	26.9	1527.6	1 ft.	2"	N	1 lb.	Scrap	2
54-L16-112	32.1	1537.1	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-113	31.0	1551.9	2 ft.	3"	N	.25 lb.	Scrap	2
54-L16-114	6.5	1566.2	1 ft.	4"	N	.25 lb.	Scrap	2
54-L16-115	10.5	1571.0	1 ft.	6"	N	.25 lb	Scrap	1
54-L16-116	3.4	1587.6	1 ft.	3"	N	.25 lb.	Scrap	2
54-L16-117	18.1	1594.8	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L16-118	4.8	1601.0	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L16-119	13.7	1605.0	2 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L16-120	25.4	1644.0	2 ft.	4"	N	.25 lb	40 mm. Flare Scrap	2
54-L16-121	11.7	1658.9	2 ft.	2"	N	.25 lb.	Scrap	2
54-L16-122	4.1	1678.7	1 ft.	2"	N	.25 lb.	Scrap	3
54-L16-123	3.1	1713.7	3 ft.	0	N	.25 lb.	Slap Flare Scrap	2

Area 54 - Line 16 - LHAAP Anomaly Digsheet

00049482

Area	Transect					
						Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	**Target Response** *(mV)*	*NAD83-Texas CS83 North Central* ***Distance*** U.S.Survey Feet	**Target Offset** *(ft)*	**Depth to item** *(in)*	**OE Item?** *(Y or N)*	**Item Description Comment**		**Digs**
54-L16-124	3.8	1742.7	1 ft.	2"	N	.25 lb.	Slap Flare Scrap	2
54-L16-125	5.2	1824.8	2 ft.	2"	N	.25 lb	Nail	1
54-L16-126	3.6	1847.1					No Contact QC Verified	
54-L16-127	2.3	1917.9	0.0	4"	N	.25 lb.	Scrap	1

Area 54 - Line 16 - LHAAP Anomaly Digsheet

00049483

Area	Transect					Total MEC Scrap 57.5 lbs
54	16	EOD Team	1			Pg. 1, Total MEC Scrap 6.5 lbs.
						Pg. 2, Total MEC Scrap 8.75 lbs.
		Date of Excavation	7/12/2006	7/13/2006	7/14/2006	Pg. 3, Total MEC Scrap 25 lbs.
						Pg. 4, Total MEC Scrap 6.25 lbs.
		Start Time	13:30	7:10	7:10	Pg. 5, Total MEC Scrap 8.75 lbs.
		Stop Time	15:45	15:45	10:30	Pg. 6, Total MEC Scrap .25 lb.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs

Area 00049484

Area	Transect			
54	17	EOD Team	1	
				Total MEC Scrap 43 lbs
		Date of Excavation	7/11/2006 7/12/2006	Pg. 1, Total MEC Scrap 22.5 lbs
				Pg. 2, Total MEC Scrap 9.75 lbs.
		Start Time	11:10 7:15	Pg. 3, Total MEC Scrap 6.25 lbs.
		Stop Time	15:45 13:15	Pg. 4, Total MEC Scrap 4.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L17-1	3.6	21.2	0.0	1"	N	1 lb.	Scrap	1
54-L17-2	2.7	65.3	1 ft.	2"	N	.25 lb.	Scrap	2
54-L17-3	2.3	89.0		2"	N		No Contact	
54-L17-4	1.3	125.7	2 ft.	2"	N	.25 lb.	Scrap	1
54-L17-5	9.2	158.6	0.0	3"	N	1 lb.	Scrap	2
54-L17-6	2.7	187.9					No Contact	
54-L17-7	6.6	234.1					No Contact	
54-L17-8	4.2	293.3					No Contact	
54-L17-9	19.4	310.7	1 ft.	2"	N	.25 lb.	40 mm. Flare Scrap	2
54-L17-10	3.2	376.5	3 ft.	6"	N	.25 lb.	Scrap	1
54-L17-11	2.8	464.3	1 ft.	3"	N	.25 lb.	Scrap	4
54-L17-12	5.3	584.1	1 ft.	2"	N	.25 lb.	Scrap	1
54-L17-13	1.6	612.5	2 ft..	2"	N	.25 lb.	Scrap	2
54-L17-14	7.0	654.7	5 ft.	0	N	10 lbs.	Scrap	2
54-L17-15	90.6	665.1	3 ft.	2"	N	1 lb.	Button Bomb dispenser Scrap	3
54-L17-16	5.5	732.0	3 ft.	1"	N	.25 lb.	Scrap	1
54-L17-17	4.0	772.2	2 ft.	4"	N	.25 lb.	Scrap	1
54-L17-18	53.3	789.1	1 ft.	2"	N	5 lbs.	Scrap	1
54-L17-19	11.1	805.6	3 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L17-20	4.5	813.9	5 ft.	5"	N	.25 lb.	Slap Flare Scrap	2
54-L17-21	35.2	824.4	3 ft.	4"	N	.25 lb.	40 mm. Flare Scrap	1
54-L17-22	1.3	848.7	4 ft.	6"	N	1 lb.	Scrap	1
54-L17-23	3.3	869.9	0.0	4"	N	.25 lb.	Scrap	1
54-L17-24	2.3	875.9					No Contact	
54-L17-25	11.2	883.9	1 ft.	1"	N	.25 lb.	Slap Flare Scrap	4

Area 00049485

Area	Transect			
54	17	EOD Team	1	
				Total MEC Scrap 43 lbs
		Date of Excavation	7/11/2006 7/12/2006	Pg. 1, Total MEC Scrap 22.5 lbs
				Pg. 2, Total MEC Scrap 9.75 lbs.
		Start Time	11:10 7:15	Pg. 3, Total MEC Scrap 6.25 lbs.
		Stop Time	15:45 13:15	Pg. 4, Total MEC Scrap 4.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L17-26	13.7	923.5	2 ft.	0	N	2 lbs.	Scrap	3
54-L17-27	21.2	936.3	1 ft.	0	N	1 lb.	Scrap	3
54-L17-28	4.5	954.9	1 ft.	6"	N	.25 lb.	Scrap	1
54-L17-29	0.0	963.4	2 ft.	4"	N	.25 lb.	Scrap	2
54-L17-30	2.7	983.2	2 ft.	4"	N	.25 lb.	Scrap	1
54-L17-31	31.6	998.9	4 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L17-32	48.9	1009.1	0.0	0	N	1 lb.	Scrap	3
54-L17-33	2.0	1016.7	2 ft.	10"	N	.25 lb.	Scrap	3
54-L17-34	31.9	1029.2	0.0	6"	N	.25 lb.	Scrap	2
54-L17-35	37.1	1041.3	2 ft.	3"	N	.25 lb.	Scrap	3
54-L17-36	0.6	1047.7	4 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L17-37	2.7	1053.0	3 ft,	2"	N	.25 lb.	Slap Flare Scrap	1
54-L17-38	54.1	1057.6	2 ft.	3"	N	.25 lb.	Slap Flare Scrap	4
54-L17-39	0.5	1073.5	1 ft.	2"	N	.25 lb.	Scrap	2
54-L17-40	0.5	1083.3	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	3
54-L17-41	23.4	1087.5	3 ft.	6"	N	.25 lb.	Slap Flare Scrap	3
54-L17-42	10.1	1092.1	4 ft.	5"	N	.25 lb.	Slap Flare Scrap	3
54-L17-43	7.6	1109.5	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	5
54-L17-44	0.7	1119.7	0.0	1"	N	.25 lb.	Scrap	4
54-L17-45	21.1	1124.8	2 ft.	3"	N	.25 lb.	Slap Flare Scrap	4
54-L17-46	50.4	1137.0	3 ft.	1"	N	.25 lb.	Slap Flare Scrap	2
54-L17-47	0.0	1145.3	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L17-48	0.9	1150.8	3 ft.	4"	N	.25 lb.	Slap Flare Scrap	3
54-L17-49	118.3	1161.5	1 ft.	4"	N	.5 lb.	Slap Flare Scrap	3
54-L17-50	38.0	1174.8	3 ft.	6"	N	.25 lb.	Slap Flare Scrap	3

Area 00049486

Area	Transect			
54	17	EOD Team	1	
				Total MEC Scrap 43 lbs
		Date of Excavation	7/11/2006 7/12/2006	Pg. 1, Total MEC Scrap 22.5 lbs
				Pg. 2, Total MEC Scrap 9.75 lbs.
		Start Time	11:10 7:15	Pg. 3, Total MEC Scrap 6.25 lbs.
		Stop Time	15:45 13:15	Pg. 4, Total MEC Scrap 4.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L17-51	1.0	1189.7	2 ft.	3"	N	.25 lb.	Slap Flare Scrap	3
54-L17-52	40.3	1194.5	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L17-53	62.7	1202.0	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	3
54-L17-54	5.1	1209.5	1 ft.	3"	N	.25 lb.	40 mm. Flare Scrap	2
54-L17-55	10.3	1215.1	2 ft.	4"	N	.25 lb.	Slap Flar Scrap	2
54-L17-56	4.7	1219.1	3 ft.	2"	N	.25 lb.	Slap Flar Scrap	2
54-L17-57	7.1	1224.6	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L17-58	5.6	1236.1	0.0	1"	N	.25 lb.	Slap Flare Scrap	3
54-L17-59	9.2	1240.1	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	3
54-L17-60	3.6	1253.1	3 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L17-61	3.1	1271.2	2 ft.	1"	N	.25 lb.	Slap Flare Scrap	1
54-L17-62	4.3	1275.4	0.0	2"	N	.25 lb.	Scrap	2
54-L17-63	110.5	1288.1	1 ft.	2"	N	.25 lb.	Slap Flare Scrap	2
54-L17-64	0.0	1304.8	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	3
54-L17-65	0.0	1316.2	2 ft.	1"	N	.25 lb.	Slap Flare Scrap	3
54-L17-66	17.8	1334.2	3 ft.	4"	N	.25 lb.	Slap Flare Scrap	4
54-L17-67	91.2	1339.9	1 ft.	2"	N	.25 lb.	Slap Flare Scrap	4
54-L17-68	1.0	1348.7	2 ft.	2"	N	.25 lb.	Slap Flare Scrap	3
54-L17-69	4.7	1353.3	0.0	4"	N	.25 lb.	Slap Flare Scrap	2
54-L17-70	1.4	1367.8	3 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L17-71	9.1	1377.7	3 ft.	3"	N	.25 lb.	Scrap	1
54-L17-72	3.9	1399.6	3 ft.	2"	N	.25 lb.	Scrap	1
54-L17-73	14.7	1410.2	2 ft.	4"	N	.25 lb.	Scrap	1
54-L17-74	4.3	1416.7	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	3
54-L17-75	2.3	1425.2	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	2

Area

00049487

Area	Transect			
54	17	EOD Team	1	
				Total MEC Scrap 43 lbs
		Date of Excavation	7/11/2006 7/12/2006	Pg. 1, Total MEC Scrap 22.5 lbs
				Pg. 2, Total MEC Scrap 9.75 lbs.
		Start Time	11:10 7:15	Pg. 3, Total MEC Scrap 6.25 lbs.
		Stop Time	15:45 13:15	Pg. 4, Total MEC Scrap 4.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L17-76	1.4	1433.3	3 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L17-77	29.7	1441.5	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	2
54-L17-78	2.6	1450.4	3 ft.	2"	N	.25 lb.	Scrap	1
54-L17-79	34.1	1456.0	2 ft.	1"	N	.25 lb.	Scrap	2
54-L17-80	0.0	1466.4	3 ft.	2"	N	.25 lb.	Scrap	1
54-L17-81	26.3	1474.6	2 ft.	0	N	.25 lb.	Scrap	1
54-L17-82	3.2	1493.5	1 ft.	4"	N	.25 lb.	Scrap	1
54-L17-83	3.7	1498.7					No Contact	
54-L17-84	2.7	1535.7	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	3
54-L17-85	3.1	1547.2	6 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L17-86	24.5	1558.4	2 ft.	4"	N	.25 lb.	Slap Flare Scarp	2
54-L17-87	35.9	1574.8	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L17-88	2.2	1587.8	4 ft.	6"	N	.25 lb.	Slap Flare Scrap	1
54-L17-89	1.4	1592.8					No Contact	
54-L17-90	18.0	1619.1	4 ft.	1"	N	.25 lb.	Slap Flare Scrap	2
54-L17-91	2.6	1630.5					No Contact	
54-L17-92	7.7	1726.9	0.0	1"	N	.25 lb.	Scrap	2
54-L17-93	2.4	1730.8	0.0	2"	N	.25 lb.	Scrap	1
54-L17-94	45.2	1737.0	2 ft.	1"	N	.25 lb.	Slap Flare Scrap	1
54-L17-95	4.4	1760.2	5 ft.	2"	N	.25 lb.	Slap Flare Scarp	1
54-L17-96	0.0	1815.6	1 ft.	1"	N	.25 lb.	Scrap	1
54-L17-97	7.9	1832.0					No Contact	
54-L17-98	32.4	1844.0	0.0	0	N	0	Hub Marking Nail	

Area 54 - Line 18 - LHAAP Anomaly Digsheet 00049488

Area	Transect				
54	18	EOD Team	1		**Total MEC Items: 1 ea. CDU 10 Dispenser Parts**
		Date of Excavation	7/10/2006	7/11/2006	**Total MEC Scrap 32.5 lbs.**
					Pg. 1, Total MEC Scrap 7.25 lbs.
		Start Time	9:30	8:15	Pg. 2, Total MEC Scrap 15 lbs.
		Stop Time	15:40	10:40	Pg. 3, Total MEC Scrap 10.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L18-1	2.8	29.0	2 ft.	4"	N	.25 lb.	OE Scrap	1
54-L18-2	2.8	76.2	5 ft.	2"	N	.25 lb.	Scrap	1
54-L18-3	2.6	86.5	3 ft.	1"	N	.25 lb.	OE Scrap	2
54-L18-4	2.5	105.0					No Contact	
54-L18-5	3.3	146.8	1 ft.	6"	N	.25 lb.	Scrap	1
54-L18-6	2.6	164.0					No Contact	
54-L18-7	2.7	174.8	4 ft.	4"	N	.25 lb.	Scrap	2
54-L18-8	2.6	223.4	6 ft.	1"	N	.25 lb.	OE Scrap	1
54-L18-9	5.9	240.2	1 ft.	3"	N	.25 lb.	Scrap	2
54-L18-10	4.6	282.8	4 ft.	2"	N	.25 lb.	Scrap	2
54-L18-11	3.0	400.5	3 ft.	2"	N	.25 lb.	Scrap	2
54-L18-12	2.0	424.8	4 ft.	6"	N	.25 lb.	Scrap	2
54-L18-13	103.6	433.8	2 ft.	3"	N	.5 lb.	OE Scrap	2
54-L18-14	21.5	456.6	1 ft.	4"	N	.25 lb.	Scrap	2
54-L18-15	1.9	471.2	1 ft.	9"	N	.25 lb.	Slap Flare Scrap	3
54-L18-16	72.7	498.0	0.0	3"	N	1 lb.	OE Scrap	3
54-L18-17	3.2	516.7	1 ft.	4"	N	.25 lb.	Nail	2
54-L18-18	67.0	538.0	0.0	6"	N	.5 lb.	Wire	4
54-L18-19	6.0	548.1	1 ft.	3"	N	.5 lb.	Slape Flare Scrap	4
54-L18-20	5.2	556.4			**Y**		**CDU 10, Dispenser Parts (CBU 40)**	
54-L18-21	2.2	601.0	2 ft.	4"	N	.25 lb.	Scrap	3
54-L18-22	1.7	617.0	2 ft.	2"	N	.25 lb.	OE Scrap	1
54-L18-23	1.4	635.5	1 ft.	3"	N	.5 lb.	OE Scrap	1
54-L18-24	5.5	663.5	3 ft.	1"	N	.25 lb.	Scrap	1
54-L18-25	2.5	735.5	2 ft.	1"	N	.25 lb.	Scrap	1

Area 54 - Line 18 - LHAAP Anomaly Digsheet 00049489

Area	Transect				
54	18	EOD Team	1		**Total MEC Items: 1 ea. CDU 10 Dispenser Parts**
		Date of Excavation	7/10/2006	7/11/2006	**Total MEC Scrap 32.5 lbs.**
					Pg. 1, Total MEC Scrap 7.25 lbs.
		Start Time	9:30	8:15	Pg. 2, Total MEC Scrap 15 lbs.
		Stop Time	15:40	10:40	Pg. 3, Total MEC Scrap 10.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L18-26	6.9	780.6	5 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L18-27	11.8	840.3	1 ft.	8"	N	.25 lb.	Slap Flare Scrap	2
54-L18-28	45.3	866.2	2 ft.	6"	N	2 lbs.	Scrap	2
54-L18-29	8.5	885.3	3 f.	3"	N	.25 lb.	Scrap	1
54-L18-30	4.4	901.8	6 ft.	8"	N	.5 lb.	Slap Flare Scrap	2
54-L18-31	2.7	922.1	5 ft.	3"	N	.25 lb.	Slap Flare Scrap	2
54-L18-32	1.0	933.6					No Contact	
54-L18-33	41.7	969.0	4 ft.	6"	N	.25 lb.	40 mm. Flare Scrap	2
54-L18-34	6.1	978.8	1 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L18-35	15.6	988.5	1 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L18-36	29.5	994.7	1 ft.	6"	N	12 lbs.	Rifle Grenade (Exp.) 6 ea. Smoke	6
54-L18-37	10.8	1002.5	3 ft.	4"	N	2 lbs.	Rifle Grenade (Exp.) 2 ea. Smoke	3
54-L18-38	6.2	1008.8	2 ft.	4"	N	2 lbs.	Rifle Grenade (Exp.) 2 ea. Smoke	3
54-L18-39	38.3	1016.7	0.0	3"	N	.5 lb.	Slape Flare Scrap & Rifle Grenade (Exp.)	2
54-L18-40	0.0	1028.9	0.0	4"	N	1 lb.	Rifle grenade Scrap	3
54-L18-41	9.2	1044.6	2 ft.	2"	N	.25 lb.	40 mm. Flare Scrap	3
54-L18-42	1.6	1052.5	1 ft.	6"	N	1 lb.	Slap Flare & 40 mm. Flare Scrap	4
54-L18-43	25.9	1064.8	1 ft.	6"	N	.25 lb.	40 mm. Flare Scrap	1
54-L18-44	18.3	1070.8	1 ft.	8"	N	.25 lb.	40 mm. Flare Scrap	2
54-L18-45	0.0	1086.0	3 ft.	3"	N	.25 lb.	40 mm. Flare Scrap	2
54-L18-46	10.2	1097.0	1 ft.	2"	N	.25 lb.	Scrap	2
54-L18-47	52.5	1101.8	1 ft.	4"	N	1 lb.	Barbed Wire	3
54-L18-48	23.8	1109.3	2 ft.	6"	N	1 lb.	Barbed Wire	2
54-L18-49	26.6	1115.9	3 ft.	6"	N	1 lb.	Scrap	2
54-L18-50	0.9	1123.5	4 ft.	6"	N	1 lb.	Scrap	2

Area 54 - Line 18 - LHAAP Anomaly Digsheet 00049490

Area	Transect				
54	18	EOD Team	1		**Total MEC Items: 1 ea. CDU 10 Dispenser Parts**
		Date of Excavation	7/10/2006	7/11/2006	**Total MEC Scrap 32.5 lbs.**
					Pg. 1, Total MEC Scrap 7.25 lbs.
		Start Time	9:30	8:15	Pg. 2, Total MEC Scrap 15 lbs.
		Stop Time	15:40	10:40	Pg. 3, Total MEC Scrap 10.25 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L18-51	4.3	1128.3	3 ft.	6"	N	.5 lb.	Scrap	1
54-L18-52	2.6	1137.2	4 ft.	4"	N	.25 lb.	Scrap	3
54-L18-53	28.0	1160.3	3 ft.	3"	N	.5 lb.	Scrap	3
54-L18-54	1.1	1168.2	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	3
54-L18-55	1.3	1177.7	0.0	0	N	.25 lb.	Scrap	1
54-L18-56	13.7	1188.0	0.0	3"	N	.25 lb.	Scrap	1
54-L18-57	10.9	1191.8	3 ft.	3"	N	.25 lb.	Slap Flare Scrap	1
54-L18-58	23.8	1198.6	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	3
54-L18-59	40.0	1205.8	1 ft.	6"	N	1 lb.	Scrap	3
54-L18-60	1.8	1212.1	4 ft.	2"	N	.25 lb.	40 mm. Flare Scrap	1
54-L18-61	0.0	1230.6	3 ft.	4"	N	.25 lb.	Scrap	3
54-L18-62	8.0	1239.8	0.0	8"	N	1 lb.	Scrap	3
54-L18-63	6.5	1254.4	2 ft.	0	N	1 lb.	Scrap	5
54-L18-64	13.9	1265.5	1 ft.	10"	N	.5 lb.	Wire	3
54-L18-65	45.7	1285.8	2 ft.	6"	N	.5 lb.	Wire	3
54-L18-66	1.8	1297.8	2 ft.	8"	N	1 lb.	Slap Flare Scrap	3
54-L18-67	11.9	1315.8	2 ft.	6"	N	.5 lb.	Wire	4
54-L18-68	10.2	1445.1	3 ft.	3"	N	.25 lb.	Scrap	2
54-L18-69	13.0	1472.3	5 ft.	2"	N	.25 lb.	Scrap	1
54-L18-70	4.1	1503.5					No Contact	
54-L18-71	4.5	1512.3	1 ft.	6"	N	.25 lb.	Scrap	1
54-L18-72	2.2	1550.5	5 ft.	4"	N	.25 lb.	Scrap	1
54-L18-73	8.1	1561.7	5 ft.	4"	N	.25 lb.	Scrap	1
54-L18-74	6.2	1630.6	0.0	2"	N	.25 lb.	Scrap	1
54-L18-75	3.3	1688.7	1 ft.	3"	N	.25 lb.	Scrap	1

Area 54 - Line 19 - LHAAP Anomaly Digsheet 00049491

Area	Transect			
54	19	EOD Team	1	
				Total MEC Scrap 36.25 lbs.
		Date of Excavation	7/7/2006	7/10/2006
				Pg. 1, Total MEC Scrap 8 lbs.
		Start Time	7:20	7:15 Pg. 2, Total MEC Scrap 23.5 lbs.
		Stop Time	15:45	9:45 Pg. 3, Total MEC Scrap 4.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L19-1	14.0	14.8					No Contact	
54-L19-2	7.5	54.8	2 ft.	3"	N	.25 lb.	Scrap	2
54-L19-3	3.3	62.1	1 ft.	0	N		Hub Marker Nail	1
54-L19-4	5.5	102.7	7 ft.	1"	N	1 lb.	Scrap	1
54-L19-5	3.5	145.1	ft.	6"	N	.25 lb.	Scrap	1
54-L19-6	8.0	163.3	1 ft.	6"	N	.25 lb.	Scrap	4
54-L19-7	18.0	177.9	2 ft.	6"	N	.5 lb.	Scrap	2
54-L19-8	4.5	192.5	1 ft.	6"	N	.5 lb.	Scrap	5
54-L19-9	4.0	196.9	1 ft.	8"	N	.25 lb.	Scrap	3
54-L19-10	14.3	235.2	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L19-11	7.2	247.9	1 ft.	6"	N	1 lb.	Scrap	2
54-L19-12	0.0	276.8	1 ft.	3"	N	.25 lb.	Scrap	1
54-L19-13	7.6	308.0	1 ft.	6'	N	.25 lb.	Slap Flare Scrap	1
54-L19-14	160.1	352.2	1 ft.	3"	N	.25 lb.	OE Scrap	2
54-L19-15	2.2	434.7	1 ft.	3"	N	.25 lb.	Scrap	1
54-L19-16	2.2	452.5	1 ft.	4"	N	.25 lb.	Scrap	1
54-L19-17	2.4	494.1	4 ft.	6"	N	.25 lb.	Scrap	1
54-L19-18	5.9	523.1	1 ft.	4"	N	.25 lb.	Scrap	6
54-L19-19	45.8	618.6	3 ft.	3"	N	.5 lb.	OE Scrap	1
54-L19-20	14.0	719.0	0.0	0	N	.25 lb.	OE Scrap	2
54-L19-21	10.2	740.1	3 ft.	6"	N	.25 lb.	Scrap	1
54-L19-22	0.0	750.4	3 ft.	4"	N	.25 lb.	Scrap	2
54-L19-23	747.2	761.8	1.5 ft.	3"	N	.25 lb.	Scrap	1
54-L19-24	1.9	777.5	2 ft.	4"	N	.25 lb.	OE Scrap	2
54-L19-25	3.2	800.4	2 ft.	6"	N	.25 lb.	Scrap	2

Area 54 - Line 19 - LHAAP Anomaly Digsheet 00049492

Area	Transect			
54	19	EOD Team	1	
				Total MEC Scrap 36.25 lbs.
		Date of Excavation	7/7/2006	7/10/2006
				Pg. 1, Total MEC Scrap 8 lbs.
		Start Time	7:20	7:15 Pg. 2, Total MEC Scrap 23.5 lbs.
		Stop Time	15:45	9:45 Pg. 3, Total MEC Scrap 4.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central Distance U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L19-26	15.6	813.3	1 ft.	6"	N	1 ft.	Scrap	1
54-L19-27	5.6	844.4	1 ft.	2"	N	.5 lb.	OE Scrap	1
54-L19-28	2.8	868.5	4 ft.	6"	N	.25 lb.	Slap Flare Scrap	3
54-L19-29	9.1	908.3	3 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L19-30	1.1	923.9	2 ft.	6"	N	.25 lb.	Slap Flare Scrap	1
54-L19-31	2.6	939.1	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	2
54-L19-32	7.5	943.9	3 ft.	6"	N	.25 lb.	Slap Flare Scrap	1
54-L19-33	53.4	961.3	2 ft.	6"	N	1 lb.	Slap Flare Scrap	4
54-L19-34	22.3	977.7	1 ft.	8"	N	1 lb.	Slap Flare Scrap	5
54-L19-35	9.4	984.5	0.0	4"	N	.25 lb.	Slap Flare Scrap	2
54-L19-36	4.1	991.6	1 ft.	6"	N	1 lb.	Barbed Wire	4
54-L19-37	12.5	998.3	1 ft.	12"	N	2 lbs.	Wire Banding	4
54-L19-38	9.0	1012.2	1 ft.	6"	N	1 lb.	Slap Flare Scrap	8
54-L19-39	5.4	1018.7	2 ft.	12"	N	2 lbs.	Scrap	4
54-L19-40	3.9	1034.2	3 ft.	4"	N	1 lb.	Scrap	1
54-L19-41	2.5	1056.7	1 ft.	6"	N	1 lb.	Scrap	2
54-L19-42	2.8	1071.9	0.0	6"	N	.25 lb.	Scrap	2
54-L19-43	6.9	1082.1	3 ft.	11"	N	.25 lb.	Scrap	2
54-L19-44	4.8	1090.6	1 ft.	3"	N	.25 lb.	Scrap	3
54-L19-45	45.0	1111.9	1 ft.	2"	N	3 lbs.	Scrap	3
54-L19-46	8.2	1131.7	1 ft.	2"	N	.25 lb.	Slap Flare Scrap	3
54-L19-47	120.1	1154.2	3 ft.	1"	N	2 lbs.	Scrap	3
54-L19-48	161.0	1195.0	2 ft.	6"	N	2 lbs.	Scrap	4
54-L19-49	15.6	1201.8	2 ft.	4"	N	1 lb.	Scrap	4
54-L19-50	1.3	1210.1	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	4

Area 54 - Line 19 - LHAAP Anomaly Digsheet 00049493

Area	Transect			
54	19	EOD Team	1	
				Total MEC Scrap 36.25 lbs.
		Date of Excavation	7/7/2006	7/10/2006
				Pg. 1, Total MEC Scrap 8 lbs.
		Start Time	7:20	7:15 Pg. 2, Total MEC Scrap 23.5 lbs.
		Stop Time	15:45	9:45 Pg. 3, Total MEC Scrap 4.75 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
54-L19-51	7.8	1230.7	2 ft.	8"	N	.25 lb. Scrap	4
54-L19-52	6.5	1235.5	1 ft.	8"	N	.25 lb. Scrap	4
54-L19-53	10.4	1239.9	0.0	6"	N	.25 lb. Scrap	4
54-L19-54	102.0	1259.0	0.0	8"	N	.25 lb. Scrap	6
54-L19-55	3.3	1268.9	1 ft.	4"	N	.25 lb. Nails	5
54-L19-56	4.7	1271.6	0.0	6"	N	.25 lb. Nails	6
54-L19-57	3.0	1319.9	2 ft.	4"	N	.25 lb. Scrap	1
54-L19-58	7.1	1350.8	4 ft.	8"	N	.25 lb. Scrap	2
54-L19-59	5.0	1367.5	1 ft.	2"	N	.25 lb. Scrap	1
54-L19-60	6.0	1380.0	0.0	0	N	.25 lb. OE Scrap	2
54-L19-61	0.7	1389.2				No Contact	
54-L19-62	4.5	1446.4	2 ft.	4"	N	.25 lb. Scrap	1
54-L19-63	7.7	1454.7	1 ft.	6"	N	.25 lb. Scrap	1
54-L19-64	2.8	1462.5	1 ft.	0	N	.25 lb. Scrap	1
54-L19-65	6.9	1476.3	0.0	4"	N	.25 lb. Slap Flare Scrap	2
54-L19-66	1.0	1508.7	0.0	6"	N	.25 lb. Scrap	1
54-L19-67	12.2	1530.2	3 ft.	2"	N	.25 lb. Scrap	1
54-L19-68	16.4	1538.0	4 ft.	2"	N	.25 lb. Scrap	1
54-L19-69	1.2	1545.0	5 ft.	1"	N	.25 lb. Scrap	1
54-L19-70	2.3	1563.1	2 ft.	1"	N	.25 lb. Scrap	1

Area 54 - Line 20 - LHAAP Anomaly Digsheet

00049494

Area	Transect			
54	20	EOD Team	1	
		Date of Excavation	7/6/2006	**Total MEC Scrap 52.25 lbs.**
		Start Time	13:00	Pg. 1, Total MEC Scrap 40.75 lbs.
		Stop Time	15:45	Pg. 2, Total MEC Scrap 11.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L20-1	7.9	42.0	3 ft.	12"	N	2 lbs.	Scrap	2
54-L20-2	82.0	73.8	1 ft.	3"	N	.25 lb.	Scrap	1
54-L20-3	2.7	102.9	4 ft.	6"	N	.5 lb.	Scrap	2
54-L20-4	3.8	117.2	1 ft.	12"	N	1 lb.	Scrap	1
54-L20-5	2.5	158.5	2 ft.	3"	N	1 lb.	Scrap	2
54-L20-6	945.6	199.1	4 ft.	6"	N	30 lbs.	Scrap	2
54-L20-7	7.4	246.5	5 ft.	2"	N	.25 lb.	Scrap	1
54-L20-8	44.1	259.6	1 ft.	6"	N	.25 lb.	Slap Flare Scrap	1
54-L20-9	4.0	278.1	2 ft.	4"	N	1 lb.	Scrap	3
54-L20-10	2.2	287.7	1 ft.	3"	N	.5 lb.	Scrap	3
54-L20-11	2.3	331.1	3 ft.	6"	N	.25 lb.	Scrap	2
54-L20-12	3.2	364.6	0.0	6"	N	.5 lb.	Scrap	2
54-L20-13	48.5	382.5	1 ft.	3"	N	.5 lb.	PD Fuze (Expended)	3
54-L20-14	2.9	434.8	6 ft.	6"	N	.5 lb.	OE Scrap	1
54-L20-15	3.9	456.6	0.0	2"	N	.25 lb.	Scrap	1
54-L20-16	1.6	480.3	3 ft.	6"	N	.25 lb.	Slap Flare Scrap	1
54-L20-17	41.2	540.1	2 ft.	4"	N	.25 lb.	Slap Flare Scrap	1
54-L20-18	3.6	602.0	3 ft.	8"	N	.25 lb.	Slap Flare Scrap	2
54-L20-19	46.3	739.5	1 ft.	12"	N	.25 lb.	40 mm. Flare Scrap	1
54-L20-20	3.1	779.1					No Contact	
54-L20-21	4.4	799.5	3 ft.	1"	N	.25 lb.	Scrap	1
54-L20-22	1.8	945.9					No Contact	
54-L20-23	2.8	950.4					No Contact	
54-L20-24	18.3	986.2	1 ft.	6"	N	.5 lb.	Scrap	2
54-L20-25	15.4	991.8	1 ft.	2"	N	.25 lb.	Slap Flare Scrap	1

Area 54 - Line 20 - LHAAP Anomaly Digsheet

00049495

Area	Transect			
54	20	EOD Team	1	
		Date of Excavation	7/6/2006	**Total MEC Scrap 52.25 lbs.**
		Start Time	13:00	Pg. 1, Total MEC Scrap 40.75 lbs.
		Stop Time	15:45	Pg. 2, Total MEC Scrap 11.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L20-26	2.9	997.4	2 ft.	3"	N	.5 lb.	Scrap	2
54-L20-27	0.9	1009.7	1 ft.	4"	N	1 lb.	Scrap	2
54-L20-28	12.8	1020.8	4 ft.	6"	N	.25 lb.	Scrap	1
54-L20-29	11.3	1029.2	2 ft.	3"	N	1 lb.	Scrap	3
54-L20-30	12.0	1033.6	3 ft.	6"	N	.5 lb.	Slap Flare Scrap	1
54-L20-31	7.8	1043.4	0.0	4"	N	.5 lb.	Scrap	2
54-L20-32	35.7	1054.4	1 ft.	6"	N	.5 lb.	Scrap	3
54-L20-33	13.6	1068.0	2 ft.	4"	N	.5 lb.	Scrap	1
54-L20-34	16.2	1082.0	1 ft.	12"	N	.5 lb.	OE Scrap	3
54-L20-35	4.0	1102.0	3 ft.	10"	N	.25 lb.	Scrap	2
54-L20-36	1.7	1120.2	4 ft.	8"	N	.25 lb.	Scrap	2
54-L20-37	6.1	1148.8	1 ft.	6"	N	.25 lb.	Scrap	1
54-L20-38	5.5	1163.2	4 ft.	11"	N	.25 lb.	Scrap	2
54-L20-39	3.2	1178.5	2 ft.	8"	N	.25 lb.	Scrap	3
54-L20-40	3.4	1197.5	3 ft.	6"	N	.5 lb.	Fragment	2
54-L20-41	5.0	1205.3	2 ft.	8"	N	.5 lb.	Scrap	1
54-L20-42	5.0	1225.2	3 ft.	6"	N	.5 lb.	Scrap	1
54-L20-43	8.6	1266.5	3 ft.	2"	N	1 lb.	Scrap	3
54-L20-44	3.1	1270.8	1 ft.	2"	N	2 lbs.	Scrap	4
54-L20-45	6.2	1296.5	5 ft.	3"	N	.25 lb.	Scrap	1
54-L20-46	3.4	1306.9					No Contact	
54-L20-47	0.0	1341.4					No Contact	

Area 54 - Line 21 - LHAAP Anomaly Digsheet 00049496

Area	Transect		
54	21	EOD Team	1
		Date of Excavation	7/6/2006
		Start Time	7:00
		Stop Time	10:10

Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L21-1	2.2	51.1	4 ft.	2"	N	.25 lb.	Scrap	1
54-L21-2	151.4	98.1	2 ft.	0	N		Hub Marking Nail	
54-L21-3	3.4	111.0	1 ft.	3"	N	.25 lb.	Scrap	1
54-L21-4	2.7	158.1	2 ft.	3"	N	.25 lb.	Scrap	1
54-L21-5	1.5	163.7	1 ft.	6"	N	.25 lb.	Scrap	1
54-L21-6	2.7	180.2					No Contact	
54-L21-7	5.9	186.3	2 ft.	3"	N	1 lb.	Fragment	1
54-L21-8	2.8	249.1	1 ft.	6"	N	.25 lb.	Scrap	1
54-L21-9	3.1	268.2					No Contact	
54-L21-10	3.7	274.4	2 ft.	1"	N	.25 lb.	Scrap	1
54-L21-11	1.8	288.8					No Contact	
54-L21-12	2.5	375.7					No Contact	
54-L21-13	1.8	408.9					No Contact	
54-L21-14	2.7	414.9					No Contact	
54-L21-15	2.7	540.1	4 ft.	2"	N	.25 lb.	Scrap	1
54-L21-16	17.2	547.6	2 ft.	3"	N	.5 lb.	Slap Flare Scrap	2
54-L21-17	7.1	564.5	1 ft.	3"	N	.25 lb.	Scrap	2
54-L21-18	3.4	571.4	6 ft.	5"	N	.5 lb.	Scrap	1
54-L21-19	16.1	624.3	2 ft.	2"	N	1 lb.	Scrap	5
54-L21-20	4.1	645.8	1 ft.	2"	N	.5 lb.	Slap Flare Scrap	1
54-L21-21	2.9	750.5	1 ft.	3"	N	.25 lb.	Scrap	1
54-L21-22	2.7	896.0					No contact	
54-L21-23	3.2	938.9	2 ft.	4"	N	.25 lb.	Scrap	1
54-L21-24	3.6	955.8	3 ft.	6"	N	.25 lb.	Scrap	1
54-L21-25	91.5	965.4	1 ft.	4"	N	.25 lb.	Scrap	1

Area 54 - Line 22 - LHAAP Anomaly Digsheet

00049497

Area	Transect		
54	22	EOD Team	1
		Date of Excavation	7/5/2006
		Start Time	14:50
		Stop Time	15:45

Total MEC Scrap 6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central *Distance* U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
54-L22-1	8.0	48.5	2 ft.	6"	N	.25 lb..	Scrap	1
54-L22-2	2.4	151.3	1 ft.	3"	N	.25 lb.	Scrap	1
54-L22-3	3.7	169.5	1 ft.	4"	N	.25 lb.	Scrap	1
54-L22-4	167.8	201.2	0.0	2"	N	2 lbs.	Scrap	1
54-L22-5	4.8	234.0	1 ft.	0	N	.25 lb.	Trash	2
54-L22-6	5.5	292.4					No Contact	
54-L22-7	3.5	298.0	2 FT.	8"	N	.25 lb.	Scrap	1
54-L22-8	107.6	319.4	2 ft.	0	N	1 lb	Rebar	1
54-L22-9	1.6	341.8	6 ft.	3"	N	.25 lb.	Scrap	1
54-L22-10	3.6	350.4	3 ft.	6"	N	.25 lb.	Scrap	1
54-L22-11	11.7	360.3	2 ft.	6"	N	1	Scrap	3
54-L22-12	1.6	425.0	0.0	1"	N	0.25 lb.	OE scrap	1
54-L22-13	8.3	565.1	4 ft.	8"	N	1 lb.	Scrap	1
54-L22-14	154.2	569.9	0.0	0	N		Hub Marker Nail	

00049498

53- G1-LHAAP Anomaly Digsheet

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
53-G1-1	24.1	3316577.8	6957319.8	5 ft.	6"	N	.25 lb.	OE Scrap	1
53-G1-2	21.2	3316565.3	6957323.8					No Contact	
53-G1-3	19.1	3316565.1	6957316.8	2 ft.	4"	N	.25 lb.	OE Scrap	1
53-G1-4	10.8	3316545.3	6957299.2	3 ft.	3"	N	.25 lb.	OE Scrap	1
53-G1-5	20.7	3316534.2	6957291.6	4 ft.	2"	N	.25 lb.	Scrap	2
53-G1-6	51.2	3316523.4	6957281.6	4.5 ft.	2"	N	.25 lb.	Scrap	1
53-G1-7	103.3	3316515.3	6957285.4	2 ft.	6"	N	.25 lb.	OE Scrap	1
53-G1-8	47.4	3316518.0	6957278.1	1 ft.	3"	N	.25 lb.	Scrap	1
53-G1-9	19.4	3316465.8	6957254.9	1 ft.	2"	N	.25 lb.	Scrap	2
53-G1-10	28.0	3316460.7	6957253.2	2 ft.	2"	N	1 lb.	OE Scrap	2
53-G1-11	43.4	3316452.0	6957256.5	4 ft.	1"	N	.5 lb.	Scrap	1
53-G1-12	21.2	3316434.2	6957253.8	1 ft.	2"	N	.25 lb.	OE Scrap	1
53-G1-13	54.0	3316478.5	6957285.7	3 ft.	10"	N	1 lb.	Scrap	1
53-G1-14	36.5	3316495.6	6957304.9	4 ft.	3"	N	.25 lb.	Scrap	1
53-G1-15	19.5	3316516.1	6957317.1	2 ft.	1"	N	1 lb.	OE Scrap	1
53-G1-16	32.6	3316520.2	6957323.8	3 ft.	2"	N	.25 lb.	Scrap	1
53-G1-17	17.7	3316518.5	6957333.6					No Contact	
53-G1-18	37.7	3316544.8	6957321.9	4 ft.	4"	N	.25 lb.	Scrap	1
53-G1-19	49.0	3316548.0	6957333.3	3 ft.	4"	N	.25 lb.	Scrap	1
53-G1-20	29.9	3316526.9	6957344.9	1 ft.	3"	N	1 lb.	Scrap	1
53-G1-21	15.2	3316535.6	6957348.7	6 ft.	5"	N	.25 lb.	Scrap	1
53-G1-22	7.5	3316530.7	6957351.7	2 ft.	4"	N	.25 lb.	Scrap	1
53-G1-23	46.9	3316525.6	6957351.4	5 ft.	6"	N	.25 lb.	Scrap	1
53-G1-24	52.0	3316531.5	6957359.3					No Contact	
53-G1-25	12.9	3316532.6	6957364.9	5 ft.	2"	N	.25 lb.	Scrap	1
53-G1-26	8.9	3316537.8	6957373.9					No Contact	
53-G1-27	18.3	3316539.9	6957378.5					No Contact	
53-G1-28	59.3	3316513.7	6957363.6					No Contact	
53-G1-29	15.7	3316515.6	6957353.9	1 ft.	4"	N	.25 lb..	Scrap	1
53-G1-30	8.5	3316502.9	6957350.6	1 ft.	0	N	.25 lb.	Scrap	1
53-G1-31	43.6	3316501.2	6957344.4	5 ft.	1"	N	1 lb.	OE Scrap	2
53-G1-32	8.1	3316501.0	6957335.5	1 ft.	3"	N	.25 lb.	Scrap	1
53-G1-33	19.9	3316492.0	6957333.8	5 ft.	6"	N	1 lb.	OE Scrap	1
53-G1-34	184.2	3316494.2	6957327.6	4 ft.	6"	N	1 lb.	OE Scrap	1
53-G1-35	35.2	3316488.0	6957324.1	3 ft.	6"	N	1 lb.	OE Scrap	1
53-G1-36	10.8	3316482.0	6957317.9	6 ft.	4"	N	.25 lb.	Scrap	2
53-G1-37	33.7	3316473.1	6957331.4					No Contact	
53-G1-38	16.7	3316451.7	6957306.8	3 ft.	6"	N	.25 lb.	Scrap	1
53-G1-39	52.2	3316442.6	6957294.6	5 ft.	1"	N	1 lb.	OE Scrap	1
53-G1-40	42.7	3316433.6	6957289.2	4 ft.	4"	N	.25 lb.	Scrap	3
53-G1-41	44.2	3316416.6	6957308.4					No Contact	
53-G1-42	48.9	3316402.5	6957316.3					No Contact	
53-G1-43	48.0	3316387.7	6957318.7					No Contact	
53-G1-44	18.4	3316384.4	6957332.8					No Contact	
53-G1-45	48.6	3316372.5	6957337.9					No Contact	
53-G1-46	43.9	3316376.3	6957346.8					No Contact	
53-G1-47	41.3	3316389.3	6957345.5					No Contact	
53-G1-48	42.6	3316402.0	6957324.6					No Contact	
53-G1-49	32.9	3316415.2	6957330.3					No Contact	
53-G1-50	54.1	3316455.3	6957329.5					No Contact	
53-G1-51	37.7	3316449.3	6957334.9	1 ft.	3"	N	1 lb.	OE Scrap	1
53-G1-52	26.1	3316457.2	6957338.2	6"	3"	N	.1 lb	Scrap	1
53-G1-53	41.4	3316443.9	6957346.5	1 ft.	8"	N	.1 lb.	Scrap	1
53-G1-54	34.4	3316449.0	6957352.2	8"	6"	N	.1 lb.	Scrap	1

53- G1-LHAAP Anomaly Digsheet

00049499

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
53-G1-55	8.3	3316460.9	6957350.9	3 ft.	4"	N	1 lb.	Scrap	1
53-G1-56	21.1	3316447.2	6957363.6	0.0	6"	N	.75 lb.	OE Scrap (Spacer)	1
53-G1-57	52.1	3316458.2	6957372.2	0.0	2"	N	.1 lb.	Scrap	1
53-G1-58	31.1	3316469.9	6957366.0	1 ft.	2"	N	.1 lb.	Scrap	1
53-G1-59	16.2	3316484.7	6957353.6	1 ft.	3"	N	.1 lb.	Scrap	1
53-G1-60	7.5	3316488.5	6957345.2	2 ft.	2"	N	.1 lb.	OE Scrap	1
53-G1-61	47.2	3316492.3	6957353.6	2 ft.	1"	N	.1 lb.	OE Scrap	1
53-G1-62	10.8	3316497.5	6957353.9	3 ft.	4"	N	.1 lb.	Scrap	1
53-G1-63	21.7	3316502.9	6957362.2	3 ft.	8"	N	.25 lb.	Scrap	1
53-G1-64	40.9	3316498.3	6957366.6	2.5 ft.	4"	N	1 lb.	OE Scrap (Spacer)	1
53-G1-65	38.5	3316497.7	6957377.7	40"	6"	N	.1 lb.	Scrap Aluminum	1
53-G1-66	54.5	3316482.6	6957370.6	5 ft.	4"	N	3 lbs.	Scrap (1" Pipe)	1
53-G1-67	37.8	3316474.2	6957374.1	0.0	4"	N	1.5 lbs.	OE Scrap	1
53-G1-68	22.0	3316476.6	6957382.2	0.0	6"	N	.75 lb.	Hot Rock	1
53-G1-69	53.3	3316452.6	6957378.2	6"	6"	N	.1 lb.	Scrap	1
53-G1-70	53.6	3316452.8	6957386.8	0.0	4"	N	.5 lb.	Wire	1
53-G1-71	25.6	3316448.8	6957392.3	10"	4"	N	.1 lb.	Screw	1
53-G1-72	65.2	3316454.2	6957402.8	1.5 ft.	6"	N	.25 lb.	Scrap (Aluminum Can)	1
53-G1-73	10.8	3316461.8	6957413.9	1 ft.	10"	N	.1 lb.	Scrap	1
53-G1-74	36.4	3316482.3	6957412.5	1 ft.	4"	N	10 lbs.	Iron Caster	1
53-G1-75	280.4	3316494.2	6957410.6	2 ft.	6"	N	.1 lb.	Scrap	1
53-G1-76	47.3	3316498.3	6957425.2	3 ft.	6"	N	.1 lb.	Scrap	1
53-G1-77	10.4	3316507.5	6957404.4	6"	6"	N	.1 lb.	Scrap	1
53-G1-78	31.3	3316502.3	6957402.0	0.0	12"	N	.1 lb.	Scrap	1
53-G1-79	41.6	3316502.9	6957388.5	3 ft.	1"	N	.1 lb.	Scrap	1
53-G1-80	6.7	3316515.0	6957400.9	5 ft.	2"	N	.1 lb.	Hot Rock	1
53-G1-81	8.3	3316518.8	6957397.1	6"	6"	N	.1 lb	Scrap	1
							NOTE:	Site 53 Grid 1 failed Quality Control inspection for Geophysical	
								Survey requirements. In order to correct this discrepancy the	
								SUXOS and QC agreed to conduct a 100% QC using teams 1	
								& 3 to accomplish this task. The following targets were not	
								identified as part of the Geophysical Survey, but were located	
								by hand held equipment utilized by Cape personnel.	
								Team 1 started at the West side of the grid moving East and	
								Team 3 started at the East side of the grid moving West.	
		Team 1							
G1-1					0	N	.25 lb.	Scrap	1
G1-2					1"	N	1 lb.	OE Scrap	1
G1-3					1"	N	1 lb.	OE Scrap	1
G1-4					1"	N	.25 lb.	Scrap	1
G1-5					2"	N	.25 lb.	Scrap	1
G1-6					1"	N	.25 lb.	Scrap	1
G1-7					2"	N	.25 lb.	Scrap	1
G1-8					1"	N	.25 lb.	Scrap	1
G1-9					1"	N	1 lb.	OE Scrap	1
G1-10					2"	N	.5 lb.	Scrap	1
G1-11					1"	N	.5 lb.	Scrap	1
G1-12					2"	N	.5 lb.	Scrap	1

53- G1-LHAAP Anomaly Digsheet

00049500

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G1-13					2"	N	.5 lb.	Scrap	1
G1-14					2"	N	.25 lb.	Scrap	1
G1-15					3"	N	.25 lb.	Scrap	1
G1-16					2"	N	.25 lb.	Scrap	1
G1-17					3"	N	1 lb.	OE Scrap	1
G1-18					2"	N	1 lb.	OE Scrap	1
G1-19					2"	N	.25 lb.	Scrap	1
G1-20					1"	N	.25 lb.	Scrap	1
G1-21					2"	N	.25 lb.	Scrap	1
G1-22					2"	N	.25 lb.	Scrap	1
G1-23					1"	N	.25 lb.	OE Scrap	1
G1-24					1"	N	.25 lb.	OE Scrap	1
G1-25					1"	N	.25 lb.	OE Scrap	1
G1-26					1"	N	.25 lb.	Scrap	1
G1-27					2"	N	.25 lb.	Scrap	1
G1-28					1"	N	.25 lb.	Scrap	1
G1-29					2"	N	1 lb.	OE Scrap	1
G1-30					1"	N	.25 lb.	Scrap	1
G1-31					1"	N	.25 lb.	Scrap	1
G1-32					2"	N	.25 lb.	Scrap	1
G1-33					1"	N	.25 lb.	Scrap	1
G1-34					2"	N	.25 lb.	Scrap	1
G1-35					1"	N	.25 lb.	Scrap	1
G1-36					1"	N	.25 lb.	Scrap	1
G1-37					2"	N	1 lb.	OE Scrap	1
G1-38					1"	N	.25 lb.	Scrap	1
G1-39					1"	N	.25 lb.	Scrap	1
G1-40					3"	N	.25 lb.	Scrap	1
G1-41					4"	N	.25 lb.	Scrap	1
G1-42					2"	N	1 lb.	OE Scrap	1
G1-43					3"	N	1 lb.	OE Scrap	1
G1-44					1"	N	.25 lb.	Scrap	1
G1-45					2"	N	.25 lb.	Scrap	1
G1-46					1"	N	.25 lb.	Scrap	1
G1-47					2"	N	1 lb.	OE Scrap	1
G1-48					1"	N	.25 lb.	Scrap	1
G1-49					2"	N	1 lb.	OE Scrap	1
G1-50					1"	N	.25 lb.	Scrap	1
G1-51					3"	N	.25 lb.	Scrap	1
G1-52					3"	N	.25 lb.	Scrap	1
G1-53					4"	N	1 lb.	Scrap	1
G1-54					6"	N	2 lbs.	Scrap	1
G1-55					2"	N	.25 lb.	Scrap	1
G1-56					3"	N	1 lb.	OE Scrap	1
G1-57					2"	N	.25 lb.	Scrap	1
G1-58					4"	N	1 lb.	Scrap	1
G1-59					3"	N	.25 lb.	Scrap	1
G1-60					2"	N	.25 lb.	Scrap	1
G1-61					2"	N	1 lb.	Scrap	1
G1-62					3"	N	.5 lb.	Scrap	1
G1-63					1"	N	.25 lb.	Scrap	1
G1-64					6"	N	.25 lb.	Scrap	1
G1-65					2"	N	.25 lb.	Scrap	1

53- G1-LHAAP Anomaly Digsheet

00049501

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G1-66					1"	N	1 lb.	OE Scrap	1
G1-67					2"	N	1 lb.	OE Scrap	1
G1-68					1"	N	.25 lb.	Scrap	1
G1-69					1"	N	1 lb.	OE Scrap	1
G1-70					2"	N	1 lb.	OE Scrap	1
G1-71					3"	N	.5 lb.	Scrap	1
G1-72					1"	N	1 lb.	OE Scrap	1
G1-73					2"	N	.25 lb.	OE Scrap	1
G1-74					2"	N	.25 lb.	OE Scrap	1
G1-75					4"	N	1 lb.	OE Scrap	1
G1-76					3"	N	1 lb.	OE Scrap	1
G1-77					2"	N	.25 lb.	Scrap	1
G1-78					3"	N	1 lb.	Scrap	1
G1-79					4"	N	1 lb.	Scrap	1
G1-80					1"	N	1 lb.	OE Scrap	1
G1-81					1"	N	1 lb.	OE Scrap	1
G1-82					6"	N	.25 lb.	Scrap	1
G1-83					4"	N	.5 lb.	Scrap	1
G1-84					3"	N	.5 lb.	Scrap	1
G1-85					5"	N	.25 lb.	Scrap	1
G1-86					6"	N	.25 lb.	Scrap	1
G1-87					1"	N	1 lb.	OE Scrap	1
G1-88					2"	N	1 lb.	OE Scrap	1
G1-89					2"	N	1 lb.	OE Scrap	1
G1-90					2"	N	.25 lb.	Scrap	1
G1-91					3"	N	.25 lb.	Scrap	1
G1-92					2"	N	.25 lb.	Scrap	1
G1-93					3"	N	.5 lb.	Scrap	1
G1-94					4"	N	.25 lb.	Scrap	1
G1-95					2"	N	.25 lb.	Scrap	1
G1-96					1"	N	1 lb.	OE Scrap	1
G1-97					1"	N	.25 lb.	Scrap	1
G1-98					2"	N	.25 lb.	Scrap	1
G1-99					3"	N	.25 lb.	Scrap	1
G1-100					2"	N	.25 lb.	Scrap	1
G1-101					3"	N	.25 lb.	Scrap	1
G1-102					2"	N	.25 lb.	Scrap	1
		Team 3	East moving	West					
G1-103					3"	N	.2 lb.	OE Scrap	1
G1-104					3"	N	.4 lb.	OE Scrap	1
G1-105					2"	N	.2 lb..	OE Scrap	1
G1-106					2"	N	.2 lb..	OE Scrap	1
G1-107					1"	N	.2 lb..	OE Scrap	1
G1-108					2"	N	.2 lb..	OE Scrap	1
G1-109					2"	N	.1 lb..	OE Scrap	1
G1-110					6"	N	.2 lb..	Scrap	1
G1-111					2"	N	.25 lb.	OE Scrap	1
G1-112					2"	N	.25 lb.	OE Scrap	1
G1-113					3"	N	.2 lb..	OE Scrap	1
G1-114					4"	N	.2 lb..	Scrap	1
G1-115					3"	N	.1 lb..	OE Scrap	1

53- G1-LHAAP Anomaly Digsheet

00049502

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G1-116					2"	N	.5 lb.	OE Scrap	1
G1-117					3"	N	.25 lb.	Scrap	1
G1-118					2"	N	.2 lb..	OE Scrap	1
G1-119					3"	N	.1 lb..	Scrap	1
G1-120					3"	N	.25 lb.	OE Scrap	1
G1-121					2"	N	.5 lb.	OE Scrap	1
G1-122					2"	N	.1 lb..	OE Scrap	1
G1-123					2"	N	.1 lb..	Scrap	1
G1-124					3"	N	.2 lb..	OE Scrap	1
G1-125					4"	N	.25 lb.	Scrap	1
G1-126					2"	N	.5 lb.	OE Scrap	1
G1-127					2"	N	.5 lb.	OE Scrap	1
G1-128					2"	N	.1 lb..	OE Scrap	1
G1-129					2"	N	.1 lb..	OE Scrap	1
G1-130					3"	N	.1 lb..	OE Scrap	1
G1-131					3"	N	.1 lb..	OE Scrap	1
G1-132					2"	N	.25 lb.	OE Scrap	1
G1-133					3"	N	.1 lb..	Scrap	1
G1-134					2"	N	.1 lb..	Scrap	1
G1-135					1"	N	.5 lb.	Scrap	1
G1-136					2"	N	.5 lb.	Scrap	1
G1-137					2"	N	.5 lb.	OE Scrap	1
G1-138					2"	N	.5 lb.	OE Scrap	1
G1-139					2"	N	.25 lb.	Scrap	1
G1-140					2"	N	.5 lb.	OE Scrap	1
G1-141					1"	N	.1 lb..	OE Scrap	1
G1-142					1"	N	.25 lb.	Scrap	1
G1-143					1"	N	.1 lb.	Scrap	1
G1-144					1"	N	.1 lb.	Scrap	1
G1-145					1"	N	.1 lb.	Scrap	1
G1-146					1"	N	.1 lb.	Scrap	1
G1-147					1"	N	.1 lb.	Scrap	1
G1-148					4"	N	.5 lb.	Scrap	1
G1-149					4"	N	.1 lb.	Scrap	1
G1-150					1"	N	.1 lb.	Scrap	1
G1-151					2"	N	.25 lb.	Scrap	1
G1-152					2"	N	.5 lb.	OE Scrap	1
G1-153					4"	N	.1 lb.	OE Scrap	1
G1-154					2"	N	.5 lb.	OE Scrap	1
G1-155					4"	N	.1 lb.	OE Scrap	1
G1-156					3"	N	.2 lb.	Scrap	1
G1-157					2"	N	.1 lb.	Scrap	1
G1-158					4"	N	.1 lb.	Scrap	1
G1-159					5"	N	.75 lb.	Scrap	1
G1-160					2"	N	.2 lb.	Scrap	1
G1-161					4"	N	.25 lb.	Hot Rock	1
G1-162					3"	N	.25 lb.	Scrap	1
G1-163					2"	N	.5 lb.	OE Scrap	1
G1-164					0	N	.1 lb	OE Scrap	1
G1-165					2"	N	.2 lb.	OE Scrap	1
G1-166					4"	N	.5 lb.	Scrap	1
G1-167					3"	N	.25 lb.	Scrap	1
G1-168					4"	N	.5 lb.	Scrap	1

53- G1-LHAAP Anomaly Digsheet

00049503

Grid Stake	X	Y					
SW -1	3316455.3	6957232.3	EOD Team	1	1 & 3	1 & 3	
NW - 2	3316359.2	6957353.0					**Total MEC Scrap 50.6 lbs.**
NE - 3	3316489.7	6957437.2	Date of Exc.	7/19/2006	7/20/2006	7/21/2006	Total Non-Related MEC Scrap 58.45 lbs.
SE - 4	3316585.9	6957315.5					
			Start Time	11:30	7:15	7:15	
			Stop Time	15:45	15:45	12:00	

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G1-169					3"	N	.25 lb.	Scrap	1
G1-170					2"	N	.5 lb.	OE Scrap	1
G1-171					3"	N	.25 lb.	Scrap	1

53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

EOD Team 1

Total MEC Scrap 0

Date of Exc. 7/20/2006 7/21/2006

Total Non-OE Related Scrap 21.75 lbs.

Start Time 12:30 7:00

Stop Time 15:45 10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-1	44.5	3316141.5	6957649.0				NOTE:	Backhoe Assist Steel Scrap QC Verified	
G2-2	45.5	3316143.0	6957643.4						
G2-3	20.1	3316145.9	6957640.9	1 ft.	4"	N	.25 lb.	Wire	1
G2-4	31.7	3316149.7	6957638.5				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-5	11.8	3316159.0	6957629.8						
G2-6	10.3	3316168.7	6957632.5	1 ft.	3"	N	.25 .lb	Wire	1
G2-7	12.3	3316170.9	6957635.0	1 ft.	4"	N	.25 lb.	Wire	1
G2-8	10.9	3316174.0	6957633.4	0.0	6"	N	.25 lb.	Scrap	1
G2-9	8.2	3316176.5	6957631.0	1 ft.	6"	N	.25 lb.	Scrap	1
G2-10	10.6	3316175.3	6957638.0	1 ft.	6"	N	.25 lb.	Wire	1
G2-11	10.7	3316171.2	6957642.0				NOTE;	Backhoe Assist Construction Debris QC Verified	
G2-12	8.2	3316170.0	6957656.0						
G2-13	6.2	3316174.0	6957657.0						
G2-14	27.2	3316174.6	6957652.8						
G2-15	29.8	3316179.9	6957651.9						
G2-16	282.8	3316184.3	6957660.0						
G2-17	46.5	3316191.4	6957667.3	0.0	4"	N	.25 lb.	Nail	1
G2-18	60.4	3316201.6	6957669.0	1 ft.	2"	N		Slag	1
G2-19	141.9	3316202.2	6957663.4	1 ft.	1"	N	1 lb.	Scrap	1
G2-20	103.8	3316204.7	6957655.9	1 ft.	4"	N	1 lb.	Bolts	1
G2-21	44.8	3316206.7	6957650.1				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-22	44.5	3316199.4	6957652.7					Backhoe Assist Construction Debris QC Verified	
G2-23	9.1	3316193.3	6957661.0	1 ft.	4"	N	.25 lb.	Wire	1
G2-24	16.6	3316194.3	6957657.4				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-25	122.3	3316190.0	6957652.9	2 ft.	4"	N	1 lb.	Scrap	1
G2-26	7.2	3316184.4	6957643.0				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-27	111.4	3316191.8	6957645.1						
G2-28	27.9	3316196.0	6957648.5						
G2-29	11.1	3316198.1	6957639.7						
G2-30	25.3	3316207.8	6957643.2						

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53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

EOD Team 1

Total MEC Scrap 0

Total Non-OE Related Scrap 21.75 lbs.

Date of Exc.	7/20/2006	7/21/2006
Start Time	12:30	7:00
Stop Time	15:45	10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-31	206.5	3316209.5	6957631.4						
G2-32	39.3	3316207.1	6957625.2	1 ft.	3"	N	.25 lb.	Scrap	2
G2-33	16.0	3316197.8	6957623.3	1 ft.	1"	N	.5 lb.	Pit of Nails	M
G2-34	8.1	3316195.7	6957616.0	1 ft.	3"	N	1 lb.	RR Spike	1
G2-35	85.5	3316188.7	6957623.8	0.0	2"	N	.25 lb.	Bolts	3
G2-36	40.8	3316187.0	6957618.7	3 ft.	3"	N	.25 lb.	Bolts	3
G2-37	218.9	3316181.2	6957614.1	0.0	0	N		Tie down Point	
G2-38	20.7	3316176.2	6957598.9	0.0	3"	N	.25 lb.	Pit of Nails	M
G2-39	24.3	3316164.3	6957594.5	0.0	1"	N		Pit of Nails	M
G2-40	7.2	3316157.0	6957589.0	0.0	1"	N		Pit of Nails	M
G2-41	24.2	3316162.3	6957589.8	0.0	1"	N	.25 lb.	Nail	1
G2-42	9.2	3316168.0	6957586.8	0.0	4"	N	.25 lb.	Pit of Nails	M
G2-43	119.3	3316214.4	6957611.3	1 ft.	2"	N	2 lbs.	Iron Bar/Scrap	2
G2-44	56.7	3316203.9	6957597.9	0.0	2"	N	4 lbs.	Scrap	2
G2-45	17.1	3316156.9	6957570.3	0.0		N		Pipe	
G2-46	18.5	3316161.6	6957575.2	0.0		N		Pipe	
G2-47	31.2	3316164.9	6957577.1	0.0		N		Pipe	
G2-48	20.1	3316170.4	6957581.5	0.0		N	.25 lb.	Pit of Nails	M
G2-49	116.3	3316176.9	6957585.5	0.0	3"	N	NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-50	989.7	3316180.0	6957588.0	0.0		N	NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-51	30.6	3316186.2	6957593.1	0.0	3"	N	..25 lb.	Pit of Nails	M
G2-52	30.8	3316190.1	6957600.1	2.0	2"	N	1 lb.	Scrap	2
G2-53	25.7	3316197.2	6957604.0	1.0	3"	N	.25 lb.	Pit of Nails	M
G2-54	23.3	3316201.5	6957606.8	0.0	4"	N	.25 lb.	Nails & Pipe	2
G2-55	41.7	3316209.0	6957613.1	1.0	4"	N	.25 lb.	Scrap	2
G2-56	221.0	3316227.0	6957554.1	1.0	1"	N		Deadman Tie Down	
G2-57	11.9	3316223.0	6957565.5	1.0	2"	N	.25 lb.	Nails & Scrap	2
G2-58	45.4	3316203.6	6957563.4	0.0	1"	N	2 lbs.	Rebar	1
G2-59	57.8	3316187.4	6957541.6	0.0	1"	N	2 lbs.	Rebar	1
G2-60	35.0	3316223.2	6957545.3	0.0	2"	N	.25 lb.	Scrap	1

53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

EOD Team 1

Total MEC Scrap 0

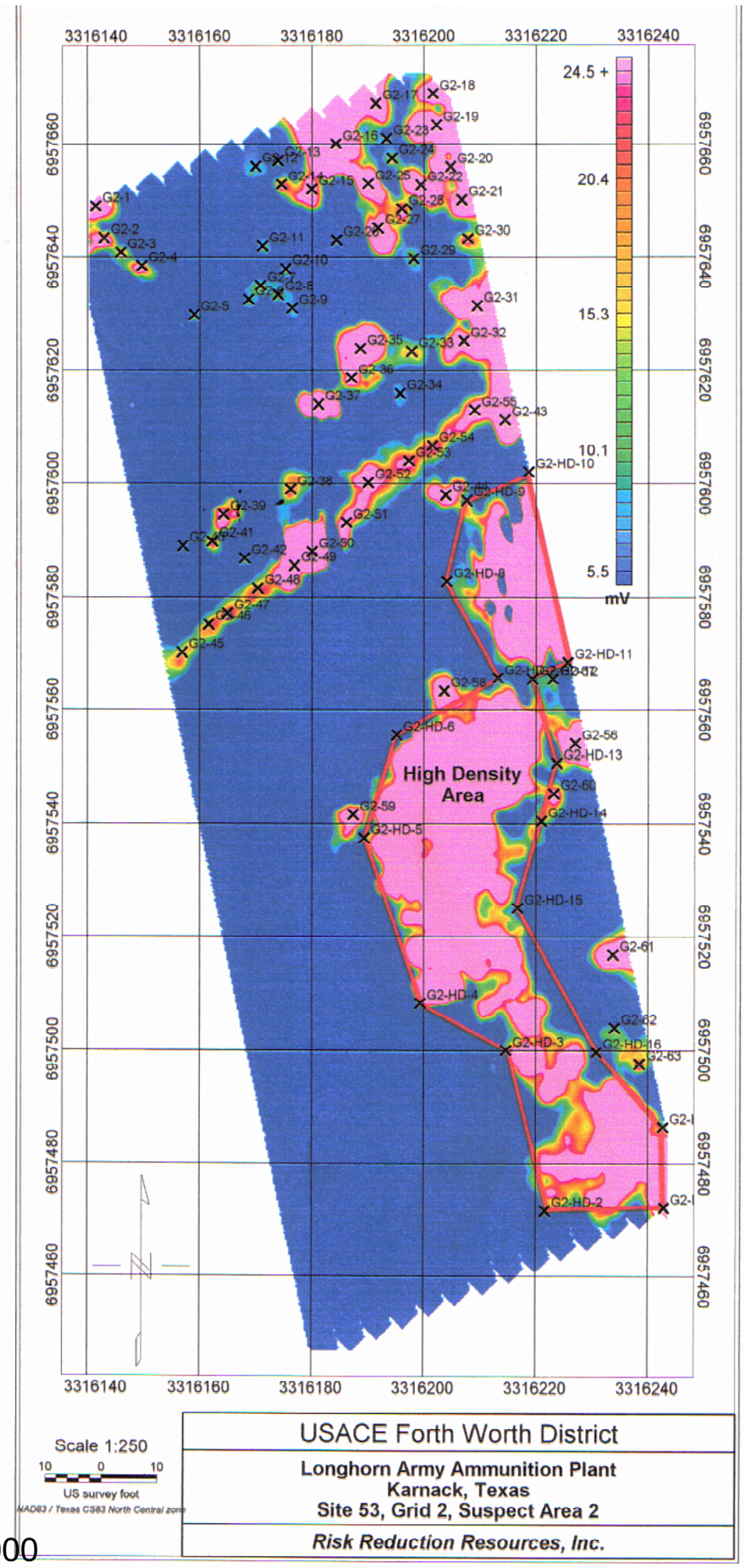
Date of Exc. 7/20/2006 7/21/2006

Total Non-OE Related Scrap 21.75 lbs.

Start Time 12:30 7:00

Stop Time 15:45 10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-61	50.6	3316233.7	6957516.8	1.0	3"	N	.25 lb.	Wire	1
G2-62	15.8	3316234.0	6957504.0	1.0	1"	N	.5 lb.	Scrap	1
G2-63	25.5	3316238.5	6957497.6	4.0	6"	N	.25 lb.	Wire	1
G2-HD-1	*	3316242.9	6957472.3				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-HD-2	*	3316221.6	6957471.8						
G2-HD-3	*	3316214.6	6957500.0						
G2-HD-4	*	3316199.4	6957508.3						
G2-HD-5	*	3316189.3	6957537.4						
G2-HD-6	*	3316195.1	6957555.5						
G2-HD-7	*	3316213.2	6957565.7						
G2-HD-8	*	3316204.1	6957582.7						
G2-HD-9	*	3316207.6	6957596.9						
G2-HD-10	*	3316218.7	6957602.0						
G2-HD-11	*	3316225.7	6957568.5						
G2-HD-12	*	3316219.4	6957565.5						
G2-HD-13	*	3316223.8	6957550.6				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-HD-14	*	3316220.9	6957540.4						
G2-HD-15	*	3316216.7	6957525.0						
G2-HD-16	*	3316230.8	6957499.7						
G2-HD-17	*	3316242.7	6957486.3						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24.5 +
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mV
High Density Area
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G2-HD-10
G2-HD-11
G2-HD-13
G2-HD-14
G2-HD-15
G2-HD-16
Scale 1:250
10 0 10
US survey foot
NAD83 / Texas CS83 North Central zone
USACE Forth Worth District
Longhorn Army Ammunition Plant
Karnack, Texas
Site 53, Grid 2, Suspect Area 2
Risk Reduction Resources, Inc.

00049507

53- G3-LHAAP Anomaly Digsheet 00049508

Grid Stake	X	Y
SW -1	3315661.6	6957220.2
NW - 2	3315659.7	6957273.0
NE - 3	3315784.6	6957269.8
SE - 4	3315786.7	6957216.2

EOD Team 1

Date of Excavation 7/19/2006

Start Time 7:30

Stop Time 10:45

Total MEC Scrap 0

Total Non MEC Related Scrap 27.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
53-G3-1	17.3	3315773.9	6957269.3	0.0	6"	N	3 lbs.	Large Iron Plate	
53-G3-2	5.5	3315771.1	6957264.7	0.0	6"	N	1 lb.	Large Iron Plate	
53-G3-3	6.2	3315770.6	6957262.3	0.0	6"	N	1 lb.	Large Iron Plate	
53-G3-4	6.6	3315761.0	6957244.9	3 ft.	3"	N	.25 lb.	Scrap	2
53-G3-5	11.1	3315775.1	6957237.1	1 ft.	2"	N	.25 lb.	Scrap	2
53-G3-6	5.9	3315785.9	6957221.5	1 ft.	1"	N	.25 lb.	Scrap	1
53-G3-7	14.5	3315781.7	6957216.2	3 ft.	2"	N	.25 lb.	Scrap	1
53-G3-8	14.2	3315778.2	6957216.3	2 ft.	2"	N	.25 lb.	Scrap	1
53-G3-9	21.4	3315771.0	6957216.5	5 ft.	0"	N		Cement Slab	
53-G3-10	20.3	3315768.3	6957222.3	0.0	2"	N	.25 lb.	Scrap	1
53-G3-11	21.5	3315765.7	6957227.1	0.0	2"	N	.25 lb.	Scrap	1
53-G3-12	66.7	3315754.4	6957223.6	0.0	2"	N	.25 lb.	Scrap	1
53-G3-13	690.2	3315758.6	6957218.0	2 ft.	0"	N		Manhole Cover	
53-G3-14	78.6	3315747.4	6957218.3	1 ft.	2"	N	.25 lb.	Scrap	1
53-G3-15	9.9	3315747.5	6957226.2	0.0	2"	N	.25 lb.	Scarp	1
53-G3-16	10.5	3315740.3	6957226.9	0.0	2"	N	.25 lb.	Scrap	1
53-G3-17	10.4	3315738.7	6957230.9	1 ft.	2"	N	.25 lb.	Scrap	1
53-G3-18	8.7	3315743.1	6957233.1	1 ft.	1"	N	.25 lb.	Wire	1
53-G3-19	5.5	3315753.9	6957227.8	0.0	2"	N	.25 lb.	Scrap	1
53-G3-20	5.6	3315753.3	6957239.5	0.0	12"	N		Scrap in hole	1
53-G3-21	6.4	3315722.9	6957235.9	2 ft.	2"	N	.25 lb.	Nail	1
53-G3-22	4.2	3315709.2	6957237.6	0.0	2"	N	.25 lb.	Scrap	1
53-G3-23	8.0	3315712.5	6957231.5	2 ft.	2"	N	.25 lb.	Scrap	1
53-G3-24	42.3	3315707.5	6957223.4	0.0	1"	N	1 lbs.	Scrap	1
53-G3-25	16.4	3315697.1	6957223.6	1 ft.	0"	N	.25 lb.	Scrap	2

53- G3-LHAAP Anomaly Digsheet

00049509

Grid Stake	X	Y
SW -1	3315661.6	6957220.2
NW - 2	3315659.7	6957273.0
NE - 3	3315784.6	6957269.8
SE - 4	3315786.7	6957216.2

EOD Team 1

Total MEC Scrap 0

Total Non MEC Related Scrap 27.5 lbs.

Date of Excavation 7/19/2006

Start Time 7:30

Stop Time 10:45

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
53-G3-26	11.8	3315695.6	6957219.2	1 ft.	2"	N	.25 lb. Scrap	
53-G3-27	5.5	3315690.9	6957227.2	1 ft.	1"	N	.25 lb. Screw	1
53-G3-28	5.9	3315686.3	6957227.3	1 ft.	1"	N	.25 lb. Scrap	
53-G3-29	5.2	3315683.2	6957231.7	0.0	1"	N	.25 lb. Scrap	
53-G3-30	12.6	3315681.2	6957224.9	1 ft.	1"	N	.25 lb. Scrap	
53-G3-31	58.0	3315681.3	6957218.4	1 ft.	2"	N	.25 lb. Scrap	2
53-G3-32	59.1	3315676.8	6957220.6	0.0	2"	N	.25 lb. Nails	1
53-G3-33	144.7	3315670.8	6957224.0	2 ft.	0	N	3 lbs. Pipe	1
53-G3-34	115.1	3315663.3	6957224.9	5 ft.	0	N	5 lbs. Water Pipe	1
53-G3-35	89.8	3315665.0	6957231.3	2 ft.	0	N	5 lbs. Conduit	1
53-G3-36	5.2	3315675.6	6957232.8	0.0	1"	N	.25 lb. Scrap	1
53-G3-37	32.7	3315661.3	6957240.8	1 ft.	1"	N	.25 lb. Scrap	1
53-G3-38	5.8	3315664.3	6957253.0	0.0	6"	N	.5 lb. Scrap	1
53-G3-39	4.9	3315670.7	6957255.4	0.0	3"	N	.25 lb. Scrap	2
53-G3-40	1.6	3315690.5	6957247.0	1 ft.	2"	N	.25 lb. Scrap	1
53-G3-41	7.4	3315698.8	6957247.1	1 ft.	3"	N	.25 lb. Scrap	1
53-G3-42	10.6	3315682.6	6957257.3	0.0	10"	N	.25 lb. Scrap	2
53-G3-43	152.9	3315681.5	6957271.3	1 ft.	4"	N	.25 lb. Nails & Welding Rod	

53- G4-LHAAP Anomaly Digsheet

00049510

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Total MEC Scrap 1.5 lbs.

Date of Excavation 7/19/2006

Total Non-related MEC Scrap 29.6 lbs.

Start Time 6:50

Stop Time 12:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-1	39.3	3315055.2	6957015.3	0.0	1'	N	.1 lb.	OE Scrap	1
G4-2	51.9	3315057.4	6957011.1	1.5 ft.	2"	N	.1 lb.	OE Scrap	1
G4-3	6.4	3315040.1	6956996.4	1.5 ft.	2"	N	.1 lb.	OE Scrap	1
G4-4	40.9	3315038.5	6956977.5	1 ft.	1"	N	1 lb.	Angle Iron	1
G4-5	19.9	3315038.1	6956970.4	1 ft.	3"	N	.1 lb.	Nail	1
G4-6	20.1	3315035.1	6956960.3	1 ft.	3"	N	.2 lb.	OE Scrap	1
G4-7	153.7	3315016.6	6956951.7	1 ft.	1"	N	.1 lb.	Scrap	1
G4-8	15.5	3315009.7	6956949.4	1 ft.	2"	N	.1 lb.	Scrap	1
G4-9	6.0	3315029.9	6956952.0	6"	3"	N	.1 lb.	Scrap	1
G4-10	6.3	3315032.2	6956953.2	6"	2"	N	.1 lb.	Nails	1
G4-11	106.0	3315035.6	6956945.1	0.0	4"	N	2 lbs.	Rebar	1
G4-12	7.2	3315048.8	6956944.1	1 ft.	4"	N	.1 lb.	Nail	1
G4-13	22.6	3315052.2	6956950.1	4"	8"	N	1 lb.	Rebar	1
G4-14	46.2	3315044.4	6956955.9	3"	6"	N	1 lb.	Scrap Steel	1
G4-15	41.9	3315053.6	6956955.2	6"	12"	N	.5 lb.	Scrap Metal	1
G4-16	15.3	3315051.1	6956960.5	5"	4"	N	.1 lb.	Nails	1
G4-17	21.3	3315056.1	6956960.2	1"	3"	N	.1 lb.	Nails	1
G4-18	7.5	3315054.7	6956969.9	1 ft.	4"	N	.1 lb.	Wire	1
G4-19	7.2	3315059.1	6956966.7	1"	4"	N	.1 lb.	Nail	1
G4-20	6.7	3315070.3	6956961.5	2 ft.	3"	N	.1 lb.	Steel Pin	1
G4-21	7.0	3315070.2	6956964.7	2"	2"	N	.1 lb.	Nail	1
G4-22	15.8	3315065.7	6956969.8	3"	2"	N	.1 lb.	Steel Rod	1
G4-23	6.1	3315062.2	6956976.7	6"	2"	N	.1 lb.	Nail	1
G4-24	5.9	3315065.2	6956977.4	2"	2"	N	.1 lb.	Nail	1
G4-25	15.0	3315075.2	6956976.5	4"	2"	N	.1 lb.	Nail	1
G4-26	13.2	3315072.5	6956981.0	1"	4"	N	.1 lb.	Nail	1
G4-27	5.9	3315066.6	6956985.6	1"	3"	N	.1 lb.	Nail	1
G4-28	10.7	3315069.7	6956998.8	0.0	3"	N	.5 lb.	Sheet Metal	1
G4-29	6.0	3315092.8	6956987.5	6"	6"	N	.2 lb.	Scrap Steel	1
G4-30	7.8	3315092.2	6956981.6	4"	3"	N	.25 lb.	Scrap Steel	1
G4-31	14.9	3315087.4	6956982.0	3"	6"	N	.25 lb.	Scrap Steel	1
G4-32	15.6	3315108.5	6956971.2	15"	4"	N	1 lb.	Claw Hammer	1
G4-33	221.1	3315091.5	6956967.1	2"	2"	N	2 lbs.	Rebar	1
G4-34	8.7	3315094.2	6956955.9	3"	2"	N	.1 lb.	Nail	1
G4-35	26.6	3315079.4	6956942.2	3 ft.	2"	N	.1 lb.	Scrap Wire	1
G4-36	61.7	3315074.7	6956935.4	3"	1"	N	.25 lb.	Scrap Wire	1
G4-37	11.8	3315079.4	6956930.1	2"	1"	N	.1 lb.	Scrap Wire	1

53- G4-LHAAP Anomaly Digsheet

00049511

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Date of Excavation 7/19/2006

Start Time 6:50

Stop Time 12:00

Total MEC Scrap 1.5 lbs.

Total Non-related MEC Scrap 29.6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-38	33.6	3315051.1	6956930.6	3"	0	N	.1 lb.	Scrap Wire	1
G4-39	8.5	3315038.8	6956932.9	6"	2"	N	.1 lb.	Nail	1
G4-40	26.0	3315042.7	6956923.9	1 ft.	3"	N	.1 lb.	Nail	1
G4-41	57.9	3315053.1	6956918.2	6"	1"	N	.1 lb.	Underground Pipe	1
G4-42	96.4	3315058.5	6956913.0	4"	2"	N	.25 lb.	Underground Pipe	1
G4-43	58.5	3315067.2	6956906.1	6"	24"	N		Conduit with Wire	1
G4-44	93.3	3315073.0	6956906.8	4"	2"	N	.1 lb.	Nail	1
G4-45	114.0	3315073.4	6956912.3	0.0	12"	N		Underground Pipe	1
G4-46	143.7	3315076.4	6956916.8	0.0	12"	N		Underground Pipe	1
G4-47	116.5	3315081.2	6956922.0	0.0	12"	N		Underground Pipe	1
G4-48	331.2	3315085.3	6956926.4	0.0	0	N		Underground Pipe	1
G4-49	225.5	3315086.9	6956936.4	0.0	0	N		Underground Pipe	1
G4-50	197.7	3315094.9	6956938.1	0.0	12"	N		Underground Pipe	1
G4-51	13.6	3315099.3	6956924.4	0.0	0	N	.1 lb.	Nails	1
G4-52	34.3	3315105.0	6956923.0	6"	2"	N	.1 lb.	Scrap	1
G4-53	56.1	3315101.4	6956917.8	1 ft.	1"	N	.1 lb.	Electrical Box	1
G4-54	19.6	3315091.8	6956920.6	1 ft.	8"	N	.1 lb.	Nail	1
G4-55	11.4	3315092.2	6956908.1	4"	6"	N	.1 lb.	Nail	1
G4-56	14.1	3315088.6	6956907.6	1 ft.	3"	N	.1 lb.	Rebar	1
G4-57	15.1	3315090.8	6956902.6	1 ft.	0	N	.1 lb.	Padlock	1
G4-58	10.4	3315107.5	6956913.3	1 ft.	1"	N	.5 lb.	Bolt	1
G4-59	12.0	3315118.2	6956910.1	1.5 ft.	1"	N	.1 lb.	Bolt	1
G4-60	11.5	3315126.1	6956904.2	6 "	2"	N	.1 lb.	Nail	1
G4-61	35.6	3315142.8	6956889.0	3 "	2"	N	5 lbs.	Grounding Rod	1
G4-62	7.3	3315144.2	6956867.3	2"	1"	N	.1 lb.	Nail	1
G4-63	8.2	3315138.0	6956865.4	0.0	2"	N	.1 lb.	Nail	1
G4-64	9.3	3315135.1	6956863.0	4"	2"	N	.1 lb.	Wire	1
G4-65	134.4	3315136.0	6956854.3	0.0	0	N	.1 lb.	Cable	1
G4-66	8.7	3315140.0	6956858.2	1 ft.	3"	N	.1 lb.	Wire	1
G4-67	7.6	3315141.2	6956861.8	6"	2"	N	.1 lb.	Nut	1
G4-68	7.8	3315144.0	6956859.6	3"	2"	N	.1 lb.	Scrap	1
G4-69	6.6	3315150.4	6956855.6	4"	2"	N	.1 lb.	Wire	1
G4-70	724.0	3315147.7	6956850.8	0.0	0	N	.5 lb.	Cable	1
G4-71	29.5	3315143.8	6956845.6	0.0	0	N	.5 lb.	OE Scrap	1
G4-72	34.2	3315153.6	6956848.0	0.0	0	N	.25 lb.	OE Scrap & Scrap	1
G4-73	11.1	3315158.0	6956849.2	0.0	0	N	.25 lb.	OE Scrap & Scrap	1
G4-74	392.2	3315166.7	6956832.4	1 ft.	12"	N		Utility Pole anchor	

00049512

53- G4-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Date of Excavation 7/19/2006

Start Time 6:50

Stop Time 12:00

Total MEC Scrap 1.5 lbs.

Total Non-related MEC Scrap 29.6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-75	77.3	3315171.9	6956835.0	1 ft.	12"	N		Utility Pole anchor	
G4-76	13.7	3315167.7	6956844.5	6"	12"	N		Grounding Cable For Utility Pole	
G4-77	8.7	3315175.8	6956844.4	0.0	6"	N	.1 lb.	Wire	1
G4-78	26.2	3315168.5	6956850.5	0.0	6"	N	.1 lb.	Nail	1
G4-79	5.6	3315157.3	6956861.8	3"	3"	N	.5 lb.	Wire	1
G4-80	65.3	3315161.4	6956865.9	1 ft.	12"	N		Hot Rock Layer	
G4-81	95.9	3315161.2	6956869.3	6"	3"	N	1 lb.	Non OE related scrap	1
G4-82	19.2	3315157.7	6956874.2	2"	8"	N	1 lb.	Rebar	1
G4-83	15.6	3315164.3	6956876.7	6"	8"9	N	.25 lb.	Scrap	1
G4-84	29.4	3315169.8	6956867.4	o	2"	N	.25 lb.	Scrap	1
G4-85	10.6	3315177.5	6956865.5	6"	6"	N	.1 lb.	Scrap	1
G4-86	85.3	3315188.8	6956901.7	4"	2"	N	1 lb.	Rebar	1
G4-87	111.0	3315199.1	6956909.4	4"	3"	N	.1 lb.	Scrap	1
G4-88	166.1	3315186.4	6956911.8	0.0	3"	N	.25 lb.	Wire	1
G4-89	136.1	3315184.1	6956918.5	1 ft.	0	N	1 lb.	Scrap pipe fittings	1
G4-90	236.8	3315173.8	6956920.2	1.5 ft.	2"	N	.25 lb.	Scrap, Conduit & Nails	1
G4-91	116.2	3315169.0	6956924.4	0.0	0	N	.1 lb.	Wire	1
G4-92	44.6	3315169.8	6956930.0	2"	8"	N		Hot Rock Layer	
G4-93	91.1	3315162.2	6956929.3	1 ft.	1"	N	.1 lb.	Wire	1
G4-94	8.0	3315161.1	6956936.8	6"	3"	N	.1 lb.	Nails	1
G4-95	12.3	3315153.4	6956942.1	4"	4"	N	.1 lb.	Nails	1
G4-96	13.1	3315150.6	6956937.8	2"	6"	N	.25 lb.	Scrap	1
G4-97	8.7	3315149.4	6956941.9	1 ft.	6"	N	.25 lb.	Scrap	1
G4-98	88.8	3315144.1	6956933.6	16 "	0	N		Guide wire anchor	
G4-99	110.4	3315136.9	6956939.1	0.0	1"	N		Guide wire anchor	
G4-100	42.6	3315140.1	6956942.7	0.0	1"	N		Guide wire anchor	
G4-101	242.3	3315135.3	6956943.6	0.0	1"	N		Guide wire anchor	
G4-102	27.3	3315137.2	6956955.1	0.0	2"	N	.1 lb.	Wire	1
G4-103	429.3	3315123.5	6956950.7	0.0	6"	N		Pipe	2
G4-104	46.7	3315115.1	6956957.0	0.0	4"	N	.1 lb.	Wire	1
G4-105	279.6	3315113.7	6956946.1	0.0	6"	N	.1 lb.	Wire	1
G4-106	233.1	3315108.4	6956938.2	0.0	0	N	.5 lb.	Conduit	1
G4-107	155.9	3315102.2	6956938.0	0.0	0	N	.5 lb.	Conduit	1

53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

EOD Team 1

Total MEC Scrap 0

Total Non-OE Related Scrap 21.75 lbs.

Date of Exc.	7/20/2006	7/21/2006
Start Time	12:30	7:00
Stop Time	15:45	10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-1	44.5	3316141.5	6957649.0				NOTE:	Backhoe Assist Steel Scrap QC Verified	
G2-2	45.5	3316143.0	6957643.4						
G2-3	20.1	3316145.9	6957640.9	1 ft.	4"	N	.25 lb.	Wire	1
G2-4	31.7	3316149.7	6957638.5				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-5	11.8	3316159.0	6957629.8						
G2-6	10.3	3316168.7	6957632.5	1 ft.	3"	N	.25 .lb	Wire	1
G2-7	12.3	3316170.9	6957635.0	1 ft.	4"	N	.25 lb.	Wire	1
G2-8	10.9	3316174.0	6957633.4	0.0	6"	N	.25 lb.	Scrap	1
G2-9	8.2	3316176.5	6957631.0	1 ft.	6"	N	.25 lb.	Scrap	1
G2-10	10.6	3316175.3	6957638.0	1 ft.	6"	N	.25 lb.	Wire	1
G2-11	10.7	3316171.2	6957642.0				NOTE;	Backhoe Assist Construction Debris QC Verified	
G2-12	8.2	3316170.0	6957656.0						
G2-13	6.2	3316174.0	6957657.0						
G2-14	27.2	3316174.6	6957652.8						
G2-15	29.8	3316179.9	6957651.9						
G2-16	282.8	3316184.3	6957660.0						
G2-17	46.5	3316191.4	6957667.3	0.0	4"	N	.25 lb.	Nail	1
G2-18	60.4	3316201.6	6957669.0	1 ft.	2"	N		Slag	1
G2-19	141.9	3316202.2	6957663.4	1 ft.	1"	N	1 lb.	Scrap	1
G2-20	103.8	3316204.7	6957655.9	1 ft.	4"	N	1 lb.	Bolts	1
G2-21	44.8	3316206.7	6957650.1				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-22	44.5	3316199.4	6957652.7					Backhoe Assist Construction Debris QC Verified	
G2-23	9.1	3316193.3	6957661.0	1 ft.	4"	N	.25 lb.	Wire	1
G2-24	16.6	3316194.3	6957657.4				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-25	122.3	3316190.0	6957652.9	2 ft.	4"	N	1 lb.	Scrap	1
G2-26	7.2	3316184.4	6957643.0				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-27	111.4	3316191.8	6957645.1						
G2-28	27.9	3316196.0	6957648.5						
G2-29	11.1	3316198.1	6957639.7						
G2-30	25.3	3316207.8	6957643.2						

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53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

EOD Team 1

Total MEC Scrap 0

Total Non-OE Related Scrap 21.75 lbs.

Date of Exc.	7/20/2006	7/21/2006
Start Time	12:30	7:00
Stop Time	15:45	10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-31	206.5	3316209.5	6957631.4						
G2-32	39.3	3316207.1	6957625.2	1 ft.	3"	N	.25 lb.	Scrap	2
G2-33	16.0	3316197.8	6957623.3	1 ft.	1"	N	.5 lb.	Pit of Nails	M
G2-34	8.1	3316195.7	6957616.0	1 ft.	3"	N	1 lb.	RR Spike	1
G2-35	85.5	3316188.7	6957623.8	0.0	2"	N	.25 lb.	Bolts	3
G2-36	40.8	3316187.0	6957618.7	3 ft.	3"	N	.25 lb.	Bolts	3
G2-37	218.9	3316181.2	6957614.1	0.0	0	N		Tie down Point	
G2-38	20.7	3316176.2	6957598.9	0.0	3"	N	.25 lb.	Pit of Nails	M
G2-39	24.3	3316164.3	6957594.5	0.0	1"	N		Pit of Nails	M
G2-40	7.2	3316157.0	6957589.0	0.0	1"	N		Pit of Nails	M
G2-41	24.2	3316162.3	6957589.8	0.0	1"	N	.25 lb.	Nail	1
G2-42	9.2	3316168.0	6957586.8	0.0	4"	N	.25 lb.	Pit of Nails	M
G2-43	119.3	3316214.4	6957611.3	1 ft.	2"	N	2 lbs.	Iron Bar/Scrap	2
G2-44	56.7	3316203.9	6957597.9	0.0	2"	N	4 lbs.	Scrap	2
G2-45	17.1	3316156.9	6957570.3	0.0		N		Pipe	
G2-46	18.5	3316161.6	6957575.2	0.0		N		Pipe	
G2-47	31.2	3316164.9	6957577.1	0.0		N		Pipe	
G2-48	20.1	3316170.4	6957581.5	0.0		N	.25 lb.	Pit of Nails	M
G2-49	116.3	3316176.9	6957585.5	0.0	3"	N	NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-50	989.7	3316180.0	6957588.0	0.0		N	NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-51	30.6	3316186.2	6957593.1	0.0	3"	N	..25 lb.	Pit of Nails	M
G2-52	30.8	3316190.1	6957600.1	2.0	2"	N	1 lb.	Scrap	2
G2-53	25.7	3316197.2	6957604.0	1.0	3"	N	.25 lb.	Pit of Nails	M
G2-54	23.3	3316201.5	6957606.8	0.0	4"	N	.25 lb.	Nails & Pipe	2
G2-55	41.7	3316209.0	6957613.1	1.0	4"	N	.25 lb.	Scrap	2
G2-56	221.0	3316227.0	6957554.1	1.0	1"	N		Deadman Tie Down	
G2-57	11.9	3316223.0	6957565.5	1.0	2"	N	.25 lb.	Nails & Scrap	2
G2-58	45.4	3316203.6	6957563.4	0.0	1"	N	2 lbs.	Rebar	1
G2-59	57.8	3316187.4	6957541.6	0.0	1"	N	2 lbs.	Rebar	1
G2-60	35.0	3316223.2	6957545.3	0.0	2"	N	.25 lb.	Scrap	1

53- G2-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3316181.7	6957449.9
NW - 2	3316140.1	6957645.0
NE - 3	3316201.5	6957671.0
SE - 4	3316242.8	6957475.8

Suspect Area 2

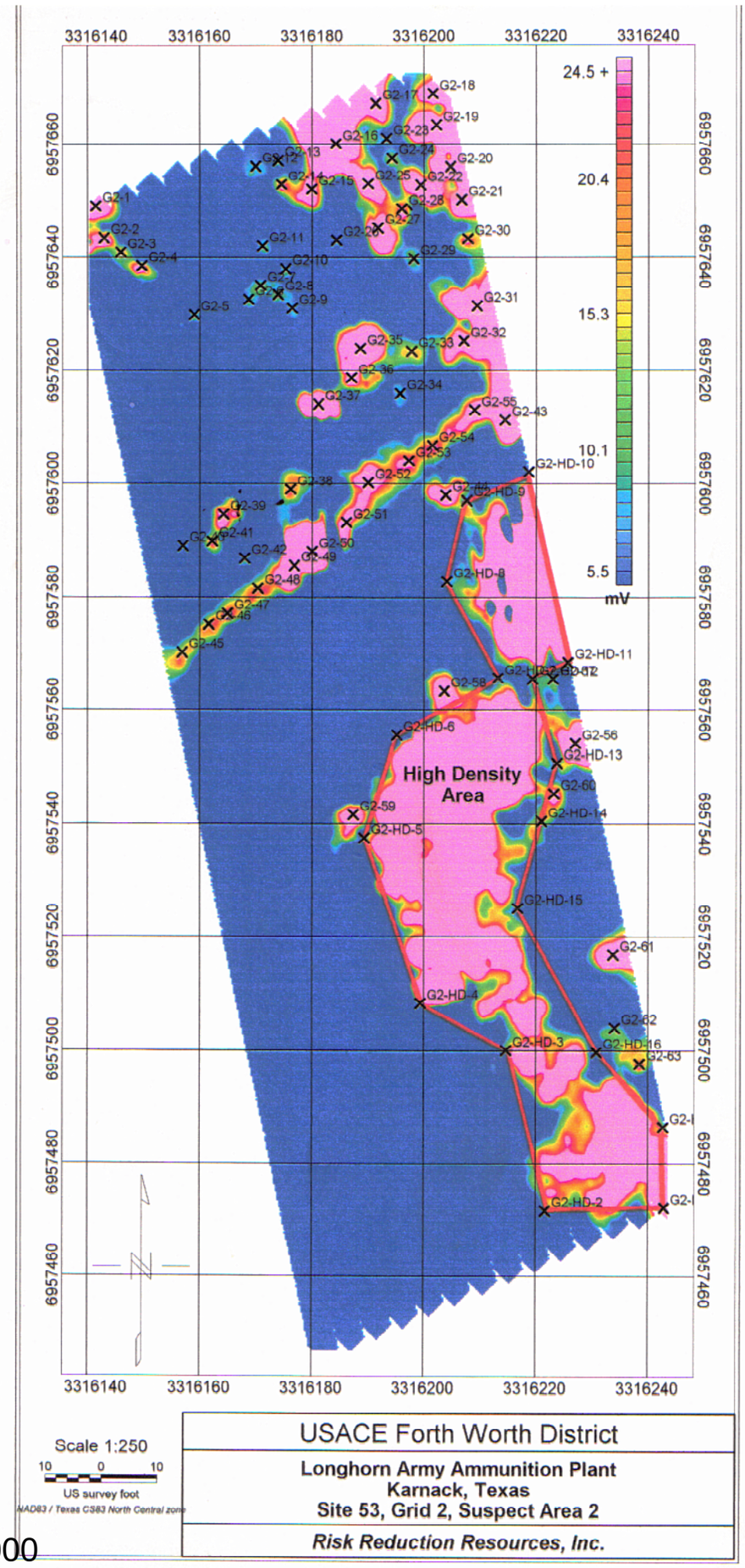
EOD Team 1

Total MEC Scrap 0

Total Non-OE Related Scrap 21.75 lbs.

Date of Exc.	7/20/2006	7/21/2006
Start Time	12:30	7:00
Stop Time	15:45	10:00

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to Item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G2-61	50.6	3316233.7	6957516.8	1.0	3"	N	.25 lb.	Wire	1
G2-62	15.8	3316234.0	6957504.0	1.0	1"	N	.5 lb.	Scrap	1
G2-63	25.5	3316238.5	6957497.6	4.0	6"	N	.25 lb.	Wire	1
G2-HD-1	*	3316242.9	6957472.3				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-HD-2	*	3316221.6	6957471.8						
G2-HD-3	*	3316214.6	6957500.0						
G2-HD-4	*	3316199.4	6957508.3						
G2-HD-5	*	3316189.3	6957537.4						
G2-HD-6	*	3316195.1	6957555.5						
G2-HD-7	*	3316213.2	6957565.7						
G2-HD-8	*	3316204.1	6957582.7						
G2-HD-9	*	3316207.6	6957596.9						
G2-HD-10	*	3316218.7	6957602.0						
G2-HD-11	*	3316225.7	6957568.5						
G2-HD-12	*	3316219.4	6957565.5						
G2-HD-13	*	3316223.8	6957550.6				NOTE:	Backhoe Assist Construction Debris QC Verified	
G2-HD-14	*	3316220.9	6957540.4						
G2-HD-15	*	3316216.7	6957525.0						
G2-HD-16	*	3316230.8	6957499.7						
G2-HD-17	*	3316242.7	6957486.3						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High Density Area
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G2-HD-13
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G2-HD-16
Scale 1:250
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US survey foot
NAD83 / Texas CS83 North Central zone
USACE Forth Worth District
Longhorn Army Ammunition Plant
Karnack, Texas
Site 53, Grid 2, Suspect Area 2
Risk Reduction Resources, Inc.

53- G3-LHAAP Anomaly Digsheet 00049517

Grid Stake	X	Y
SW -1	3315661.6	6957220.2
NW - 2	3315659.7	6957273.0
NE - 3	3315784.6	6957269.8
SE - 4	3315786.7	6957216.2

EOD Team 1

Date of Excavation 7/19/2006

Start Time 7:30

Stop Time 10:45

Total MEC Scrap 0

Total Non MEC Related Scrap 27.5 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
53-G3-1	17.3	3315773.9	6957269.3	0.0	6"	N	3 lbs.	Large Iron Plate	
53-G3-2	5.5	3315771.1	6957264.7	0.0	6"	N	1 lb.	Large Iron Plate	
53-G3-3	6.2	3315770.6	6957262.3	0.0	6"	N	1 lb.	Large Iron Plate	
53-G3-4	6.6	3315761.0	6957244.9	3 ft.	3"	N	.25 lb.	Scrap	2
53-G3-5	11.1	3315775.1	6957237.1	1 ft.	2"	N	.25 lb.	Scrap	2
53-G3-6	5.9	3315785.9	6957221.5	1 ft.	1"	N	.25 lb.	Scrap	1
53-G3-7	14.5	3315781.7	6957216.2	3 ft.	2"	N	.25 lb.	Scrap	1
53-G3-8	14.2	3315778.2	6957216.3	2 ft.	2"	N	.25 lb.	Scrap	1
53-G3-9	21.4	3315771.0	6957216.5	5 ft.	0"	N		Cement Slab	
53-G3-10	20.3	3315768.3	6957222.3	0.0	2"	N	.25 lb.	Scrap	1
53-G3-11	21.5	3315765.7	6957227.1	0.0	2"	N	.25 lb.	Scrap	1
53-G3-12	66.7	3315754.4	6957223.6	0.0	2"	N	.25 lb.	Scrap	1
53-G3-13	690.2	3315758.6	6957218.0	2 ft.	0"	N		Manhole Cover	
53-G3-14	78.6	3315747.4	6957218.3	1 ft.	2"	N	.25 lb.	Scrap	1
53-G3-15	9.9	3315747.5	6957226.2	0.0	2"	N	.25 lb.	Scarp	1
53-G3-16	10.5	3315740.3	6957226.9	0.0	2"	N	.25 lb.	Scrap	1
53-G3-17	10.4	3315738.7	6957230.9	1 ft.	2"	N	.25 lb.	Scrap	1
53-G3-18	8.7	3315743.1	6957233.1	1 ft.	1"	N	.25 lb.	Wire	1
53-G3-19	5.5	3315753.9	6957227.8	0.0	2"	N	.25 lb.	Scrap	1
53-G3-20	5.6	3315753.3	6957239.5	0.0	12"	N		Scrap in hole	1
53-G3-21	6.4	3315722.9	6957235.9	2 ft.	2"	N	.25 lb.	Nail	1
53-G3-22	4.2	3315709.2	6957237.6	0.0	2"	N	.25 lb.	Scrap	1
53-G3-23	8.0	3315712.5	6957231.5	2 ft.	2"	N	.25 lb.	Scrap	1
53-G3-24	42.3	3315707.5	6957223.4	0.0	1"	N	1 lbs.	Scrap	1
53-G3-25	16.4	3315697.1	6957223.6	1 ft.	0"	N	.25 lb.	Scrap	2

53- G3-LHAAP Anomaly Digsheet

00049518

Grid Stake	X	Y
SW -1	3315661.6	6957220.2
NW - 2	3315659.7	6957273.0
NE - 3	3315784.6	6957269.8
SE - 4	3315786.7	6957216.2

EOD Team 1

Total MEC Scrap 0

Total Non MEC Related Scrap 27.5 lbs.

Date of Excavation 7/19/2006

Start Time 7:30

Stop Time 10:45

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment	Digs
53-G3-26	11.8	3315695.6	6957219.2	1 ft.	2"	N	.25 lb. Scrap	
53-G3-27	5.5	3315690.9	6957227.2	1 ft.	1"	N	.25 lb. Screw	1
53-G3-28	5.9	3315686.3	6957227.3	1 ft.	1"	N	.25 lb. Scrap	
53-G3-29	5.2	3315683.2	6957231.7	0.0	1"	N	.25 lb. Scrap	
53-G3-30	12.6	3315681.2	6957224.9	1 ft.	1"	N	.25 lb. Scrap	
53-G3-31	58.0	3315681.3	6957218.4	1 ft.	2"	N	.25 lb. Scrap	2
53-G3-32	59.1	3315676.8	6957220.6	0.0	2"	N	.25 lb. Nails	1
53-G3-33	144.7	3315670.8	6957224.0	2 ft.	0	N	3 lbs. Pipe	1
53-G3-34	115.1	3315663.3	6957224.9	5 ft.	0	N	5 lbs. Water Pipe	1
53-G3-35	89.8	3315665.0	6957231.3	2 ft.	0	N	5 lbs. Conduit	1
53-G3-36	5.2	3315675.6	6957232.8	0.0	1"	N	.25 lb. Scrap	1
53-G3-37	32.7	3315661.3	6957240.8	1 ft.	1"	N	.25 lb. Scrap	1
53-G3-38	5.8	3315664.3	6957253.0	0.0	6"	N	.5 lb. Scrap	1
53-G3-39	4.9	3315670.7	6957255.4	0.0	3"	N	.25 lb. Scrap	2
53-G3-40	1.6	3315690.5	6957247.0	1 ft.	2"	N	.25 lb. Scrap	1
53-G3-41	7.4	3315698.8	6957247.1	1 ft.	3"	N	.25 lb. Scrap	1
53-G3-42	10.6	3315682.6	6957257.3	0.0	10"	N	.25 lb. Scrap	2
53-G3-43	152.9	3315681.5	6957271.3	1 ft.	4"	N	.25 lb. Nails & Welding Rod	

00049519

53- G4-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Date of Excavation 7/19/2006

Start Time 6:50

Stop Time 12:00

Total MEC Scrap 1.5 lbs.

Total Non-related MEC Scrap 29.6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-1	39.3	3315055.2	6957015.3	0.0	1'	N	.1 lb.	OE Scrap	1
G4-2	51.9	3315057.4	6957011.1	1.5 ft.	2"	N	.1 lb.	OE Scrap	1
G4-3	6.4	3315040.1	6956996.4	1.5 ft.	2"	N	.1 lb.	OE Scrap	1
G4-4	40.9	3315038.5	6956977.5	1 ft.	1"	N	1 lb.	Angle Iron	1
G4-5	19.9	3315038.1	6956970.4	1 ft.	3"	N	.1 lb.	Nail	1
G4-6	20.1	3315035.1	6956960.3	1 ft.	3"	N	.2 lb.	OE Scrap	1
G4-7	153.7	3315016.6	6956951.7	1 ft.	1"	N	.1 lb.	Scrap	1
G4-8	15.5	3315009.7	6956949.4	1 ft.	2"	N	.1 lb.	Scrap	1
G4-9	6.0	3315029.9	6956952.0	6"	3"	N	.1 lb.	Scrap	1
G4-10	6.3	3315032.2	6956953.2	6"	2"	N	.1 lb.	Nails	1
G4-11	106.0	3315035.6	6956945.1	0.0	4"	N	2 lbs.	Rebar	1
G4-12	7.2	3315048.8	6956944.1	1 ft.	4"	N	.1 lb.	Nail	1
G4-13	22.6	3315052.2	6956950.1	4"	8"	N	1 lb.	Rebar	1
G4-14	46.2	3315044.4	6956955.9	3"	6"	N	1 lb.	Scrap Steel	1
G4-15	41.9	3315053.6	6956955.2	6"	12"	N	.5 lb.	Scrap Metal	1
G4-16	15.3	3315051.1	6956960.5	5"	4"	N	.1 lb.	Nails	1
G4-17	21.3	3315056.1	6956960.2	1"	3"	N	.1 lb.	Nails	1
G4-18	7.5	3315054.7	6956969.9	1 ft.	4"	N	.1 lb.	Wire	1
G4-19	7.2	3315059.1	6956966.7	1"	4"	N	.1 lb.	Nail	1
G4-20	6.7	3315070.3	6956961.5	2 ft.	3"	N	.1 lb.	Steel Pin	1
G4-21	7.0	3315070.2	6956964.7	2"	2"	N	.1 lb.	Nail	1
G4-22	15.8	3315065.7	6956969.8	3"	2"	N	.1 lb.	Steel Rod	1
G4-23	6.1	3315062.2	6956976.7	6"	2"	N	.1 lb.	Nail	1
G4-24	5.9	3315065.2	6956977.4	2"	2"	N	.1 lb.	Nail	1
G4-25	15.0	3315075.2	6956976.5	4"	2"	N	.1 lb.	Nail	1
G4-26	13.2	3315072.5	6956981.0	1"	4"	N	.1 lb.	Nail	1
G4-27	5.9	3315066.6	6956985.6	1"	3"	N	.1 lb.	Nail	1
G4-28	10.7	3315069.7	6956998.8	0.0	3"	N	.5 lb.	Sheet Metal	1
G4-29	6.0	3315092.8	6956987.5	6"	6"	N	.2 lb.	Scrap Steel	1
G4-30	7.8	3315092.2	6956981.6	4"	3"	N	.25 lb.	Scrap Steel	1
G4-31	14.9	3315087.4	6956982.0	3"	6"	N	.25 lb.	Scrap Steel	1
G4-32	15.6	3315108.5	6956971.2	15"	4"	N	1 lb.	Claw Hammer	1
G4-33	221.1	3315091.5	6956967.1	2"	2"	N	2 lbs.	Rebar	1
G4-34	8.7	3315094.2	6956955.9	3"	2"	N	.1 lb.	Nail	1
G4-35	26.6	3315079.4	6956942.2	3 ft.	2"	N	.1 lb.	Scrap Wire	1
G4-36	61.7	3315074.7	6956935.4	3"	1"	N	.25 lb.	Scrap Wire	1
G4-37	11.8	3315079.4	6956930.1	2"	1"	N	.1 lb.	Scrap Wire	1

53- G4-LHAAP Anomaly Digsheet

00049520

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Date of Excavation 7/19/2006

Start Time 6:50

Stop Time 12:00

Total MEC Scrap 1.5 lbs.

Total Non-related MEC Scrap 29.6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-38	33.6	3315051.1	6956930.6	3"	0	N	.1 lb.	Scrap Wire	1
G4-39	8.5	3315038.8	6956932.9	6"	2"	N	.1 lb.	Nail	1
G4-40	26.0	3315042.7	6956923.9	1 ft.	3"	N	.1 lb.	Nail	1
G4-41	57.9	3315053.1	6956918.2	6"	1"	N	.1 lb.	Underground Pipe	1
G4-42	96.4	3315058.5	6956913.0	4"	2"	N	.25 lb.	Underground Pipe	1
G4-43	58.5	3315067.2	6956906.1	6"	24"	N		Conduit with Wire	1
G4-44	93.3	3315073.0	6956906.8	4"	2"	N	.1 lb.	Nail	1
G4-45	114.0	3315073.4	6956912.3	0.0	12"	N		Underground Pipe	1
G4-46	143.7	3315076.4	6956916.8	0.0	12"	N		Underground Pipe	1
G4-47	116.5	3315081.2	6956922.0	0.0	12"	N		Underground Pipe	1
G4-48	331.2	3315085.3	6956926.4	0.0	0	N		Underground Pipe	1
G4-49	225.5	3315086.9	6956936.4	0.0	0	N		Underground Pipe	1
G4-50	197.7	3315094.9	6956938.1	0.0	12"	N		Underground Pipe	1
G4-51	13.6	3315099.3	6956924.4	0.0	0	N	.1 lb.	Nails	1
G4-52	34.3	3315105.0	6956923.0	6"	2"	N	.1 lb.	Scrap	1
G4-53	56.1	3315101.4	6956917.8	1 ft.	1"	N	.1 lb.	Electrical Box	1
G4-54	19.6	3315091.8	6956920.6	1 ft.	8"	N	.1 lb.	Nail	1
G4-55	11.4	3315092.2	6956908.1	4"	6"	N	.1 lb.	Nail	1
G4-56	14.1	3315088.6	6956907.6	1 ft.	3"	N	.1 lb.	Rebar	1
G4-57	15.1	3315090.8	6956902.6	1 ft.	0	N	.1 lb.	Padlock	1
G4-58	10.4	3315107.5	6956913.3	1 ft.	1"	N	.5 lb.	Bolt	1
G4-59	12.0	3315118.2	6956910.1	1.5 ft.	1"	N	.1 lb.	Bolt	1
G4-60	11.5	3315126.1	6956904.2	6 "	2"	N	.1 lb.	Nail	1
G4-61	35.6	3315142.8	6956889.0	3 "	2"	N	5 lbs.	Grounding Rod	1
G4-62	7.3	3315144.2	6956867.3	2"	1"	N	.1 lb.	Nail	1
G4-63	8.2	3315138.0	6956865.4	0.0	2"	N	.1 lb.	Nail	1
G4-64	9.3	3315135.1	6956863.0	4"	2"	N	.1 lb.	Wire	1
G4-65	134.4	3315136.0	6956854.3	0.0	0	N	.1 lb.	Cable	1
G4-66	8.7	3315140.0	6956858.2	1 ft.	3"	N	.1 lb.	Wire	1
G4-67	7.6	3315141.2	6956861.8	6"	2"	N	.1 lb.	Nut	1
G4-68	7.8	3315144.0	6956859.6	3"	2"	N	.1 lb.	Scrap	1
G4-69	6.6	3315150.4	6956855.6	4"	2"	N	.1 lb.	Wire	1
G4-70	724.0	3315147.7	6956850.8	0.0	0	N	.5 lb.	Cable	1
G4-71	29.5	3315143.8	6956845.6	0.0	0	N	.5 lb.	OE Scrap	1
G4-72	34.2	3315153.6	6956848.0	0.0	0	N	.25 lb.	OE Scrap & Scrap	1
G4-73	11.1	3315158.0	6956849.2	0.0	0	N	.25 lb.	OE Scrap & Scrap	1
G4-74	392.2	3315166.7	6956832.4	1 ft.	12"	N		Utility Pole anchor	

00049521

53- G4-LHAAP Anomaly Digsheet

Grid Stake	X	Y
SW -1	3315167.3	6956829.2
NW - 2	3315007.9	6956950.2
NE - 3	3315056.7	6957014.6
SE - 4	3315217.3	6956895.0

Suspect Area 1

EOD Team 2 & 3

Date of Excavation 7/19/2006

Start Time 6:50

Stop Time 12:00

Total MEC Scrap 1.5 lbs.

Total Non-related MEC Scrap 29.6 lbs.

Target ID	Target Response (mV)	NAD83-Texas CS83 North Central X U.S.Survey Feet	NAD83-Texas CS83 North Central Y U.S.Survey Feet	Target Offset (ft)	Depth to item (in)	OE Item? (Y or N)	Item Description Comment		Digs
G4-75	77.3	3315171.9	6956835.0	1 ft.	12"	N		Utility Pole anchor	
G4-76	13.7	3315167.7	6956844.5	6"	12"	N		Grounding Cable For Utility Pole	
G4-77	8.7	3315175.8	6956844.4	0.0	6"	N	.1 lb.	Wire	1
G4-78	26.2	3315168.5	6956850.5	0.0	6"	N	.1 lb.	Nail	1
G4-79	5.6	3315157.3	6956861.8	3"	3"	N	.5 lb.	Wire	1
G4-80	65.3	3315161.4	6956865.9	1 ft.	12"	N		Hot Rock Layer	
G4-81	95.9	3315161.2	6956869.3	6"	3"	N	1 lb.	Non OE related scrap	1
G4-82	19.2	3315157.7	6956874.2	2"	8"	N	1 lb.	Rebar	1
G4-83	15.6	3315164.3	6956876.7	6"	8"9	N	.25 lb.	Scrap	1
G4-84	29.4	3315169.8	6956867.4	o	2"	N	.25 lb.	Scrap	1
G4-85	10.6	3315177.5	6956865.5	6"	6"	N	.1 lb.	Scrap	1
G4-86	85.3	3315188.8	6956901.7	4"	2"	N	1 lb.	Rebar	1
G4-87	111.0	3315199.1	6956909.4	4"	3"	N	.1 lb.	Scrap	1
G4-88	166.1	3315186.4	6956911.8	0.0	3"	N	.25 lb.	Wire	1
G4-89	136.1	3315184.1	6956918.5	1 ft.	0	N	1 lb.	Scrap pipe fittings	1
G4-90	236.8	3315173.8	6956920.2	1.5 ft.	2"	N	.25 lb.	Scrap, Conduit & Nails	1
G4-91	116.2	3315169.0	6956924.4	0.0	0	N	.1 lb.	Wire	1
G4-92	44.6	3315169.8	6956930.0	2"	8"	N		Hot Rock Layer	
G4-93	91.1	3315162.2	6956929.3	1 ft.	1"	N	.1 lb.	Wire	1
G4-94	8.0	3315161.1	6956936.8	6"	3"	N	.1 lb.	Nails	1
G4-95	12.3	3315153.4	6956942.1	4"	4"	N	.1 lb.	Nails	1
G4-96	13.1	3315150.6	6956937.8	2"	6"	N	.25 lb.	Scrap	1
G4-97	8.7	3315149.4	6956941.9	1 ft.	6"	N	.25 lb.	Scrap	1
G4-98	88.8	3315144.1	6956933.6	16 "	0	N		Guide wire anchor	
G4-99	110.4	3315136.9	6956939.1	0.0	1"	N		Guide wire anchor	
G4-100	42.6	3315140.1	6956942.7	0.0	1"	N		Guide wire anchor	
G4-101	242.3	3315135.3	6956943.6	0.0	1"	N		Guide wire anchor	
G4-102	27.3	3315137.2	6956955.1	0.0	2"	N	.1 lb.	Wire	1
G4-103	429.3	3315123.5	6956950.7	0.0	6"	N		Pipe	2
G4-104	46.7	3315115.1	6956957.0	0.0	4"	N	.1 lb.	Wire	1
G4-105	279.6	3315113.7	6956946.1	0.0	6"	N	.1 lb.	Wire	1
G4-106	233.1	3315108.4	6956938.2	0.0	0	N	.5 lb.	Conduit	1
G4-107	155.9	3315102.2	6956938.0	0.0	0	N	.5 lb.	Conduit	1

LONGHORN ARMY AMMUNITION PLANT,

Karnack, Texas

MONTHLY MANAGERS' MEETING

AGENDA

DATE: Tuesday, 16 October 2007
TIME: 1:00 p.m.
PLACE: Teleconference: Call-in 866-797-9304, Passcode 4155734

Welcome **RMZ**

Review of September 2007 Meeting Minutes and Action Items **RMZ**

EPA
- Steve Tzhone to provide comments on 5-year review report

TCEQ
- Fay Duke to provide comments on LHAAP-59 report
- Dale Vodak to check on use of the demolition landfill

Army/Shaw
- Conduct additional sampling at LHAAP-59 and report results
- Rose to check on O&M Reporting requirements

Programmatic Issues – Ongoing Discussion
Reasonably Anticipated Use, Decision Documents, SIs

Defense Environmental Restoration Program (DERP) PBC Update **DC/PS**
- Document Status/Environmental Sites (Table)
- BERA Status
- Update on Ongoing Field Work
- 5-Year Review RTCs
- Groundwater Treatment Plant

DERP Total Environmental Restoration Contract Update **JE/PS**
- Documents Status/Environmental Sites (Table)
- Fieldwork: Results from two new wells at Site 37
- Results from two additional SPLP samples at Site 59

MMRP **JRL**
- Update

Transfer Update **RMZ**
- ECOP V
- Pits and Hazards Abatement

Shaw® Shaw Environmental, Inc.

Subject: **Draft Final Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: Teleconference

Date of Meeting: **October 16, 2007; 1:00 PM – 3:45 PM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert
Shaw Environmental:	Praveen Srivastav, Dave Cobb, John Elliot, Greg Jones, Van Vangala, Susan Watson, Kay Everett
USEPA Region 6:	Steve Tzhone, Raji Josiam
TCEQ:	Fay Duke
USFWS:	Paul Bruckwicki

Welcome
Rose Zeiler welcomed everyone to the meeting and began reviewing the action items identified from the last meeting.

Action Items from September 2007 Manager's Meeting
EPA

- **Steve Tzhone to provide comments on 5-year review report** – Done

TCEQ

- **Fay Duke to provide comments on LHAAP-59 Report –** Fay will provide comments soon. Further discussion on the site is summarized below.
- **Dale Vodak to check on use of the demolition landfill –** Rose indicated that after discussion with the State, the Army would be able to use the demolition landfill when conducting further demolition work at the site (namely the power plant building across from the fire station).

Army/Shaw

- **Conduct additional sampling at LHAAP-59 and report results-** Sampling completed. Results will be reported soon.

- **Rose Zeiler to check on the requirement for annual O&M reporting with BRAC-** Rose checked into this, but the person responsible has been out of town.

Programmatic Issues—Ongoing Discussion

Reasonably Anticipated Use, Decision Documents, SIs. This issue continues to be discussed for several meetings. The issue is whether or not it is appropriate to close sites out at SI stage after site data are screened according to reasonable anticipated future use of the site. EPA's view is that all the sites at LHAAP should be at Remedial Investigation (RI) stage and can not be closed out at SI stage. After some discussion, EPA indicated that site closure at SI stage is possible if all of the PA information (aerial photos, interviews, etc.) is presented in a document. Praveen Srivastav added that preliminary assessments led to the designation of the sites and, by conducting environmental sampling, the sites are at a more advanced stage than the PA stage. If sampling shows no release, then there should be no need for stepping back to collect PA type data. Rose Zeiler stated that she has sought the opinion of BRAC and AEC. According to BRAC, a 5-year review is required if the screening is done to industrial levels at the SI stage. However, it might be difficult to secure funding without going through RI stage for such sites. Omaha CX believes that closure at SI stage is possible.

John Lambert discussed that risk screening at SI stage is very different from risk assessment under an RI. Risk screening should be considered an SI stage action. Praveen asked for clarification from Fay Duke that if Texas Standard 2 MSCs are used during the SI stage, it should not be construed that a site is at the RI stage and could not be closed out unless it goes through the proposed plan and public participation phase. Fay said the State has no problem with that because all three standards are allowed to be used at any stage. Praveen indicated that the question is for sites with limited data and at the SI stage and not for sites already at the RI stage. Fay indicated that on sites with limited data or no data, the use of Standard 2 MSCs is acceptable.

Steve Tzhone said he sent an email to the stakeholders from EPA lawyers, with EPA Interim BRAC Guidance attached, indicating that Longhorn sites would fall under CERCLA Section 120 (h). Rose disagreed and said that the referenced section pertains to BRAC sites that are being transferred by Federal agencies by deed where federal government was terminating operations. Longhorn is not a BRAC site and will remain under the control of the Federal government. Steve said that the definition of a Fed to Fed transfer was discussed within the document. Rose said to note the descriptions on the first page that emphasized the "applicability" to BRAC installations and noted that in the Appendix F section relating to uncontaminated property, the requirements relate to sites at which the United States Government is terminating federal operations. She said that she is okay with EPA using the ECOP as a mechanism to address the environmental category of the property. Generally, the Army does not have EPA review ECOPs, however, at LHAAP, the USFWS has a Memorandum Of Agreement with EPA to do so. EPA has said in the past that the ECOP would suffice for transfer, and the Army will continue to prepare them.

Steve said that the original question was regarding the determination of what is uncontaminated property. Rose said that was been determined a long time ago. Two EBS were conducted and that EPA reviewed both, however she was unsure whether all of the property was addressed or just environmental sites. Steve was making the distinction regarding all of the acreage at Longhorn, not just the environmental sites and suggested calling

it the uncontaminated acreage. Praveen said that since a RAFU is applicable to Longhorn, the screening done to the industrial level would not determine that a site is uncontaminated, only that it is fit for future industrial use. Fay said that screening to industrial screening levels is acceptable at SI stage if a notification is filed at the county office. Rose said that the Army would consider this as an administrative measure, and not a remedy. She also said that Army itself is not clear on whether or not industrial level screening is appropriate at SI stage. Additional discussion followed, ending with Rose's suggestion to table it and get with legal as necessary.

Applicability of ARARs versus Risk Assessment. Raji Josiam indicated that she has checked with other staff at EPA and has found that, if MCL is exceeded at a site, it has to be met. A risk assessment is independent of applicability of MCL. John Lambert disagreed and said that under CERCLA, ARARs do not kick in unless there is an unacceptable risk at the site in question. The issue was tabled until clarification is obtained from Army's legal.

Defense Environmental Restoration Program (DERP) PBC Update (Dave Cobb/Praveen Srivastav)

Document Status/Environmental Sites (Table). Dave Cobb briefly went over the highlights on the document status/environmental sites table and indicated that the BERA RLS meeting for 10/26/07 was still on schedule. Revisions to the LHAAP-02 report should be completed by middle to the end of next week. LHAAP-60 and -16 were on hold for the final BERA. FS for LHAAP-58 was in review with the regulators. The 5-year review report is awaiting Army/BRAC input. Steve said he wanted to have to get it signed by October 29 at headquarters, if not before. Preferably, the document should get to Steve by the October 25 in order to meet that deadline. Steve said he was more interested in the RTC and an electronic version can be supplied. Fay indicated that the SI Report for LHAAP-49 was with her supervisor.

Update on Field Work. Dave provided a status of field work at Longhorn. Currently the optimization work on the GWTP is ongoing and hopefully the changes will be implemented by the end of November. The plant was down for a month after the gas line had been severed by SWEPCO; Shaw repaired the gas line September 11. There were no problems with the FBR when all systems were brought on line.

Praveen stated that the latest perimeter well sampling results were provided just prior to the beginning of the meeting. Creek sampling results would be available in a few days.

Defense Environmental Restoration Program (DERP) TERC Update (John Elliot/Praveen Srivastav)

Document Status/Environmental Sites (Table). John Elliot discussed the highlights of the Document Status Table for the TERC contract. He indicated that many documents were awaiting finalization of the BERA before proceeding. The ROD for LHAAP-08, -32, -48, -53 is slated to out as one document. Proposed plan for LHAAP-37/67 is pending finalization of BERA. ROD for LHAAP-37/67 is currently scheduled for a November 7 submittal. Remedial design/LUC document expected next year.

Fieldwork: Results from two additional SPLP samples at Site 59 and two new wells at LHAAP-37. John indicated that LHAAP-59 sampling was conducted recently and that data will be presented in a memo. Samples offsetting 59SB01 were collected 5 feet north and 5 feet south of the original location. The north sample failed the MSC for GWP and the south sample passed. Samples were analyzed for SPLP and all passed. It was agreed a memo would be submitted providing this additional data and that it would also address the TCEQ comments to the LHAAP-59 report. This memo will be an attachment to a cover letter and will be formally added to the Admin Record. Other field work included the abandonment of well LHSMW59 at LHAAP-37(35B) and installation of replacement well 35BWW08 and compliance well 35BWW07. John indicated that the data results came back with results for 35BWW08 being comparable to those of the well it replaced (LHSMW59) and no detections in the groundwater at 35BWW07. Rose asked how the data would be provided to the regulators. It was agreed that the field data would be provided to the stakeholders in memo form.

A discussion ensued about the restoration RAO comment on Site 12 and how it might relate to Site 37. Rose said that the regulators have a draft final proposed plan in their review. Fay said usually the RAOs would not be in the PP but would be in the ROD. Praveen pointed out that the proposed plan for LHAAP-37/67 has RAOs restated from the FS. Fay said that she does not usually look for RAOs until the ROD. Fay asked if this is a site we are doing MNA on and Rose concurred.

MMRP Update (John Lambert)

John Lambert indicated that the contract was awarded for the removal action the close of government's fiscal year in September. However, the first phases, including the removal action work plan and explosives safety plan submission will take several months to complete and meet approval. He does not anticipate field work before February 2008.

Transfer Update (Rose M. Zeiler)

ECOP V. Site 12 was addressed in ECOP V. The Army offered Site 12 to USFWS. USFWS was not satisfied with the offer. Paul Bruckwicki indicated that the land use responsibilities set forth in the ECOP were never agreed on by the USFWS. Paul said that the MOA indicated that the USFWS would decide as to which responsibilities it will assume and there has not been an agreement on that subject. Rose noted that the MOA also stated that USFWS would agree to assist the Army by monitoring, maintaining, and enforcing the LUCs that fell within the normal course of refuge management. Paul further indicated that he did not receive a copy of the land use control document prepared by the Army. Rose agreed to provide an electronic copy of the LUC document to Paul. She said that these issues will be addressed at a higher level. At present, the transfer has been put on hold until land use control maintenance responsibilities are agreed upon.

Pits and Hazards Abatement. Additional pits have been identified at LHAAP-29. Army indicated issues with the pits and hazards contractor and the PBC contractor regarding the disposal of contaminated water is being worked out.

Next meeting to be held at the Shaw office in Houston, November 14, 2007 at 2:00 PM.

Meeting Adjourned

Action Items:

Army/Shaw

- Rose Zeiler to check on the requirement for annual O&M reporting with BRAC
- Shaw to provide creek sampling results
- Army to provide responses to regulatory comments on the 5-year review report

LONGHORN ARMY AMMUNITION PLANT
MONTHLY MANAGERS' MEETING

Location	Longhorn Army Ammunition Plant TELEC.		
Date	16-Oct-2007	**Time**	1:00 PM

ATTENDEES

Name (printed)	Signature	Organization	Phone	E-mail
Longhorn Team Members				
Rose M. Zeiler	Phone	BRAC	(479) 635-0110	rose.zeiler@us.army.mil
Jeff Armstrong		USAEC	(410) 436-1516	jeffrey.armstrong@us.army.mil
Cliff Murray	out	USACE, Tulsa	(918) 669-7573	cliff.murray@SWT03.usace.army.mil
John Lambert	Phone	USACE, Tulsa	(918) 669-4956	john.r.lambert@SWT03.usace.army.mil
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Van Vangala		SHAW	(713)996-4459	van.vangala@shawgrp.com
Kay Everett		SHAW	(713)996-4421	kay.everett@shawgrp.com
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Susan Watson		SHAW	713.996.4407	susan.watson@shawgrp.com
Bill Davis				

Technical Document Status Table
TERC Task Order N0. 0109
Longhorn Army Ammunition Plant

Site	Documents in Progress	Draft Document				Draft Final Document									Final
		Draft Submittal Date	Army Comments	Shaw RTC	Comment Resolution	Draft Final Submittal Date	AEC Comments	EPA Comments	TCEQ Comments	Shaw RTC	Army Comments	Comment Resolution	Army forward RTC to TCEQ & EPA	Comment Resolution	Final Submittal Date
08	Proposed Plan, LHAAP-08	05/01/06	05/24/06			07/07/06	08/25/06	08/21/06	09/20/06	09/29/06			11/21/06	TCEQ 12/07/06 EPA 02/21/07	
08	Record of Decision, LHAAP-08	10/26/07													
12	Operating Properly and Successfully Demonstration Report, LHAAP-12	07/25/07	07/27/07	07/31/07	08/02/07	08/02/07	NA	08/27/07	NA	08/29/07	08/29/07	08/29/07	08/29/07	08/31/07	09/07/07
32	Proposed Plan, LHAAP-32					07/21/06	08/25/06	09/05/06	09/12/06	09/19/06			11/21/06	TCEQ 12/07/06 EPA 01/26/07	
32	Record of Decision, LHAAP-32	10/26/07													
37/67	Proposed Plan, LHAAP-37/67	05/02/06	05/24/06	06/06/06	06/22/06	07/18/06	08/25/06	09/05/06	09/20/06	10/19/06	10/31/06	11/07/06	11/21/06	TCEQ 04/27/07 EPA 02/21/07	08/29/07
37/67	Record of Decision, LHAAP-37/67	11/07/07													
37/67	Remedial Design/LUCs, LHAAP-37/67	02/28/08													
48/53	Revised Proposed Plan, LHAAP-48/53	09/25/06	10/31/06	11/14/06	01/12/07	04/09/07	USACHPPM 04/25/07 OC 05/15/07	6/12/07 via USACE	04/27/07	06/27/07	07/12/07 07/13/07	08/16/07	08/27/07	TCEQ_____ EPA 08/27/07	
48/53	Record of Decision, LHAAP-48/53	10/26/07													
59	Site Investigation Report, LHAAP-59	11/02/06	11/07/06	11/09/06	11/15/06	11/21/06	None Required	03/20/07	01/11/2007, 03/20/07, & 03/22/07	04/02/07	RMZ 04/12/07 USACE 04/11/07	04/12/07	04/25/07	TCEQ 06/15/07 EPA 04/30/07	08/02/07
59	Decision Document, LHAAP-59	11/30/07													

Shaw Forecasted Submittal Date | Shaw Action Item | Army Action Item | EPA & TCEQ Action Item | Current Action item

Shaw® Shaw Environmental, Inc.

Status of Technical Documents – 4 week look ahead
Longhorn Army Ammunition Plant – PBC Contract
October 16, 2007

No.	Documents in Progress	Submittal Date	Army	Regulator	Comments Due from USACE/ Regulators	Comment Resolution	Status	On Stakeholder's Portal?	Remarks
	ERA								
	BERA RTCs (revised)	6/28/07		x			Complete	x	Plan is to incorporate these comments and subsequent responses directly into DF document and issue BERA as final. Surface water sampling data will also be included in final.
	BERA interim Deliverables package	8/21/07		x			Complete	x	Supplemental information requested/discussed at Comment resolution meeting.
	Final Step 3 report (Vol I of BERA) – RLS Version	9/18/07		x	10/18/07		RLS under review by regulators	x	
	Final BERA (Vol II of BERA) – RLS Version	9/18/07		x	10/18/07		RLS under review by regulators	x	
	ENVIRONMENTAL								
	Revised Draft Final SI/Evaluation Report, LHAAP-02	10/24/07					In preparation – has already been reviewed by Army		Originally submitted in 3/06, but asked to wait by regulators until BERA more finalized.
	Draft Final Proposed Plan, LHAAP-60	11/9/06					Revised DF in preparation	x	Originally submitted in 7/06, but asked to wait by regulators until BERA more finalized.
	Draft Final Feasibility Study, LHAAP-58	9/20/07		x	10/20/07		Under regulatory review	x	
	Draft Feasibility Study, LHAAP-17	10/29/07					Under final internal review		Draft will be issued to Army with expected BERA results and DF to follow with final BERA results.
	Draft Final Feasibility Study, LHAAP-16	TBD					On hold pending BERA		Decision made to hold DF document until BERA information available.

Shaw® Shaw Environmental, Inc.

Status of Technical Documents – 4 week look ahead
Longhorn Army Ammunition Plant – PBC Contract
October 16, 2007

No.	Documents in Progress	Submittal Date	Army	Regulator	Comments Due from USACE/ Regulators	Comment Resolution	Status	On Stakeholder's Portal?	Remarks
	Revised RTC on DF SI Report for LHAAP-06, 07, -51, -55, -64, -66, -68	8/16/07		x	9/18/07		Complete	x	
	Final SI Report for LHAAP-06, 07, -51, -55, -64, -66, -68 (combined)	10/26/07					In preparation		
	Final SI Report for LHAAP-35/36	11/2/07		x			In preparation – addressing regulatory comments on DF		
	Draft Final LHAAP-16 MNA Evaluation Proposal	TBD		x		EPA comments rec'd 3/28/07, TCEQ has provided verbal comments – no formal written comments rec'd.	Final being revised to reflect recent discussions once open issues resolved.	x	• No formal comments received from TCEQ. • Perchlorate standard for stream still needs to be resolved.
	Draft Final 5 Year Review Report for LHAAP-12, 16, and 18/24 RTCs	10/26/07					In preparation		Final will be dependent upon BRAC legal input.
	Draft Final SI Report for LHAAP-03	9/13/07			10/14/07		Under regulator review	x	Will be incorporated into FINAL SI report for sites -06, -07, -51, -55, -64, -66, -68. Revised version expected to be issued late July 2007.
	Draft Final Site Evaluation Report for LHAAP-49	9/14/07			10/15/07		Under regulator review	x	
	Draft EE/CA for LHAAP-04	10/24/07					In preparation		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

October 29, 2007

Ms. Rose Zeiler
Army / BRAC Site Manager
Longhorn Army Ammunition Plant
Post Office Box 220
Ratcliff, AR 72951

RE: Final Installation-Wide Baseline Ecological Risk Assessment
RLS Version/Volumes I and II
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Ms. Zeiler:

The U.S. Environmental Protection Agency (EPA) has completed review of the redline strikeout (RLS) version of the Final Installation-Wide Baseline Ecological Risk Assessment (BERA) contained in two files transmitted to EPA via email on September 18, 2007. The two files, containing the RLS version of Volumes I and II of the BERA, were prepared based on previous comment resolutions and approved interim deliverables.

Based on our review, we are satisfied with the revisions and approve of the RLS BERA for finalization. Please feel free to contact me at (214) 665-8409 for any questions or additional information.

Sincerely,

Stephen L. Tzhone, RPM
AR/TX Team, Remedial Branch
Superfund Division

cc: Ms. Fay Duke, TCEQ
Mr. Cliff Murray, USACE
Mr. Paul Bruckwicki, FWS

LONGHORN ARMY AMMUNITION PLANT,

Karnack, Texas

MONTHLY MANAGERS' MEETING

AGENDA

DATE: Wednesday, 14 November 2007
TIME: 2:00 p.m.
PLACE: Shaw Office – Houston, Call-in 866-797-9304, Passcode 4155734

Welcome **RMZ**

Review of October 2007 Meeting Minutes and Action Items **RMZ**

Action Items

Army/Shaw

- Rose Zeiler to check on the requirement for annual O&M reporting with BRAC
- Shaw to provide creek sampling results
- Army to provide responses to regulatory comments on the 5-year review report
-

Programmatic Issues – Ongoing Discussion

Defense Environmental Restoration Program (DERP) PBC Update **DC/PS**

- Document Status/Environmental Sites (Table)
- BERA Status
- LHAAP-16 Sampling Results/Path Forward
- LHAAP-49 Comments/Responses
- LHAAP-35/36 Comments/Responses
- LHAAP-18/24 - Groundwater Treatment Plant Operation/Optimization
- 5-Year Review Report Status

DERP Total Environmental Restoration Contract Update **JE/PS**

- Documents Status/Environmental Sites (Table)
- Site 37 Status
- Site 59 Status
- Proposed Plans for Sites 8, 32, 48, 53 – Public Meeting

MMRP **JRL**

- Update

Transfer Update **RMZ**

Shaw® Shaw Environmental, Inc.

Subject: **Draft Final Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: Shaw Environmental, Inc., Houston, Texas

Date of Meeting: November 14, 2007; 2:00 PM – 4:15 PM

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert, Cliff Murray
USAEC	Golden "Bill" Davis (phone)
Shaw Environmental:	Praveen Srivastav, Dave Cobb, Greg Jones, Susan Watson, Kay Everett
USEPA Region 6:	Raji Josiam, Steve Tzhone (phone)
TCEQ:	Dale Vodak, Fay Duke (phone)
USFWS:	Paul Bruckwicki

Welcome
Rose Zeiler welcomed everyone to the meeting and began reviewing the action items identified from the last meeting.

Action Items from September 2007 Manager's Meeting
Army/Shaw

- **Rose Zeiler to check on the requirement for annual O&M reporting with BRAC-** Rose checked into this, and said that she was unable to locate a permit, but that the landfill (LHAAP-12) was initially under RCRA closure. Now, however, CERCLA requirements would take precedence, with RCRA requirements as ARARs. As part of the Remedial Design, the Army will conduct annual inspections. These reports will be rolled up into the 5-year review reports. Fay Duke indicated she receives annual reports for her other sites. Rose requested Fay to provide a reference for the annual reporting requirement. Fay said that she will check on the reference. The Army will attempt to locate the permit, if one exists.

- **Shaw to provide creek sampling results –** The results were provided via e-mail.

- **Army to provide responses to regulatory comments on the 5-year review report –** Rose indicated a letter from BRAC legal was forwarded to Steve Tzhone, EPA, earlier today. Rose asked Raji Josiam if she can provide an example of Explanation of Significant Difference (ESD). Raji replied that she will look for one.

Programmatic Issues—Ongoing Discussion

Reasonably Anticipated Use, Decision Documents, SIs. Army agrees with the State in the use of RRR Std 2 at SI level - using MSCs as screening levels. Army also agrees with comments from Fay Duke, TCEQ, regarding the state's requirement that a notification be filed at the county office. Although a "deed" recordation for property transfer is not applicable at Longhorn since the transfer is from one federal agency to another and the notification is not considered a remedy (or land use control), the documentation is still relevant.

The National Priorities List (NPL) footprint determination (and the definition of uncontaminated property of Longhorn acreage) will be discussed in a teleconference between the Army and EPA on Monday, November 11, 2007. Steve Tzhone, EPA, is in Washington, D.C. and will participate along with Seth Lowe of EPA HQ. LHAAP-BRAC, USACE, and AEC (Mike Kelly) will participate from the Army.

Defense Environmental Restoration Program (DERP) PBC Update (Dave Cobb/Praveen Srivastav)

Document Status/Environmental Sites (Table). Dave Cobb briefly went over the highlights on the document status/environmental sites table and indicated that the Final BERA document is expected to be shipped early the following week. The Draft Final Revision 1 LHAAP-02 is in Army's review. Applicable text from the results of the BERA has been provided. The text will be inserted in documents that have been complete but on hold, awaiting the results of the BERA. Fay Duke indicated that she will be sending an email comments letter for the LHAAP-35A(58) FS and for LHAAP-60 regarding groundwater deferment comments.

Steve Tzhone joined in by telephone briefly from Washington D.C. Steve relayed to the group that Scott Harris was on leave and that before he left, he sent his comments on LHAAP-35A(58) FS to Fay. Discussions regarding long-term maintenance, definition of uncontaminated property transfers, solid and hazardous storage, and other items are on the table. A teleconference for next week has been set up with, among others, George Malone, Steve Tzhone, Mike Kelly, John Lambert, and Rose Zeiler. Steve left the meeting after about 15 minutes.

Dave Cobb continued summarizing the document status table. He indicated that the FS for LHAAP-17 has a few more items to address before it will be available to the regulators and that FS for LHAAP-16 is in preparation and Praveen will discuss the site later in more detail. Raji informed the group that Scott Harris, EPA, was reviewing the Site Evaluation Report for LHAAP-35/36. Fay indicated that she did not have any comments on it yet. The response to comments for the 5-year review report has been submitted to EPA.

A handout showing recent groundwater analytical data for LHAAP-16 was provided by Praveen Srivastav. Praveen indicated that MNA as a remedy will probably not go any further because TCE and perchlorate concentrations in well 16WW40, installed by the creek, exceed compliance values. Praveen said that additional internal discussions are taking place regarding the next step and that an FS is in progress. Rose asked about shutting the system off at the site in order to further evaluation MNA at LHAAP-16. Fay disagreed because the data indicated that contamination enters the surface water and the next question was whether contamination has migrated under the creek. She said that the system should remain on. Rose reminded everyone that the system was put in as a treatability study originally and that there is no decision document.

Shaw indicated that based on extraction information kept on the system, the wells at LHAAP-16 are low yielding and that they are not effective for what they are being used for; however, the state does not agree. Dave proposed that if the system is shut down, Shaw can collect the necessary data needed. He said that the state may request this type of data if Shaw submits the FS without looking at this. Dale Vodak, TCEQ, said that it looks like two problems exist at LHAAP-16 in that there is an ineffective treatment system and that contamination is past the point of compliance. He discussed a similar situation in the Red River AAP, where contaminants were going into the creek (Panther Creek) and the Army had to install a reactive barrier wall.

Groundwater Treatment Plant. Dave provided a status of activity at the GWTP. Currently, the effluent from the plant is being reinjected at ICT 6 and 9, and that there has been good success with the reinjection. Currently the injection rate is 18-19 gallons per minute.

Defense Environmental Restoration Program (DERP) TERC Update (Praveen Srivastav)

Document Status/Environmental Sites (Table). Praveen Srivastav discussed the highlights of the Document Status Table for the TERC contract. He indicated that many documents had been reviewed by the regulators already but without the BERA paragraph. The paragraph on ecological risk previously provided to the regulators will be inserted in the proposed plans and RODs. The documents are presently being prepared as finals with this language inserted. The Army said that these documents could be sent in redline in order to get the notices out for the public meeting to coincide next month with the RAB meeting. The PP on LHAAP-08 and 32 as well as LHAAP-48/53 will be sent out in electronic format next week. New well data will be sent regarding LHAAP-37/67. As discussed in last month's meeting, the results from resampling LHAAP-59 and LHAAP-37 will be presented by separate memos.

MMRP Update (John Lambert)

John Lambert indicated that the contract for the removal action was awarded at the close of government's fiscal year in September 2007. However, the initial phases, including the removal action work plan and explosives safety plan submission will take several months to complete and obtain approval. He does not anticipate field work to start before March 2008.

Transfer Update (Rose M. Zeiler)

There is nothing new to report regarding parcel transfers at this time.

Next meeting to be held at the Longhorn Trailer, Longhorn Army Ammunition Plant, Karnack, Texas, December 11, 2007 at 2:30 or 3:00 PM.

Meeting Adjourned

Action Items:

EPA

- EPA to provide comments to responses to the 5-year review report comments
- Raji Josiam to provide an example of ESD

TCEQ

- Fay Duke to provide a reference for annual O&M reporting requirement
- Fay to provide concurrence letter for NFA for all seven sites

LONGHORN ARMY AMMUNITION PLANT
MONTHLY MANAGERS' MEETING

Location	Shaw Office - 3010 Briarpark, Houston, Texas
Date	14-Nov-2007 **Time** 2:00 PM

ATTENDEES

Name (printed)	Signature	Organization	Phone	E-mail
Longhorn Team Members				
Rose M. Zeiler		BRAC	(479) 635-0110	rose.zeiler@us.army.mil
Bill Davis	BY PHONE	USAEC	(410) 436-1507	golden.davis@us.army.mil
Cliff Murray		USACE, Tulsa	(918) 669-7573	cliff.murray@SWT03.usace.army.mil
John Lambert		USACE, Tulsa	(918) 669-4956	john.r.lambert@SWT03.usace.army.mil
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Scott Harris		USEPA, Dallas	(214) 665-7114	harris.scott@epa.gov
Raji Josiam		USEPA, Dallas	(214) 665-8529	josiam.raji@epa.gov
Fay Duke	Teleconference	TCEQ, Austin	(512) 239-2443	fduke@tceq.state.tx.us
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Van Vangala		SHAW	(713)996-4459	van.vangala@shawgrp.com
Kay Everett		SHAW	(713)996-4421	kay.everett@shawgrp.com
Susan Watson		SHAW	(713)996-4407	susan.watson@shawgrp.com
Greg Jones		SHAW	(713) 996-4472	greg.n.jones@shawgrp.com
Bill Davis	Telephone	AEC		

Technical Document Status Table
TERC Task Order N0. 0109
Longhorn Army Ammunition Plant

00049539

Site	Documents in Progress	Draft Document				Draft Final Document									Final
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08	Proposed Plan, LHAAP-08	05/01/06	05/24/06			07/07/06	08/25/06	08/21/06	09/20/06	09/29/06			11/21/06	TCEQ 12/07/06 EPA 02/21/07	
08	Record of Decision, LHAAP-08	11/05/07	11/09/07	**11/16/07**											
12	Operating Properly and Successfully Demonstration Report, LHAAP-12	07/25/07	07/27/07	07/31/07	08/02/07	08/02/07	NA	08/27/07	NA	08/29/07	08/29/07	08/29/07	08/29/07	08/31/07	09/07/07
32	Proposed Plan, LHAAP-32					07/21/06	08/25/06	09/05/06	09/12/06	09/19/06			11/21/06	TCEQ 12/07/06 EPA 01/26/07	
32	Record of Decision, LHAAP-32	11/05/07	11/09/07	**11/16/07**											
37/67	Proposed Plan, LHAAP-37/67	05/02/06	05/24/06	06/06/06	06/22/06	07/18/06	08/25/06	09/05/06	09/20/06	10/19/06	10/31/06	11/07/06	11/21/06	TCEQ 04/27/07 EPA 02/21/07	08/29/07
37/67	Record of Decision, LHAAP-37/67	**11/15/07**													
37/67	Remedial Design/LUCs, LHAAP-37/67	02/28/08													
48/53	Revised Proposed Plan, LHAAP-48/53	09/25/06	10/31/06	11/14/06	01/12/07	04/09/07	USACHPPM 04/25/07 OC 05/15/07	6/12/07 via USACE	04/27/07	06/27/07	07/12/07 07/13/07	08/16/07	08/27/07	TCEQ 10/16/07 EPA 08/27/07	
48/53	Record of Decision, LHAAP-48/53	11/05/07	11/09/07	**11/16/07**											
59	Site Investigation Report, LHAAP-59	11/02/06	11/07/06	11/09/06	11/15/06	11/21/06	None Required	03/20/07	01/11/2007, 03/20/07, & 03/22/07	04/02/07	RMZ 04/12/07 USACE 04/11/07	04/12/07	04/25/07	TCEQ 06/15/07 EPA 04/30/07	08/02/07
59	Decision Document, LHAAP-59	01/25/08													

Shaw Forecasted Submittal Date | Shaw Action Item | Army Action Item | EPA & TCEQ Action Item | Current Action item

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Status of Technical Documents – 4 week look ahead
Longhorn Army Ammunition Plant – PBC Contract
November 14, 2007

No.	Documents in Progress	Submittal Date	Army	Regulator	Comments Due from USACE/ Regulators	Comment Resolution	Status	On Stakeholder's Portal?	Remarks
	ERA								
	Final BERA	11/15/07	x	x	NA		Final BERA in preparation	x	
	ENVIRONMENTAL								
	Revised Draft Final SI/Evaluation Report, LHAAP-02	11/09/07	x				In Army's review		Originally submitted in 3/06, but asked to wait by regulators until BERA finalized.
	Draft Final Proposed Plan, LHAAP-60	11/9/06		x	11/30/07		Submitted ecological text insert on 10/31/07	x	Originally submitted in 7/06, but asked to wait by regulators until BERA more finalized.
	Draft Final Feasibility Study, LHAAP-58	9/20/07		x	10/20/07		Under regulatory review	x	
	Draft Feasibility Study, LHAAP-17	11/30/07					Under final internal review		Draft will be issued to Army with expected BERA results and DF to follow with final BERA results.
	Draft Final Feasibility Study, LHAAP-16	12/15/07		x			In preparation		Decision made to hold DF document until BERA information available. Also conducted MNA evaluation
	Final SI Report for LHAAP-06, 07, -51, -55, -64, -66, -68	11/19/07					In preparation		The report was submitted in October 2007 but needs to be revised to incorporate RTC.
	Final SI Report for LHAAP-35/36	11/30/07		x	11/30/07		RTC submitted on 10/31/07		Regulatory concurrence of RTC required
	Draft Final LHAAP-16 MNA Evaluation Proposal	NA					On hold		

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No.	Documents in Progress	Submittal Date	Army	Regulator	Comments Due from USACE/ Regulators	Comment Resolution	Status	On Stakeholder's Portal?	Remarks
	Draft Final 5 Year Review Report for LHAAP-12, 16, and 18/24 RTCs	TBD		x	11/27/07		RTC submitted to regulators on 10/28/07		RTC in regulatory review
	Draft Final SI Report for LHAAP-03, Rev 01	TBD					Regulatory comments received. RTC in preparation	x	Collected three soil samples to address regulatory comments
	Final Site Evaluation Report for LHAAP-49	TBD		x			Regulatory comments received. RTC in preparation	x	
	Draft EE/CA for LHAAP-04	11/19/07					In preparation		