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FINAL EXPANDED SITE INVESTIGATION REPORT MILITARY MUNITIONS RESPONSE  
PROGRAM (MMRP) SITE UXO-01 (ASR 2.23) FORMER LIVE HAND GRENADE COURSE  
MCB CAMP LEJEUNE NC  
3/1/2012  
CH2M HILL

Final

**Expanded Site Investigation Report  
Military Munitions Response Program Site UXO-01 (ASR #2.23) -  
Former Live Hand Grenade Course**

**Marine Corps Base Camp Lejeune  
Jacksonville, North Carolina**

**Contract Task Order WE41**

**March 2012**

Prepared for

**Department of the Navy  
Naval Facilities Engineering Command  
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**NAVFAC CLEAN 1000 Program  
Contract N62470-08-D-1000**

Prepared by



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# Executive Summary

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This report documents the findings of the Expanded Site Investigation (SI) at United States Marine Corps Military Munitions Response Program (MMRP) Site Unexploded Ordnance (UXO) -01 (Archive Search Report [ASR] #2.23) – Former Live Hand Grenade Course at Marine Corps Base Camp Lejeune (MCB CamLej) in Jacksonville, North Carolina. The Expanded SI was conducted by CH2M HILL under the Naval Facilities Engineering Command Comprehensive Long-Term Environmental Action—Navy (CLEAN) Contract N62470-08-D-1000, Contract Task Order (CTO) WE41.

Site UXO-01 (ASR #2.23) is located west of Holcomb Boulevard near its intersection with North Carolina Route 24. The site covers approximately 10 acres of gently sloping terrain, approximately 80 percent of which is heavily vegetated with trees and thick undergrowth. The site was used during World War II for troop maneuvers that included the use of fragmentation, offensive, and practice grenades.

The purpose of the Site UXO-01 (ASR #2.23) Expanded SI was to address the Preliminary Assessment/Site Inspection (PA/SI) Report recommendation (CH2M HILL, 2009) to intrusively investigate the sources of geophysical anomalies identified as representing potential munitions and explosives of concern (MEC). The PA/SI risk screening found no unacceptable risks to human or ecological receptors from exposure to site media; therefore no additional environmental characterization was conducted during the Expanded SI.

## **MEC Intrusive Investigation Results**

The PA/SI digital geophysical mapping (DGM) survey of approximately 10 percent of Site UXO-01 (ASR #2.23) yielded a total of 249 geophysical anomalies representing potential subsurface MEC. The DGM survey was conducted along 3-foot wide parallel transects every 30 feet across the site, totaling approximately 1 acre. Intrusive investigation of these 249 anomalies during the Expanded SI found no MEC or material potentially presenting an explosive hazard (MPPEH). These results indicate that the potential for encountering subsurface MEC at Site UXO-01 (ASR #2.23) is likely to be low.

## **Recommendations**

Based on the findings from the PA/SI and the Expanded SI, no additional environmental or MEC investigation work is required at Site UXO-01 (ASR #2.23). Therefore, this site is recommended for no further action.

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# Acronyms and Abbreviations

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ASR	Archive Search Report
Baker	Baker Environmental, Inc.
BBG	Base background
bgs	below ground surface
CamLej	Camp Lejeune
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action—Navy
CTO	Contract Task Order
CWM	chemical warfare materiel
DGM	digital geophysical mapping
DPT	Direct Push Technology
EM61	EM61-MK2 electromagnetic system
ERS	Ecological Risk Screening
ESS	Explosives Safety Submission
°F	degrees Fahrenheit
ft/ft	feet per foot
HHRS	Human Health Risk Screening
IS	incremental sampling
MC	munitions constituents
MCB	Marine Corps Base
MEC	munitions and explosives of concern
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MRP	Munitions Response Program
NCDENR	North Carolina Department of Environment and Natural Resources
NCGWQS	North Carolina Groundwater Quality Standards
NC SSL	North Carolina Soil Screening Level
PA/SI	Preliminary Assessment/Site Inspection
QA	quality assurance
QC	quality control
RSL	Regional Screening Level
SI	Site Investigation
SOP	Standard Operating Procedure
USACE	United States Army Corps of Engineers
USAE	USA Environmental, Inc.
USEPA	United States Environmental Protection Agency
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Specialist

# Introduction

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This report documents the findings of the Expanded Site Investigation (SI) conducted at United States Marine Corps Military Munitions Response Program (MMRP) Site Unexploded Ordnance (UXO) -01 – Former Live Hand Grenade Course (Archive Search Report [ASR] #2.23) at Marine Corps Base Camp Lejeune (MCB CamLej) in Jacksonville, North Carolina (**Figure 1-1**). Site UXO-01 includes additional ASR numbers, but this report addresses only #2.23, the Former Live Hand Grenade Course.

The Expanded SI was conducted by CH2M HILL under the Naval Facilities Engineering Command Comprehensive Long-Term Environmental Action—Navy (CLEAN) Contract N62470-08-D-1000, Contract Task Order (CTO) WE41.

## 1.1 Purpose

The purpose of the Site UXO-01 (ASR #2.23) Expanded SI was to address the recommendations included in the Preliminary Assessment/Site Inspection (PA/SI) (CH2M HILL, 2009), which was conducted as part of the MCB CamLej investigation of closed ranges following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigation process. The PA/SI recommended intrusive investigation of the sources of geophysical anomalies identified during the digital geophysical mapping (DGM) survey and re-evaluation of the need for additional munitions constituents (MC) sampling after the intrusive investigation.

## 1.2 Objectives and Approach

The objective of the UXO-01 (ASR # 2.23) Expanded SI is to assess, through intrusive investigation, the nature of 249 geophysical anomalies identified as representing potential subsurface munitions and explosives of concern (MEC).

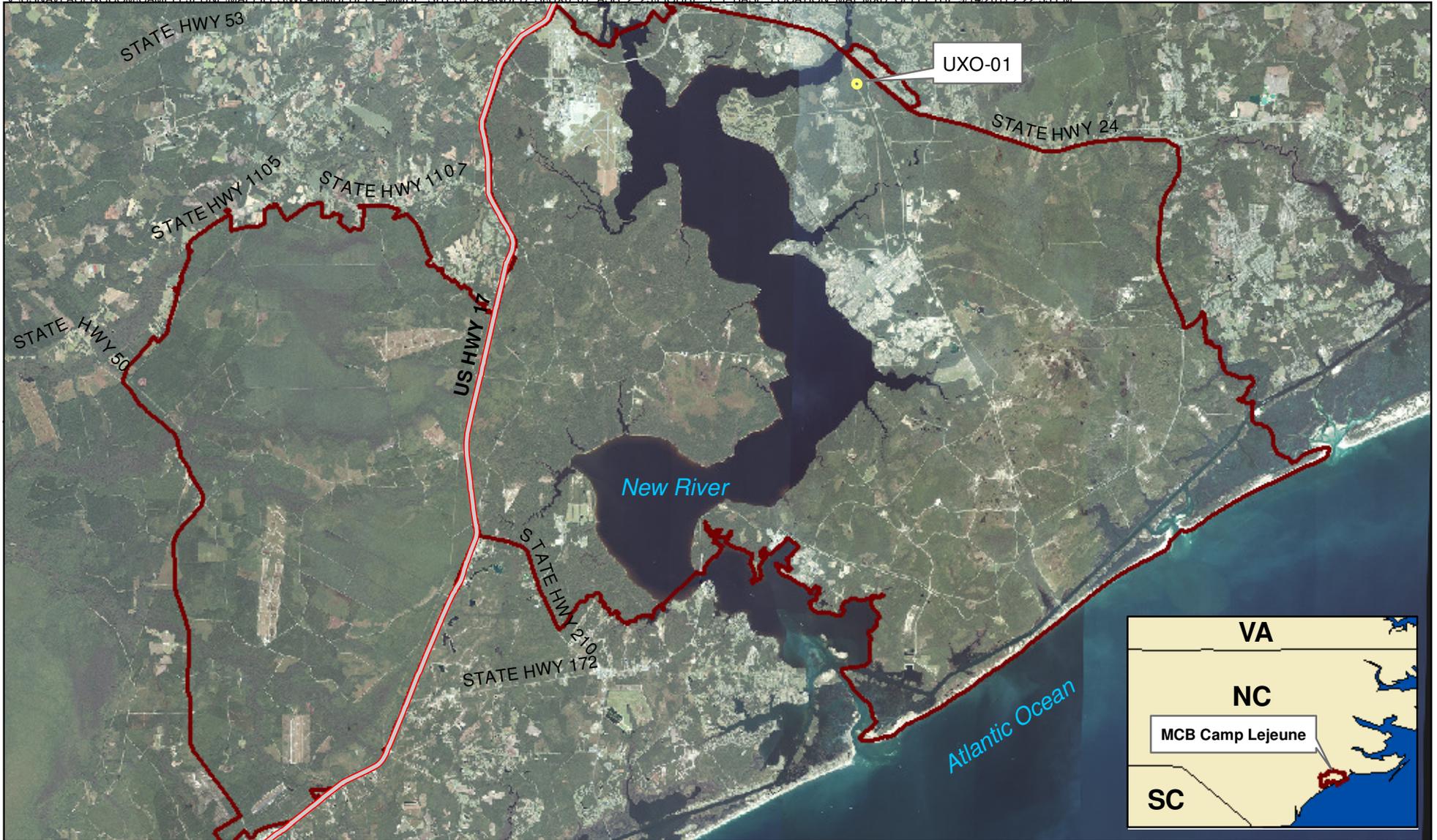
The Expanded SI was conducted in accordance with the Expanded SI Work Plan (CH2M HILL, 2011a) and the Munitions Response Program (MRP) Master Project Plan (CH2M HILL, 2008).

## 1.3 Report Organization

This Expanded SI report is organized as follows:

- Section 1- Introduction – provides the project objectives of the Expanded SI and tasks performed
- Section 2 - Site Background – provides a summary of the site description, history, and physical setting
- Section 3 - Field Investigation Activities – provides a summary of the field activities conducted to evaluate potential MEC
- Section 4- Intrusive Investigation Results – provides a summary of the field investigation results
- Section 5 - Conclusions and Recommendations - presents the project conclusions and recommendations
- Section 6- References - presents the documents cited in the report

Figures and tables are provided at the end of their respective Sections. Historical data and field documentation of the intrusive investigation are contained in the appendices.



- Legend**
- Highways
  - UXO 01 Boundary
  - Installation Boundary

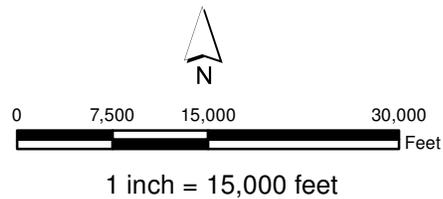


Figure 1-1  
Base Location Map  
Site UXO-01 (ASR # 2.23) Expanded SI Report  
MCB Camp Lejeune  
North Carolina

# Site Background

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This section summarizes regional and site-specific information, including location, site setting, physical characteristics, and history.

## 2.1 MCB CamLej Location and Description

MCB CamLej covers approximately 236 square miles in Onslow County, North Carolina, and is bisected by the New River, which flows in a southeasterly direction toward the Atlantic Ocean. Construction of MCB CamLej began in 1941 with the objective of developing the world's most complete amphibious training base. The mission of MCB CamLej is to maintain combat-ready units for expeditionary deployment. MCB CamLej provides housing, training facilities, logistical support, and administrative supplies for Fleet Marine Force units and other assigned units. The Base and surrounding community is home to an active-duty, dependent, retiree, and civilian population of approximately 180,000 people. Land use surrounding MCB CamLej is varied. Mainly commercial properties are located along the northern boundary. A mix of agricultural lands and residential areas are located along the eastern and western boundaries of the Base. The southern boundary of MCB CamLej extends to the New River and Atlantic Ocean.

## 2.2 Site Setting

Site UXO-01 (ASR # 2.23) – Former Live Hand Grenade Course, is located west of Holcomb Boulevard near its intersection with North Carolina Route 24 (**Figure 2-1**) and covers approximately 10 acres of gently sloping terrain, approximately 80 percent of which is heavily vegetated with trees and thick undergrowth. Overhead electrical and underground communications utilities traverse the western edge of Site UXO-01 (ASR # 2.23). A sanitary sewer force main runs southwest to northeast through the site, and a high pressure natural gas pipe line crosses the site from southeast to northwest. The portion of the investigation area adjacent to two unnamed gravel access roads and areas along gas and power line easements are mowed regularly.

## 2.3 Site History

Site UXO-01 (ASR #2.23) is identified as an MMRP site based on historical information contained in the *Final Range Identification and Preliminary Range Assessment* (USACE, 2001). The range assessment report states that the only reference document found regarding this range was in Camp Training Order 5-1946, dated March 19, 1946, which reports the range was established under Camp Training Order Number 7-1945, dated March 19, 1945. Archival review indicates that the area comprised by Site UXO-01 (ASR #2.23) was a former live hand grenade course used for troop training; the area is not currently associated with an active impact area, range, range fan, surface danger zone, or with the disposal of military munitions (CH2M HILL, 2009). The site was used during World War II for troop maneuvers that included the use of fragmentation, offensive, and practice grenades (USACE, 2001). Disposal of munitions and/or burial of munitions is not reported or suspected at the site. The use of chemical warfare materiel (CWM) is unlikely, based on the archival review. No historical structures or remnants of a former hand grenade course were observed during the assessment.

The range was disestablished in March 1946 and is no longer used for the firing of live ammunition (USACE, 2001). The site boundary, shown on **Figure 2-1**, was provided by MCB CamLej and is consistent with the site boundary shown in the 1946 Range Overlay Map (Plate 4, USACE, 2001).

Site UXO-01 (ASR #2.23) is undeveloped. Site access is limited to those who have access to MCB CamLej, but there are no additional physical barriers preventing access to anyone on Base. The area is currently extensively used for hunting, the most common forms of which are black powder hunting and bow hunting. Hunting is regulated by the Base Game Warden. Spent civilian small arms ammunition (such as shotgun shells and small-caliber rifle bullets) may be present as a result of hunting on the site (Richardson, 2007, personal communication).

## 2.4 Previous Investigations

A PA/SI was conducted at Site UXO-01 (ASR # 2.23) in 2008 to evaluate potential contamination of environmental media and to evaluate the potential presence and nature of impacts from subsurface MEC that may have resulted from activities associated with the former live hand grenade course.

### 2.4.1 PA/SI Summary

The technical approach employed to meet the site objectives included:

- Evaluation of the potential presence and nature of impacts to environmental media resulting from historical munitions use at the site
- Evaluation of whether additional investigation and/or remediation activities are necessary
- Identification of geophysical anomalies that may represent subsurface MEC

Eight soil borings were drilled and three temporary monitoring wells were installed to characterize the shallow lithology and hydrogeology at the site. The soil borings were advanced to depths of up to 21 feet below ground surface (bgs), and continuous soil cores retrieved from these borings were examined and the lithology described by the CH2M HILL geologist. The three temporary groundwater monitoring wells were installed to depths ranging from 16 to 28 feet bgs, and static water levels were gauged to support the interpretation of the surficial aquifer flow direction and the hydraulic gradient. The site geology and hydrogeology are presented as follows in Section 2.7.

Two composite sampling approaches (incremental sampling [IS] and TR-02-1) were utilized to collect representative surface soil samples (0-2 inches bgs). The IS procedure is described in the Standard Operating Procedure (SOP) entitled *Systematic Random Multi-Increment Sampling* in Appendix C of the Munitions Response Program (MRP) Master Project Plans (CH2M HILL, 2008). The TR-02-1 sampling approach required compositing a minimum of 10 sample aliquots from random locations within each 1-meter by 1-meter sampling location.

The environmental media samples collected included:

- Fifteen composite surface soil samples using the TR-02-01 sampling method and nine samples using the IS sampling method.
- One unsaturated subsurface soil sample from each of eight soil cores collected using a direct-push technology (DPT) rig
- Three groundwater samples from temporary groundwater monitoring wells

Soil and groundwater samples were submitted to an analytical laboratory for the following analysis:

- Explosives residues (SW-846 United States Environmental Protection Agency [USEPA] Method 8330)
- Perchlorate (USEPA Method 6850)
- Total metals (ILM05), additional dissolved metals for groundwater samples

Soil and groundwater analytical data are provided in **Appendix A**.

### Surface Soil Summary

Both surface and subsurface soil samples were screened against the North Carolina Soil Screening Levels (NC SSLs), the adjusted USEPA Regional Screening Levels (RSLs) for Chemical Contaminant Tables (USEPA, 2008), and MCB CamLej background soil concentrations (2 times the mean base background [BBG] concentration), which were available for inorganic analytes only (Baker, 2001).

The USEPA RSLs for non-carcinogenic compounds were adjusted by dividing by 10 to conservatively account for exposure to multiple analytes. The methodology for calculating NC SSLs for contaminant migration from soil to

groundwater was developed to identify chemical concentrations in soil that have the potential to impact groundwater. The NC SSLs are back-calculated from acceptable groundwater concentrations, taking fate and transport parameters into consideration (NCDENR, 2000).

The screening criteria comparison results for surface soil are summarized as follows:

- One explosives residue constituent (2,4,6-trinitrotoluene) was detected, but the concentration was not greater than the screening criteria.
- Perchlorate was not detected in the surface soil samples.
- Arsenic was found at concentrations which exceeded the USEPA Adjusted Residential Soil RSL, the Adjusted Industrial Soil RSL (one location), and 2 times the mean BBG concentration. However, none of the UXO-01 surface soil arsenic concentrations exceeded the NC SSL.
- Iron concentrations exceeded the NC SSLs in all of the surface soil samples. Iron also exceeded 2 times the mean BBG concentration at one location. However, none of the iron concentrations exceeded the USEPA Adjusted Residential or Industrial Soil RSLs.
- Manganese concentrations exceeded 2 times the mean BBG concentration. At one location, the manganese concentration exceeded the NC SSL. None of the manganese concentrations exceeded the USEPA Adjusted Soil RSLs.
- Mercury concentrations exceeded the NC SSLs, but did not exceed the USEPA Adjusted Residential or Industrial Soil RSLs. Six locations exceeded 2 times the mean BBG concentration for mercury.
- Silver concentrations exceeded the NC SSLs and 2 times the mean BBG concentration. None of the silver concentrations detected exceeded the USEPA Adjusted Soil RSLs.
- Additional metals (barium, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, manganese, nickel, vanadium, and zinc) were detected at concentrations greater than 2 times the corresponding mean BBG concentration but did not exceed their respective USEPA Adjusted Soil RSLs or NC SSLs.

**Figure 2-2** shows the locations of the Site UXO-01 surface soil screening criteria exceedances, and the surface soil screening levels are summarized in **Table 2-1**.

TABLE 2-1  
PA/SI Surface Soil Criteria Exceedence Summary

Compound/Element (mg/kg)	Surface Soil Maximum Concentration	MCB CamLej Background 2x Mean	NC SSLs	Industrial RSLs	Residential RSLs
Arsenic	1.8	0.626	5.24	1.6	0.39
Iron	3,540	3,245	151	72,000	5,500
Manganese	157	13.7	65.2	2,300	180
Mercury	0.34	0.081	0.015	31	2.3
Silver	3.1	0.14	0.217	510	39

**Notes:**

MCB CamLej – Marine Corps Base Camp Lejeune

mg/kg - milligrams per kilogram

NC SSL – North Carolina Soil Screening Level

RSL – Regional Screening Level

## Subsurface Soil Summary

Results of the subsurface soil screening criteria (refer to Section 2.3.1) evaluation are summarized as follows:

- No explosives residues exceeded the screening criteria.
- Perchlorate was not detected in the subsurface soil samples.
- Aluminum was detected at concentrations that exceeded USEPA Adjusted Residential Soil RSLs and 2 times the mean BBG concentration. None of the aluminum concentrations exceeded the USEPA Adjusted Industrial Soil RSLs.
- Arsenic concentrations were present at concentrations greater than the USEPA Adjusted Residential and Industrial Soil RSLs. Arsenic concentrations also exceeded 2 times the mean BBG concentration. None of the arsenic concentrations exceeded the NC SSL.
- Iron was detected at concentrations which exceeded the NC SSL, 2 times the mean BBG concentration, and the USEPA Adjusted Soil Residential Soil RSL.
- Additional metals (antimony, chromium, lead, magnesium, potassium, and vanadium) were detected at concentrations above 2 times the mean BBG concentration but less than the USEPA Adjusted Soil RSLs and NC SSLs.

Figure 2-3 presents the locations of the Site UXO-01 subsurface soil screening criteria exceedances, and the subsurface soil screening levels are summarized in Table 2-2.

TABLE 2-2  
PA/SI Subsurface Soil Criteria Exceedence Summary

Compound/Element (mg/kg)	Subsurface Soil Maximum Concentration	MCB CamLej Background 2x Mean	NC SSLs	Industrial RSLs	Residential RSLs
Aluminum	11,500 J	10,369	NA	99,000	7,700
Arsenic	3.1	2.12	5.24	1.6	0.39
Iron	5,880	5,439	151	72,000	5,500

**Notes:**

- J - estimated laboratory value
- MCB CamLej – Marine Corps Base Camp Lejeune
- mg/kg - milligrams per kilogram
- NC SSL – North Carolina Soil Screening Level
- RSL - Regional Screening Level

## Groundwater Summary

Groundwater results from the three shallow temporary monitoring wells sampled at Site UXO-01 were screened against the North Carolina Groundwater Quality Standards (NCGWQS) (NCDENR, 2006), USEPA Tap Water RSLs, and MCB CamLej background groundwater concentrations (2 times the mean concentration) (Baker, 2001). The NCGWQS are the maximum allowable concentrations resulting from any discharge of contaminants to the land or waters of the state that may be tolerated without creating a threat to human health or otherwise render the groundwater unsuitable for its intended purpose.

UXO-01 groundwater analytical results are summarized as follows:

- Explosives residues were not detected.
- Perchlorate was detected in one sample at concentration that did not exceed any of the screening criteria.
- Total cobalt was detected at location at a concentration that exceeded the USEPA Adjusted Tap Water RSL but did not exceed 2 times the mean BBG concentration or the NCGWQS.

- Total iron was detected at concentrations that exceeded the NCGWQS and 2 times the mean BBG concentration. Iron was also detected at concentrations above the USEPA Adjusted Tap Water RSL.
- Dissolved iron was detected at concentrations that exceeded the NCGWQS and the USEPA Adjusted Tap Water RSL. None of the dissolved iron concentrations were above 2 times the mean BBG concentration.
- Total manganese was detected at concentrations that exceeded the NCGWQS. None of the total manganese concentrations exceeded the USEPA Adjusted Tap Water RSL or were greater than the 2 times the mean BBG concentration.
- Dissolved manganese was detected at concentrations that exceeded the NCGWQS but did not exceed the USEPA Adjusted Tap Water RSL. Dissolved manganese was not detected at concentrations above 2 times the mean BBG concentration.
- Additional total metals (chromium, copper, and nickel,) and one dissolved metal (nickel) were detected at concentrations above 2 times the mean BBG concentration but did not exceed USEPA Adjusted Tap Water RSLs or NCGWQS.

**Figure 2-4** presents the Site UXO-01 groundwater screening criteria exceedances for samples that exceed 2 times the mean BBG concentration and at least one of the screening levels (NCGWQS or USEPA Tap Water RSLs). These same groundwater screening level exceedances are summarized in **Table 2-3**.

TABLE 2-3  
PA/SI Groundwater Criteria Exceedence Summary

Compound/Element	Groundwater Maximum Concentration	MCB CamLej Background 2x Mean	NCGWQS	USEPA Tap Water RSLs
Iron (mg/L)	7,370	5,999	300	2,600

**Notes:**

MCB CamLej – Marine Corps Base Camp Lejeune  
 mg/L - milligrams per liter  
 NCGWQS - North Carolina Groundwater Quality Standards  
 RSL - Regional Screening Level  
 USEPA – United States Environmental Protection Agency

### Geophysical Survey Summary

A DGM survey was conducted over approximately 10 percent of Site UXO-01 (ASR #2.23) using a single-coil EM61-MK2 electromagnetic system (EM61). The DGM survey was conducted along 3-foot wide parallel transects every 30 feet across the site, totaling approximately 1 acre, and yielded a total of 249 geophysical anomalies representing potential subsurface MEC (**Figure 2-5**). The PA/SI report recommended an intrusive investigation be conducted to assess the nature of the geophysical anomalies.

### 2.4.2 Risk Screening Summary

A conservative preliminary Human Health Risk Screening (HHRS) and an Ecological Risk Screening (ERS) were conducted for Site UXO-01 (ASR# 2.23) based upon the PA/SI results. They are summarized in **Tables 2-4** and **2-5**, respectively.

The preliminary HHRS and ERS indicated that exposure to Site UXO-01 (#2.23) soil and groundwater would not result in any unacceptable risks to human health or ecological receptors (CH2M HILL, 2009). Therefore, based on these risk screening results, no further assessment of soil or groundwater was recommended at the site.

TABLE 2-4

**PA/SI Human Health Risk Screening Summary**

Media	Step 1 COPCs	Step 2 COPCs	Step 3 COPCs	Conclusion
Surface Soil	Arsenic	None	NC	No unacceptable risk expected from exposure to surface soil.
Combined Surface and Subsurface Soil	Aluminum Arsenic Iron	None	NC	No unacceptable risk expected from exposure to surface and subsurface soil.
Groundwater	Iron	None	NC	No unacceptable risk expected from exposure to groundwater.

## Notes:

COPC = chemical of potential concern

NC = not calculated; No COPCs were identified in the preceding step.

TABLE 2-5

**PA/SI Ecological Risk Screening Summary**

Media	Ecological Risk Screening COPCs	Conclusions
Surface Soil	None	No unacceptable risk from surface soil.
Groundwater	None	No unacceptable risk from groundwater.

## 2.5 Regional Climate

The climate in the Onslow County area is characterized by short, mild winters and long, hot, and humid summers. Average annual net precipitation is approximately 50 inches. Ambient air temperatures generally range from 33 to 53 degrees Fahrenheit (°F) in the winter months and from 71 to 98°F during the summer months. Winds are generally south-southwesterly in the summer and north-northwesterly in the winter (Water and Air Research, 1983). The hurricane season begins on June 1 and continues through November 30. Storms of non-tropical origin, such as frontal passages, local thunderstorms, and tornadoes, are more frequent and can occur at any time during the year.

## 2.6 Regional Geology and Hydrogeology

Regional geology at MCB CamLej is discussed in the MRP Master Project Plan (CH2M HILL, 2008).

## 2.7 Site Geology and Hydrogeology

Site-specific information was obtained from soil cores collected from depths of up to 24 feet bgs during the PA/SI for Site UXO-01 (ASR #2.23). Soil boring logs indicated that the soils range from clay and silt to very fine to fine grained sand in laterally discontinuous layers (CH2M HILL, 2009). These shallow soils are consistent with those described as the undifferentiated formation (Cardinell et al., 1993).

The water table of the surficial aquifer occurs in the undifferentiated formation at this site. Site-specific hydrogeologic information was derived from the installation of three shallow temporary monitoring wells in the surficial aquifer during the PA/SI. In July 2008, shallow groundwater flow was northwest towards Northeast Creek, a tributary of the New River. The horizontal hydraulic gradient was 0.0006 foot per foot (ft/ft), based upon the July 30, 2008, potentiometric surface map of the water table (CH2M HILL, 2009).

**Figure 2-6** provides a summary of the Site UXO-01 (ASR #2.23) physical conditions.



**Legend**  
Site UXO-01- Former Live Hand Grenade Course (ASR #2.23) Boundary  
Installation Boundary

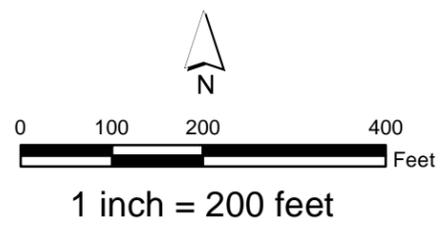
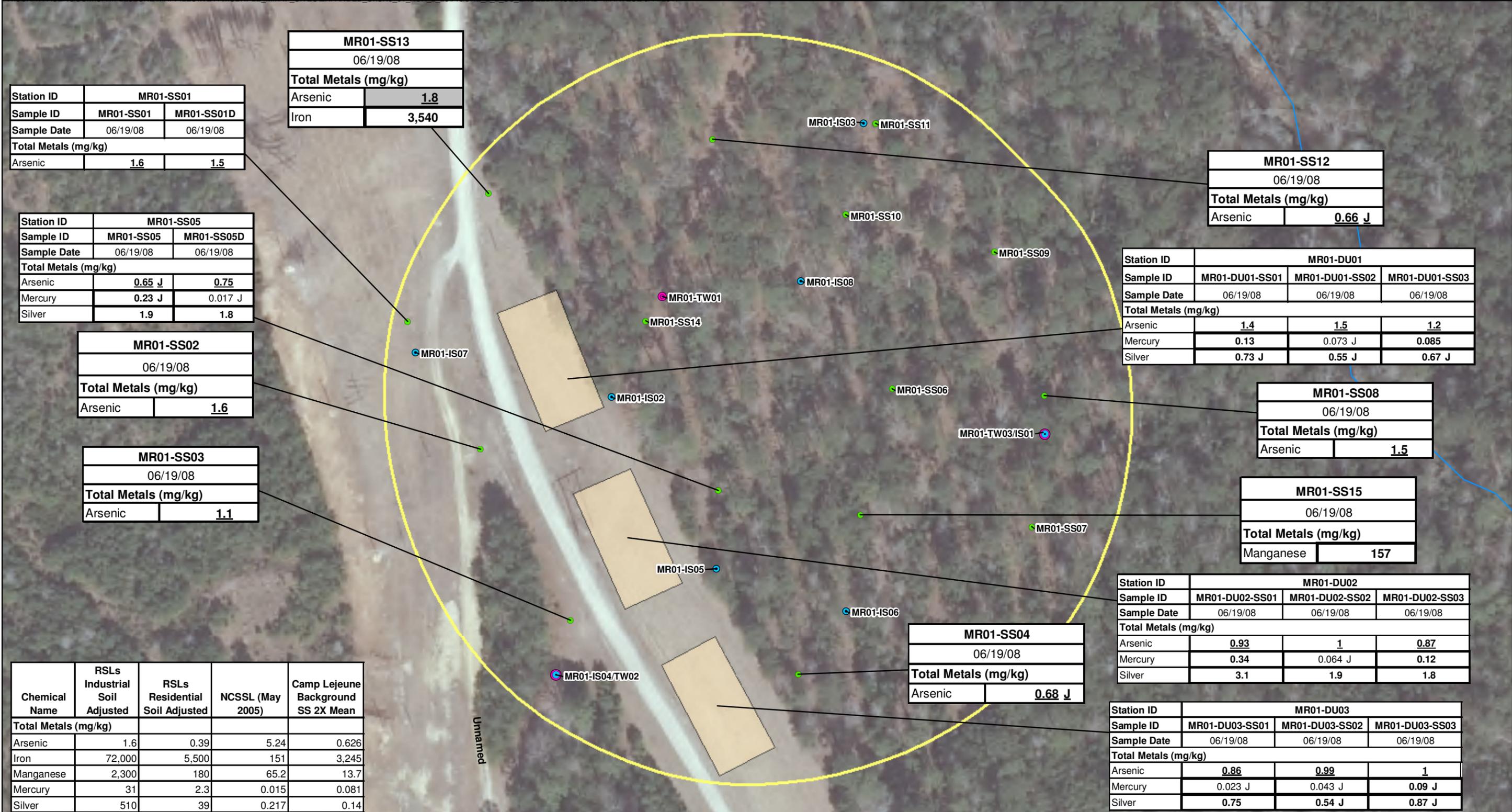


Figure 2-1  
Site Location  
Site UXO-01 (ASR# 2.23) Expanded SI Report  
MCB CamLej  
North Carolina



Station ID	MR01-SS01	
Sample ID	MR01-SS01	MR01-SS01D
Sample Date	06/19/08	06/19/08
Total Metals (mg/kg)		
Arsenic	<u>1.6</u>	<u>1.5</u>

<b>MR01-SS13</b>	
06/19/08	
Total Metals (mg/kg)	
Arsenic	<u>1.8</u>
Iron	<b>3,540</b>

Station ID	MR01-SS05	
Sample ID	MR01-SS05	MR01-SS05D
Sample Date	06/19/08	06/19/08
Total Metals (mg/kg)		
Arsenic	<u>0.65 J</u>	<u>0.75</u>
Mercury	<u>0.23 J</u>	0.017 J
Silver	1.9	1.8

<b>MR01-SS02</b>	
06/19/08	
Total Metals (mg/kg)	
Arsenic	<u>1.6</u>

<b>MR01-SS03</b>	
06/19/08	
Total Metals (mg/kg)	
Arsenic	<u>1.1</u>

<b>MR01-SS12</b>	
06/19/08	
Total Metals (mg/kg)	
Arsenic	<u>0.66 J</u>

Station ID	MR01-DU01		
Sample ID	MR01-DU01-SS01	MR01-DU01-SS02	MR01-DU01-SS03
Sample Date	06/19/08	06/19/08	06/19/08
Total Metals (mg/kg)			
Arsenic	<u>1.4</u>	<u>1.5</u>	<u>1.2</u>
Mercury	<u>0.13</u>	0.073 J	<u>0.085</u>
Silver	<u>0.73 J</u>	<u>0.55 J</u>	<u>0.67 J</u>

<b>MR01-SS08</b>	
06/19/08	
Total Metals (mg/kg)	
Arsenic	<u>1.5</u>

<b>MR01-SS15</b>	
06/19/08	
Total Metals (mg/kg)	
Manganese	<b>157</b>

Station ID	MR01-DU02		
Sample ID	MR01-DU02-SS01	MR01-DU02-SS02	MR01-DU02-SS03
Sample Date	06/19/08	06/19/08	06/19/08
Total Metals (mg/kg)			
Arsenic	<u>0.93</u>	<u>1</u>	<u>0.87</u>
Mercury	<u>0.34</u>	0.064 J	<u>0.12</u>
Silver	<u>3.1</u>	<u>1.9</u>	<u>1.8</u>

Station ID	MR01-DU03		
Sample ID	MR01-DU03-SS01	MR01-DU03-SS02	MR01-DU03-SS03
Sample Date	06/19/08	06/19/08	06/19/08
Total Metals (mg/kg)			
Arsenic	<u>0.86</u>	<u>0.99</u>	<u>1</u>
Mercury	0.023 J	0.043 J	<u>0.09 J</u>
Silver	<u>0.75</u>	<u>0.54 J</u>	<u>0.87 J</u>

Chemical Name	RSLs Industrial Soil Adjusted	RSLs Residential Soil Adjusted	NCSL (May 2005)	Camp Lejeune Background SS 2X Mean
Total Metals (mg/kg)				
Arsenic	1.6	0.39	5.24	0.626
Iron	72,000	5,500	151	3,245
Manganese	2,300	180	65.2	13.7
Mercury	31	2.3	0.015	0.081
Silver	510	39	0.217	0.14

- Legend**
- Groundwater Sample Locations
  - Surface Soil Sample Locations
  - Subsurface Soil Sample Locations
  - Subsurface Soil and Groundwater Sample Locations
  - Surface Water Course Centerline
  - Decision Units
  - Site UXO-01 Boundary

**Notes:**  
 Data displayed for metals exceeds two times the mean base background concentration and an additional screening criteria  
 "D" indicator in sample ID indicates duplicate sample  
 J - Analyte present, value may or may not be accurate or precise  
 Shading indicates exceedance of Adjusted Industrial Soil RSL  
 Underline indicates exceedance of Adjusted Residential Soil RSL  
**Bold text indicates exceedance of two times the mean background concentration**

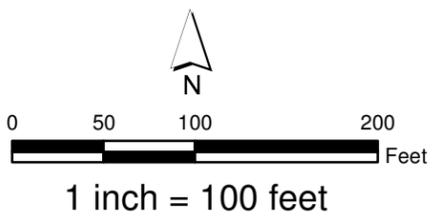


Figure 2-2  
 Surface Soil Exceedances  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej  
 North Carolina





MR01-IS05	
18-19 ft bgs	
07/13/08	
Total Metals (mg/kg)	
Arsenic	<u>3.1</u>
Iron	<b>5,530</b>

MR01-IS01	
7-8 ft bgs	
07/13/08	
Total Metals (mg/kg)	
Aluminum	<u>11,500 J</u>
Iron	<u>5,880</u>

Chemical Name	RSLs Industrial Soil Adjusted	RSLs Residential Soil Adjusted	NCSSL (May 2005)	Camp Lejeune Background SB 2X Mean
<b>Total Metals (mg/kg)</b>				
Aluminum	99,000	7,700	--	10,369
Arsenic	1.6	0.39	5.24	2.12
Iron	72,000	5,500	151	5,439

- Legend**
- Groundwater Sample Locations
  - Surface Soil Sample Locations
  - Subsurface Soil Sample Locations
  - Subsurface Soil and Groundwater Sample Locations
  - Surface Water Course Centerline
  - Site UXO-01 Boundary

**Notes:**  
 Data displayed for metals exceeds two times the mean base background concentration and an additional screening criteria  
 J - Analyte present, value may or may not be accurate or precise  
 Shading indicates exceedance of Adjusted Industrial Soil RSL  
 Underline indicates exceedance of Adjusted Residential Soil RSL  
 Bold box indicates exceedance of NCSSL  
**Bold text indicates exceedance of two times the mean background concentration.**

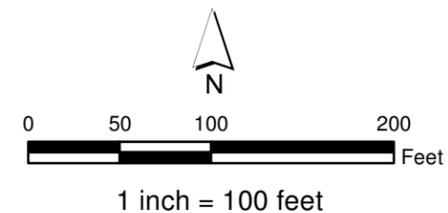


Figure 2-3  
 Subsurface Soil Exceedances  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej  
 North Carolina

Station ID	MR01-TW01	
Sample ID	MR01-TW01	MR01-TW01D
Sample Date	07/30/08	07/30/08
Total Metals (µg/L)		
Iron	7,370	6,720



Chemical Name	Adjusted Tap Water RSLs	NCGWQS (December 2005)	Camp Lejeune Background GW 2X Mean
<b>Total Metals (µg/L)</b>			
Iron	2,600	300	5,999

- Legend**
- Groundwater Sample Locations
  - Surface Soil Sample Locations
  - Subsurface Soil Sample Locations
  - Subsurface Soil and Groundwater Sample Locations
  - Surface Water Course Centerline
  - Site UXO-01 Boundary

**Notes:**  
 Data displayed for metals exceeds two times the mean base background concentration and an additional screening criteria  
 Dissolved metal exceedances are not shown  
 J - Analyte present, value may or may not be accurate or precise  
 "D" indicator in sample ID indicates duplicate sample  
 Shading indicates exceedance of Adjusted Tap Water RSL  
**Bold box indicates exceedance of NCGWQS**  
**Bold text indicates exceedance of two times the mean background concentration**

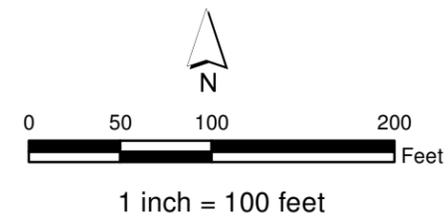


Figure 2-4  
 Groundwater Exceedances  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej  
 North Carolina



- Legend**
- Geophysical Anomaly (greater than 2.5 mV)
  - UXO-01 Boundary
  - DGM Transect

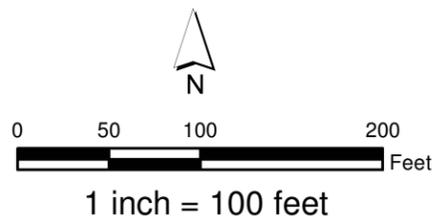
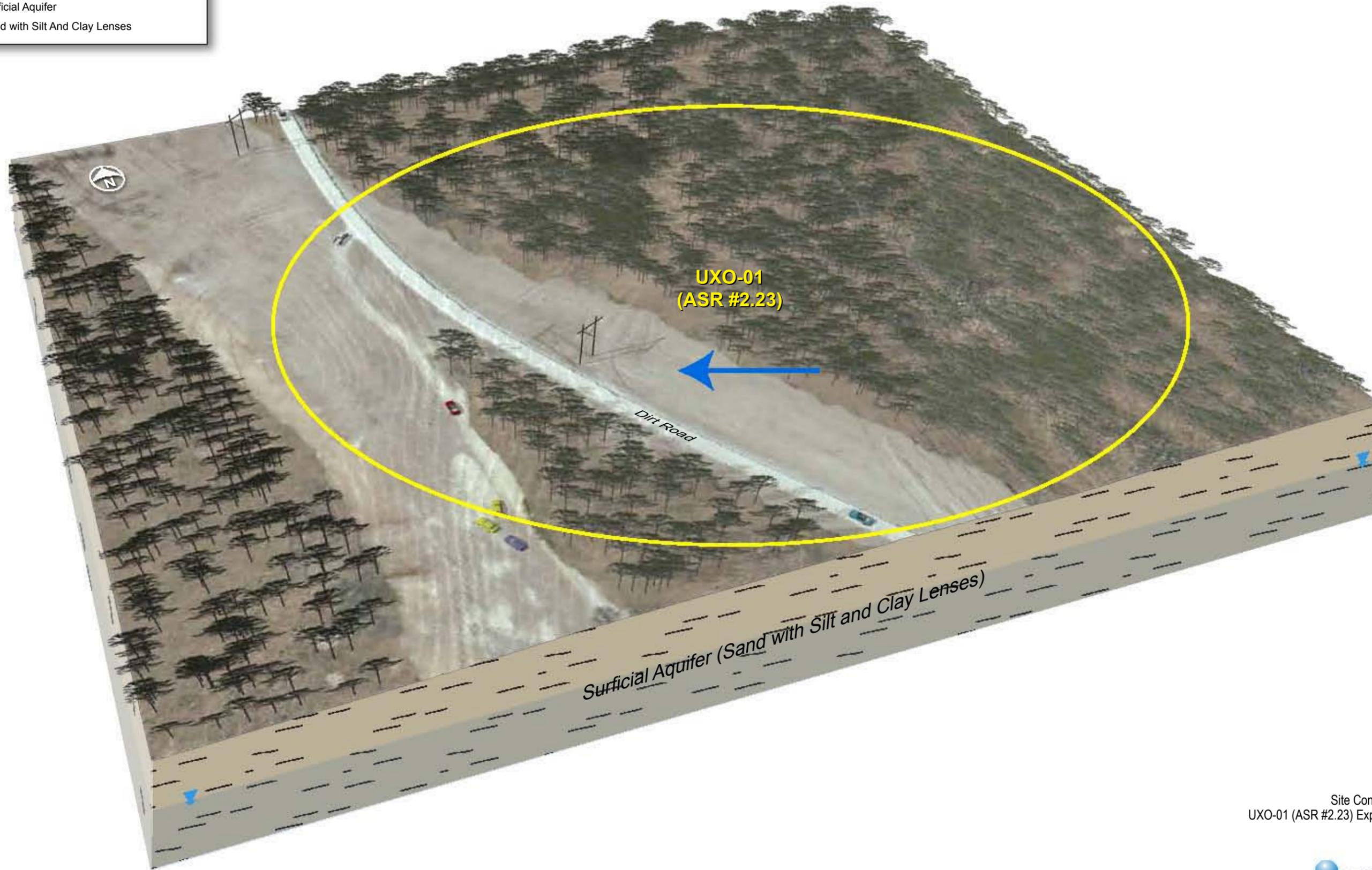


Figure 2-5  
Digital Geophysical Mapping Results  
Site UXO-01 (ASR # 2.23) Expanded SI Report  
MCB CamLej  
North Carolina

- LEGEND**
- Former Pistol Range
  - Groundwater Table
  - Surface Water Flow Direction
  - Surficial Aquifer
  - Sand with Silt And Clay Lenses



**FIGURE 2-6**  
Site Conditions Summary  
UXO-01 (ASR #2.23) Expanded SI Report  
MCB CamLej  
North Carolina



# Field Investigation Activities

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The Expanded SI field investigation activities at Site UXO-01 (ASR #2.23) were conducted in August and September 2011. Field activities were performed in accordance with the Expanded SI Work Plan (CH2M HILL, 2011a) and Explosives Safety Submission (ESS)-111 (CH2M HILL, 2011b). The technical approach was developed by the MCB CamLej Tier I Partnering Team, which consists of representatives from the Department of the Navy (Navy), MCB CamLej, USEPA Region 4, and North Carolina Department of Environment and Natural Resources (NCDENR). Only the former Live Hand Grenade Course is addressed in this Expanded SI Report.

## 3.1 Site Preparation and Support

This section describes activities conducted in order to safely perform the field investigation activities and provide appropriate conditions for the reacquisition and intrusive investigation of the geophysical anomalies identified during the DGM survey.

### 3.1.1 MEC Avoidance

Because of the potential presence of MEC, avoidance procedures were implemented in accordance with ESS-111 (CH2M HILL, 2011b). Qualified UXO technicians provided MEC escort and avoidance services to the surveying and vegetation clearance subcontractors in accordance with the health and safety plan (CH2M HILL, 2011a, Appendix A).

### 3.1.2 Surveying

LDSI, Inc., of Charlotte, North Carolina, was subcontracted to place survey pin flags along the center line of the PA/SI DGM corridors in order to guide the vegetation clearing activities conducted during the Expanded SI.

### 3.1.3 Vegetation Clearing

Mid-Atlantic Drilling, Inc., was subcontracted to clear areas of brush and vegetative cover where required to prevent interference with the use of the EM-61 during anomaly reacquisition. The undergrowth was cleared using a mulching-cutting machine. Vegetation less than 3 inches in diameter was cut to within 6 inches of ground surface to allow sufficient area for DGM activities. Cut vegetation was mulched and left in place.

## 3.2 MEC Intrusive Investigation Activities

The MEC intrusive investigation was focused on the geophysical anomalies identified during the DGM survey. The DGM survey covered approximately 10 percent (1 acre) of the 10 acre area and identified 249 geophysical anomalies for intrusive investigation (**Figure 3-1**).

### 3.2.1 Field Activities

The following MEC intrusive investigation field activities were conducted in August and September 2011:

- Reacquisition of the geophysical anomalies identified during the DGM survey as representing potential subsurface MEC
- Manual digging and identification of the sources of anomalies
- Removal verification and excavation backfilling

CH2M HILL provided project and site management, quality control (QC), and safety supervision during the intrusive investigation. USA Environmental, Inc. (USAE) was subcontracted to conduct the reacquisition and intrusive investigation of the geophysical anomalies and the disposition of material potentially presenting an explosive hazard (MPPEH) items found during the investigation.

At Site UXO-01, USAE identified all 249 subsurface geophysical anomalies for excavation using a Whites XLT metal detector or a Schonstedt GA-52Cx magnetometer, or both, and placed a flag approximately 1 foot north of each anomaly.

Excavation of all anomalies was performed by USAE, to a depth of 2 feet bgs. The UXO teams were composed of at least one UXO Technician III, one UXO Technician II, and additional UXO technicians. Small hand tools, such as shovels, spades, trowels, and pry bars, were used to access the source anomaly. If the item did not appear to be ordnance related (such as scrap metal or other debris), it was moved to the non-MPPEH collection point. Once the item was removed, the excavation area was rechecked with the EM61 to ensure all anomaly source material had been removed. No MEC or MPPEH was found during the intrusive investigation.

### **3.2.2 Quality Assurance and Quality Control**

QC inspections were performed by the UXO Quality Control Specialist (UXOQCS) during fieldwork. This consisted of checking 10 percent of the intrusively investigated anomaly locations using an EM61 geophysical instrument to determine if all detectable metallic items had been removed. Additional quality assurance (QA)/QC removal verification requirements and analysis were followed, as described the Expanded SI Work Plan. Both QC seeds buried onsite during the DGM activities were recovered.



- Legend**
- Geophysical Anomaly (greater than 2.5 mV)
  - UXO-01 Boundary
  - DGM Transect

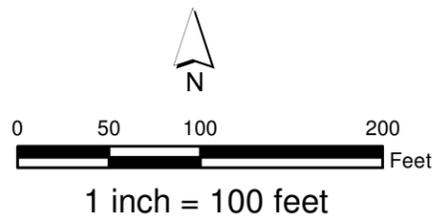


Figure 3-1  
Intrusive Investigation Locations  
Site UXO-01 (ASR # 2.23) Expanded SI Report  
MCB CamLej  
North Carolina

SECTION 4

## Intrusive Investigation Results

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The data collected during the investigation of each anomaly is documented in **Appendix B**. Approximately 50 pounds of non-MPPEH metallic debris (such as scrap metal or other debris) were collected during the intrusive investigation. No MEC or MPPEH were found during the intrusive investigation.

# Conclusions and Recommendations

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This section presents conclusions and provides recommendations based upon the PA/SI and Expanded SI findings.

## 5.1 Conclusions

### 5.1.1 Environmental Investigation and Preliminary Risk Screening

The PA/SI preliminary risk-based screening indicated that exposure to Site UXO-01 (ASR #2.23) soil and groundwater would not result in any unacceptable human health or ecological risks.

### 5.1.2 MEC Intrusive Investigation

No MEC or MPPEH were found during the intrusive investigation. These results indicate that the potential for encountering subsurface MEC at the site is likely to be low.

## 5.2 Recommendations

Based on the previously presented conclusions, no further action is recommended at Site UXO-01 (ASR #2.23).

## SECTION 6

# References

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**Appendix A**  
**PA/SI Data Summary Tables**

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TABLE 4-1  
 Multi-Increment Surface Soil Analytical Results  
 Site UXO-01 Former Live Hand Grenade Course  
 MCB Camp Lejeune, North Carolina

Station ID Sample ID	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NCS SSL (May 2005)	Camp Lejeune Background SS 2X Mean	MR01-DU01			MR01-DU02			MR01-DU03		
					MR01-DU01-SS01-08B	MR01-DU01-SS02-08B	MR01-DU01-SS03-08B	MR01-DU02-SS01-08B	MR01-DU02-SS02-08B	MR01-DU02-SS03-08B	MR01-DU03-SS01-08B	MR01-DU03-SS02-08B	MR01-DU03-SS03-08B
Sample Date					06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08
<b>Chemical Name</b>													
<b>Explosives (µg/kg)</b>													
No Detections													
<b>Total Metals (mg/kg)</b>													
Aluminum	99,000	7,700	--	5,487	3,660	3,750	3,410	2,900	3,330	3,000	3,570	3,580	3,730
Antimony	41	3.1	5.42	0.447	0.13 J	4.3 UJ	0.12 J	0.38 J	0.16 J	0.17 J	0.14 J	0.14 J	5.3 UJ
Arsenic	1.6	0.39	5.24	0.626	<b>1.4</b>	<b>1.5</b>	<b>1.2</b>	<b>0.93</b>	<b>1</b>	<b>0.87</b>	<b>0.86</b>	<b>0.99</b>	<b>1</b>
Barium	19,000	1,500	848	14.5	<b>14.6 J</b>	12.8 J	12.5 J	<b>38</b>	<b>25.9</b>	<b>24.6</b>	<b>18.6</b>	<b>17.7</b>	<b>20.2</b>
Beryllium	200	16	3.38	0.103	0.46 U	0.079 J	0.37 U	0.38 U	0.45 U	0.36 U	0.36 U	0.37 U	0.44 U
Cadmium	81	7	0.95	0.033	<b>0.13 J</b>	<b>0.093 J</b>	<b>0.11 J</b>	<b>0.38</b>	<b>0.24 J</b>	<b>0.25 J</b>	<b>0.16 J</b>	<b>0.14 J</b>	<b>0.17 J</b>
Calcium	--	--	--	6,360	<b>10,100 J</b>	5,970 J	5,050 J	<b>13,800 J</b>	4,000 J	5,330 J	<b>9,750 J</b>	<b>13,700 J</b>	<b>13,400 J</b>
Chromium	310	23	27.2	6.05	<b>7.5</b>	<b>6.7</b>	<b>6.6</b>	<b>8.7</b>	<b>7.1</b>	<b>6.9</b>	5.8	5.6	<b>6.2</b>
Cobalt	1,700	150	--	0.294	0.23 J	0.23 J	0.2 J	0.2 J	0.15 J	0.17 J	0.23 J	0.24 J	0.26 J
Copper	4,100	310	704	4.83	3	2.5	2.5	7	4.8	4.7	3.6	2.9	3.5
Iron	72,000	5,500	151	3,245	2,930	2,840	2,550	2,000	1,990	1,930	2,470	2,510	2,660
Lead	800	400	270	12.3	6.4	6.1	5.8	<b>13.7</b>	9.9	10.2	10.4	11	8.8
Magnesium	--	--	--	238	<b>283 J</b>	<b>243 J</b>	206 J	200 J	136 J	180 J	<b>293 J</b>	<b>341 J</b>	<b>334 J</b>
Manganese	2,300	180	65.2	13.7	<b>19.6</b>	<b>15.5</b>	12.7	<b>17</b>	12.6	<b>15.3</b>	<b>24.9</b>	<b>26.9</b>	<b>26.6</b>
Mercury	31	2.3	0.015	0.081	<b>0.13</b>	0.073 J	<b>0.085</b>	<b>0.34</b>	0.064 J	<b>0.12</b>	0.023 J	0.043 J	<b>0.09 J</b>
Nickel	2,000	160	56.4	1.21	<b>1.3 J</b>	1.1 J	1.1 J	<b>1.3 J</b>	1.1 J	1.1 J	<b>1.3 J</b>	<b>1.3 J</b>	<b>1.5 J</b>
Selenium	510	39	12.2	0.563	3.3 U	2.5 U	2.6 U	0.53 J	3.1 U	0.41 J	2.5 U	0.35 J	0.43 J
Silver	510	39	0.217	0.14	<b>0.73 J</b>	<b>0.55 J</b>	<b>0.67 J</b>	<b>3.1</b>	<b>1.9</b>	<b>1.8</b>	<b>0.75</b>	<b>0.54 J</b>	<b>0.87 J</b>
Sodium	--	--	--	80.9	465 U	15 J	369 U	378 U	450 U	359 U	363 U	374 U	443 U
Vanadium	720	55	--	8.9	8.2	8.1	7.4	5.4	5.5	5.4	6.9	7.1	7.4
Zinc	31,000	2,300	550	10.8	<b>12.3 J</b>	10.1 J	9.9 J	<b>31.1 J</b>	<b>20 J</b>	<b>22 J</b>	<b>13.4 J</b>	<b>12.2 J</b>	<b>12.9 J</b>
<b>Wet Chemistry (mg/kg)</b>													
% Solids	--	--	--	--	74	99	99	97	82	98	97	94	82

**Notes:**  
 J - Analyte present, value may or may not be accurate or precise  
 U - The material was analyzed for, but not detected  
 UJ - Analyte not detected, quantitation limit may be inaccurate

Shading indicates exceedance of Adjusted Industrial Soil RSL

Underline indicates exceedance of Adjusted Residential Soil RSL

Bold box indicates exceedance of NCS

Bold text indicates exceedance of two times the mean background concentration

TABLE 4-2  
 TR-02-1 Surface Soil Analytical Results  
 Site UXO-01 Former Live Hand Grenade Course  
 MCB Camp Lejeune, North Carolina

Station ID Sample ID Sample Date	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NCSL (May 2005)	Camp Lejeune Background SS 2X Mean	MR01-SS01		MR01-SS02	MR01-SS03	MR01-SS04	MR01-SS05		MR01-SS06	MR01-SS07
					MR01-SS01-08B	MR01-SS01D-08B	MR01-SS02-08B	MR01-SS03-08B	MR01-SS04-08B	MR01-SS05-08B	MR01-SS05D-08B	MR01-SS06-08B	MR01-SS07-08B
					06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08
<b>Chemical Name</b>													
<b>Explosives (µg/kg)</b>													
2,4,6-Trinitrotoluene	31,000	3,100	--	--	100 U	100 U	100 U	100 U	180	100 U	100 U	100 U	100 U
<b>Total Metals (mg/kg)</b>													
Aluminum	99,000	7,700	--	5,487	3,660	3,410	3,380	4,260	1,830	1,850	1,810	955	1,720
Antimony	41	3.1	5.42	0.447	0.11 J	4.7 UJ	4.9 UJ	4.1 UJ	5.2 UJ	0.18 J	0.22 J	5.8 UJ	0.15 J
Arsenic	1.6	0.39	5.24	0.626	<b>1.6</b>	<b>1.5</b>	<b>1.6</b>	<b>1.1</b>	<b>0.68 J</b>	<b>0.65 J</b>	<b>0.75</b>	0.25 J	<u>0.52 J</u>
Barium	19,000	1,500	848	14.5	6.9 J	6.6 J	6.1 J	9.2 J	13.9 J	<b>23.8</b>	<b>24.1</b>	<b>23.4</b>	13.1 J
Beryllium	200	16	3.38	0.103	0.1 J	0.081 J	0.08 J	0.086 J	0.072 J	0.065 J	0.058 J	0.48 U	0.38 U
Cadmium	81	7	0.95	0.033	<b>0.092 J</b>	<b>0.054 J</b>	0.033 J	<b>0.046 J</b>	<b>0.038 J</b>	<b>0.2 J</b>	<b>0.2 J</b>	0.013 J	0.38 U
Calcium	--	--	--	6,360	<b>28,400 J</b>	<b>19,400 J</b>	<b>13,000 J</b>	<b>20,600 J</b>	1,530 J	3,010 J	2,580 J	297 J	86.2 J
Chromium	310	23	27.2	6.05	<b>7</b>	<b>6.5</b>	6	6	1.9	6	6	1.4	2
Cobalt	1,700	150	--	0.294	<b>0.5 J</b>	<b>0.31 J</b>	0.26 J	0.29 J	0.085 J	0.097 J	0.089 J	0.053 J	0.027 J
Copper	4,100	310	704	4.83	1.9	1.7 J	1.2 J	1.7 J	1.4 J	4.4	4.3	0.86 J	0.71 J
Iron	72,000	5,500	151	3,245	2,970	2,570	3,110	2,770	951	1,270	1,290	557	1,350
Lead	800	400	270	12.3	5.3	5.7	3.7	4.8	<b>17.6</b>	10	10.1	4.7	7.9
Magnesium	--	--	--	238	<b>591 J</b>	<b>427 J</b>	<b>373 J</b>	<b>455 J</b>	186 J	83.6 J	80.7 J	56.1 J	54.1 J
Manganese	2,300	180	65.2	13.7	<b>37.7</b>	<b>23</b>	<b>22.6</b>	<b>24.2</b>	<b>48</b>	<b>16.5</b>	<b>16.3</b>	<b>23.1</b>	5.4
Mercury	31	2.3	0.015	0.081	0.018 J	0.011 J	0.036 U	0.013 J	0.043 J	<b>0.23 J</b>	0.017 J	0.027 J	0.033 U
Nickel	2,000	160	56.4	1.21	<b>2.2 J</b>	<b>1.5 J</b>	<b>1.3 J</b>	<b>1.4 J</b>	0.88 J	0.79 J	0.78 J	0.33 J	0.38 J
Selenium	510	39	12.2	0.563	2.4 U	2.8 U	2.9 U	2.4 U	3 U	2.6 U	2.5 U	3.4 U	2.7 U
Silver	510	39	0.217	0.14	0.7 U	0.79 U	0.82 U	0.69 U	0.87 U	<b>1.9</b>	<b>1.8</b>	0.97 U	0.76 U
Sodium	--	--	--	80.9	37.7 J	29.5 J	27.9 J	43.7 J	21.5 J	12.3 J	357 U	483 U	382 U
Vanadium	720	55	--	8.9	<b>10</b>	8.4	8.9	8.3	4.7	4.2	3.7	2.3 J	3.9
Zinc	31,000	2,300	550	10.8	8.9 J	6.4 J	4.6 J	6.1 J	8 J	<b>18.9 J</b>	<b>18.6 J</b>	1.8 J	1.7 J
<b>Wet Chemistry (mg/kg)</b>													
% Solids	--	--	--	--	98	87	84	99	84	98	98	70	94

Notes:  
 J - Analyte present, value may or may not be accurate or precise  
 U - The material was analyzed for, but not detected  
 UJ - Analyte not detected, quantitation limit may be inaccurate  
 Shading indicates exceedance of Adjusted Industrial Soil RSL  
 Underline indicates exceedance of Adjusted Residential Soil RSL  
 Bold box indicates exceedance of NCSL  
 Bold text indicates exceedance of two times the mean background concentration

TABLE 4-2  
 TR-02-1 Surface Soil Analytical Results  
 Site UXO-01 Former Live Hand Grenade Course  
 MCB Camp Lejeune, North Carolina

Station ID	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NCSL (May 2005)	Camp Lejeune Background SS 2X Mean	MR01-SS08	MR01-SS09	MR01-SS10	MR01-SS11		MR01-SS12	MR01-SS13	MR01-SS14	MR01-SS15
Sample ID					MR01-SS08-08B	MR01-SS09-08B	MR01-SS10-08B	MR01-SS11-08B	MR01-SS11D-08B	MR01-SS12-08B	MR01-SS13-08B	MR01-SS14-08B	MR01-SS15-08B
Sample Date					06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08	06/19/08
<b>Chemical Name</b>													
<b>Explosives (µg/kg)</b>													
2,4,6-Trinitrotoluene	31,000	3,100	--	--	100 U	100 U	100 U	100 U	100 U				
<b>Total Metals (mg/kg)</b>													
Aluminum	99,000	7,700	--	5,487	2,000	1,080	827	534	856	1,530	4,190	2,410	1,370
Antimony	41	3.1	5.42	0.447	6 UJ	4.6 UJ	6.7 UJ	5.4 UJ	4.3 UJ	5.5 UJ	6 UJ	4.4 UJ	4.3 UJ
Arsenic	1.6	0.39	5.24	0.626	<b>1.5</b>	<u>0.49 J</u>	0.34 J	0.3 J	0.28 J	<b>0.66 J</b>	<b>1.8</b>	<u>0.62 J</u>	<u>0.51 J</u>
Barium	19,000	1,500	848	14.5	<b>26.7</b>	13.1 J	7.9 J	4.3 J	5.4 J	5.6 J	7.7 J	5.8 J	12.2 J
Beryllium	200	16	3.38	0.103	0.093 J	0.38 U	0.057 J	0.049 J	0.081 J	0.058 J	0.094 J	0.057 J	0.36 U
Cadmium	81	7	0.95	0.033	0.017 J	0.0088 J	0.0096 J	0.45 U	0.36 U	0.46 U	0.031 J	0.36 U	0.018 J
Calcium	--	--	--	6,360	447 J	376 J	340 J	139 J	141 J	252 J	<b>15,300 J</b>	168 J	234 J
Chromium	310	23	27.2	6.05	3.4	1.2	1.4	1	1.3	2.1	<b>6.8</b>	2.8	1.6
Cobalt	1,700	150	--	0.294	0.087 J	0.042 J	0.026 J	4.5 U	3.6 U	4.6 U	<b>0.31 J</b>	0.051 J	0.039 J
Copper	4,100	310	704	4.83	2.5 U	0.6 J	2.8 U	2.2 U	1.8 U	2.3 U	1.3 J	1.8 U	1 J
Iron	72,000	5,500	151	3,245	1,970	716	617	397	462	1,290	<b>3,540</b>	1,410	740
Lead	800	400	270	12.3	11.8	8.6	10	4.1	5	4.1	4.5	3.4	8
Magnesium	--	--	--	238	99.7 J	74.2 J	88 J	29.1 J	38 J	62 J	<b>406 J</b>	76.3 J	53.6 J
Manganese	2,300	180	65.2	13.7	7.1	<b>23.9</b>	7.7	7.2	8.2	<b>22.7</b>	<b>23.9</b>	7.4	<b>157</b>
Mercury	31	2.3	0.015	0.081	0.021 J	0.029 J	0.022 J	0.039 U	0.032 U	0.041 U	0.041 U	0.03 U	0.024 J
Nickel	2,000	160	56.4	1.21	0.67 J	0.32 J	0.3 J	0.11 J	0.14 J	0.24 J	<b>1.5 J</b>	0.41 J	0.32 J
Selenium	510	39	12.2	0.563	3.5 U	2.7 U	3.9 U	3.1 U	2.5 U	3.2 U	0.47 J	2.6 U	2.5 U
Silver	510	39	0.217	0.14	1 U	0.76 U	1.1 U	0.89 U	0.72 U	0.92 U	1 U	0.73 U	0.72 U
Sodium	--	--	--	80.9	22.2 J	382 U	16.4 J	447 U	8.8 J	9.9 J	22.6 J	364 U	359 U
Vanadium	720	55	--	8.9	7.6	2.8 J	2.8 J	2.2 J	2.6 J	3.7 J	<b>9.6</b>	4.7	3.1 J
Zinc	31,000	2,300	550	10.8	3.4 J	1.7 J	2.6 J	1.1 J	1.3 J	2.7 J	6.2 J	2.4 J	1.3 J
<b>Wet Chemistry (mg/kg)</b>													
% Solids	--	--	--	--	67	94	64	79	96	73	71	98	97

Notes:  
 J - Analyte present, value may or may not be accurate or precise  
 U - The material was analyzed for, but not detected  
 UJ - Analyte not detected, quantitation limit may be inaccurate  
 Shading indicates exceedance of Adjusted Industrial Soil RSL  
 Underline indicates exceedance of Adjusted Residential Soil RSL  
 Bold box indicates exceedance of NCSL  
 Bold text indicates exceedance of two times the mean background concentration

TABLE 4-3  
 Subsurface Soil Analytical Results  
 Site UXO-01 Former Live Hand Grenade Course  
 MCB Camp Lejeune, North Carolina

Station ID	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NCSSL (May 2005)	Camp Lejeune Background SB 2X Mean	MR01-IS01	MR01-IS02	MR01-IS03	MR01-IS04	MR01-IS05	MR01-IS06	MR01-IS07		MR01-IS08
Sample ID					MR01-IS01-7-8-08C	MR01-IS02-11-12-08C	MR01-IS03-19-20-08C	MR01-IS04-19-20-08C	MR01-IS05-18-19-08C	MR01-IS06-10-11-08C	MR01-IS07-9-10-08C	MR01-IS07D-9-10-08C	MR01-IS08-13.5-14.5-08C
Sample Date					07/13/08	07/13/08	07/12/08	07/12/08	07/13/08	07/13/08	07/13/08	07/13/08	07/12/08
Chemical Name													
<b>Explosives (µg/kg)</b>													
2,4,6-Trinitrotoluene	31,000	3,100	--	--	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	73 J
<b>Total Metals (mg/kg)</b>													
Aluminum	99,000	7,700	--	10,369	<b>11,500 J</b>	1,390 J	6,740 J	1,800 J	7,040 J	4,460 J	2,940 J	2,470 J	<b>8,140 J</b>
Antimony	41	3.1	5.42	0.36	<b>0.53 J</b>	0.34 J	4.5 UJ	5 UJ	4.9 UJ	<b>0.73 J</b>	4.8 UJ	<b>0.48 J</b>	<b>0.41 J</b>
Arsenic	1.6	0.39	5.24	2.12	<b>2</b>	<b>0.41 J</b>	<b>0.96</b>	<b>0.44 J</b>	<b>3.1</b>	0.8 U	0.36 J	<b>0.99</b>	<b>2.1</b>
Barium	19,000	1,500	848	16.6	16.2 U	15.6 U	16.6	16.6 U	16.4 U	16.1 U	16 U	16.1 U	16.3 U
Beryllium	200	16	3.38	0.165	0.13 J	0.015 J	0.069 J	0.029 J	0.097 J	0.042 J	0.042 J	0.035 J	0.11 J
Calcium	--	--	--	441	20.8 J	19.9 J	24.8 J	15.4 J	11.4 J	25.8 J	299 J	<b>591</b>	42.1 J
Chromium	310	23	27.2	14.5	<b>16.4</b>	3.3	6.1	3.2	12	5	4.4	4.9	13.1
Cobalt	1,700	150	--	0.822	0.48 J	0.087 J	0.4 J	4.2 U	0.3 J	0.19 J	4 U	0.13 J	0.37 J
Iron	72,000	5,500	151	5,439	<b>5,880</b>	1,430	3,540	514	<b>5,530</b>	812	739	1,410	3,490
Lead	800	400	270	8.49	<b>9.2</b>	3.3	4.8	1.7	7.4	5.7	2.3	4.2	5.3
Magnesium	--	--	--	363	<b>478 J</b>	391 U	379 U	415 U	411 U	402 U	399 U	402 U	406 U
Manganese	2,300	180	65.2	9.25	7.1 J	7.2 J	6.6 J	2.3 J	6.4 J	4.5 J	1.9 J	3.1 J	5.6 J
Mercury	31	2.3	0.015	0.071	0.0098 J	0.033 U	0.011 J	0.033 U	0.035 U	0.035 U	0.035 U	0.034 U	0.034 U
Potassium	--	--	--	361	<b>555 J</b>	391 U	379 U	415 U	411 U	402 U	399 U	402 U	406 U
Silver	510	39	0.217	0.129	0.81 U	0.78 U	0.76 U	0.83 U	0.82 U	0.036 J	0.8 U	0.044 J	0.81 U
Vanadium	720	55	--	17.2	<b>20.1</b>	4.9	10	4.3	<b>18.3</b>	6.7	4.2	6.3	<b>20.2</b>
Zinc	31,000	2,300	550	6.59	5.4	4.7 U	4.5 U	5 U	4.9 U	4.8 U	4.8 U	4.8 U	4.9 U
<b>Wet chemistry (mg/kg)</b>													
% Solids	--	--	--	--	84	93	90	90	89	86	89	90	86

Notes:  
 J - Analyte present, value may or may not be accurate or precise  
 U - The material was analyzed for, but not detected  
 UJ - Analyte not detected, quantitation limit may be inaccurate  
 Shading indicates exceedance of Adjusted Industrial Soil RSL  
 Underlining indicates exceedance of Adjusted Residential Soil RSL  
 Bold box indicates exceedance of NCSSL  
 Bold text indicates exceedance of two times the mean background concentration

TABLE 4-4

Groundwater Analytical Results  
 Site UXO-01 Former Live Hand Grenade Course  
 MCB Camp Lejeune, North Carolina

Station ID Sample ID Sample Date	Adjusted Tap Water RSLs	NCGWQS (December 2006)	Camp Lejeune Background GW 2X Mean	MR01-TW01		MR01-TW02	MR01-TW03
				MR01-TW01-08C	MR01-TW01D-08C	MR01-TW02-08C	MR01-TW03-08C
				07/30/08	07/30/08	07/30/08	07/30/08
<b>Chemical Name</b>							
<b>Explosives (µg/L)</b>							
Perchlorate	2.6	--	--	0.2 U	0.2 U	0.329	0.2 U
<b>Total Metals (µg/L)</b>							
Aluminum	3,700	--	1,886	706 J	342 J	1,300 J	1,710 J
Beryllium	7.3	--	0.308	0.086 J	0.068 J	0.1 J	0.13 J
Calcium	--	--	69,078	1,000 J	856 J	531 J	669 J
Chromium	11	50	3.13	<b>3.2 J</b>	2 J	<b>6.8 J</b>	<b>4.5 J</b>
Cobalt	1.1	--	3.4	50 U	50 U	50 U	1.4 J
Copper	150	1,000	2.76	<b>3.4 J</b>	2.6 J	<b>7.3 J</b>	<b>4.3 J</b>
Iron	2,600	300	5,999	<b>7,370</b>	<b>6,720</b>	4,690	3,460
Lead	--	15	2.8	2 J	10 U	2.6 J	10 U
Magnesium	--	--	6,363	703 J	677 J	921 J	1,510 J
Manganese	88	50	214	87.9	82.4	47.2	33.8
Mercury	1.1	1.05	0.1	0.045 J	0.02 J	0.2 U	0.092 J
Nickel	73	100	7.97	<b>9.4 J</b>	<b>9.3 J</b>	6.7 J	<b>8.4 J</b>
Sodium	--	--	22,508	5,000 U	5,000 U	5,380	7,990
Vanadium	26	--	4.72	50 U	50 U	4 J	3.7 J
<b>Dissolved Metals (µg/L)</b>							
Aluminum	3,700	--	1,886	200 U	200 U	200 U	273 J
Beryllium	7.3	--	0.308	5 U	0.062 J	0.069 J	0.11 J
Calcium	--	--	69,078	883 J	915 J	480 J	571 J
Chromium	11	50	3.13	10 U	10 U	10 U	1.2 J
Iron	2,600	300	5,999	<b>5,700</b>	<b>5,720</b>	<b>3,630</b>	2,170
Magnesium	--	--	6,363	648 J	684 J	807 J	1,430 J
Manganese	88	50	214	76.2	75.9	39.9	28.3
Mercury	1.1	1.05	0.1	0.2 U	0.2 U	0.063 J	0.051 J
Nickel	73	100	7.97	<b>8.8 J</b>	7.9 J	5.9 J	6.1 J
Sodium	--	--	22,508	5,000 U	5,000 U	5,490	8,190

**Notes:**

J - Analyte present, value may or may not be accurate or precise

U - Not detected

Shading indicates exceedance of Adjusted Tap Water RSL

Bold box indicates exceedance of NCGWQS

Bold text indicates exceedance of two times the mean background concentration

**Appendix B**  
**MEC Intrusive Investigation Documents**

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TABLE B-1  
MEC Intrusive Investigation Results  
Site UXO-01 (ASR # 2.23) Expanded SI Report  
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-01#2.23-00001	UXO-01#2.23	11.19	9/13/2011	284989.5	3844918	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.2	Scrap Bin	None	
UXO-01#2.23-00002	UXO-01#2.23	12.14	2/1/2012	284989.5	3844920	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00003	UXO-01#2.23	3.1	9/13/2011	284979	3844922.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00004	UXO-01#2.23	8.04	9/13/2011	284989.25	3844922.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00005	UXO-01#2.23	60.08	9/13/2011	284965.5	3844923.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.2	Scrap Bin	None	
UXO-01#2.23-00006	UXO-01#2.23	3.32	9/13/2011	284978.75	3844926	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00007	UXO-01#2.23	6.02	9/14/2011	284998.25	3844928.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	1	0.2	Scrap Bin	None	
UXO-01#2.23-00008	UXO-01#2.23	8.4	9/13/2011	284978	3844929	Cultural Debris	Scrap	N/A	N/A	N/A	7	1	0.1	Scrap Bin	None	
UXO-01#2.23-00009	UXO-01#2.23	2.94	9/14/2011	284998.25	3844930.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00010	UXO-01#2.23	8.26	9/14/2011	284978	3844931.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00011	UXO-01#2.23	2.85	9/13/2011	284944	3844931.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	1	0.1	Scrap Bin	None	
UXO-01#2.23-00012	UXO-01#2.23	3.69	9/14/2011	284998.25	3844936	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00013	UXO-01#2.23	277.46	2/1/2012	284965.25	3844932	Cultural Debris	Scrap	N/A	N/A	N/A	2	14	1	Scrap Bin	None	
UXO-01#2.23-00014	UXO-01#2.23	20.92	9/13/2011	284977.75	3844933.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.3	Scrap Bin	None	
UXO-01#2.23-00015	UXO-01#2.23	10.72	9/12/2011	284934	3844934.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00016	UXO-01#2.23	34.49	9/13/2011	284953.75	3844936	Cultural Debris	Scrap	N/A	N/A	N/A	10	7	1.2	Scrap Bin	None	
UXO-01#2.23-00017	UXO-01#2.23	11.54	9/13/2011	284977	3844937.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00018	UXO-01#2.23	10.59	9/13/2011	284953.5	3844937.5	Cultural Debris	Scrap	N/A	N/A	N/A	6	8	0.1	Scrap Bin	None	
UXO-01#2.23-00019	UXO-01#2.23	9.32	9/13/2011	284976.5	3844940.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00020	UXO-01#2.23	9.11	9/13/2011	284977	3844940.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00021	UXO-01#2.23	730.97	9/12/2011	284933	3844941.5	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00022	UXO-01#2.23	335.35	9/12/2011	284953.5	3844943	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00023	UXO-01#2.23	6.07	9/13/2011	284976.5	3844943.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.2	Scrap Bin	None	
UXO-01#2.23-00024	UXO-01#2.23	6.74	9/14/2011	285001.5	3844943.75	Cultural Debris	Scrap	N/A	N/A	N/A	7	8	0.2	Scrap Bin	None	
UXO-01#2.23-00025	UXO-01#2.23	2.76	9/14/2011	284942.75	3844944	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00026	UXO-01#2.23	201.79	9/14/2011	285059.5	3844944.25	QC	QC Seed	QC Seed	N/A	N/A	1	4	0.5	Consolidation Poir	None	
UXO-01#2.23-00027	UXO-01#2.23	35.41	9/13/2011	285002.25	3844945.25	Cultural Debris	Scrap	N/A	N/A	N/A	3	2	0.2	Scrap Bin	None	
UXO-01#2.23-00028	UXO-01#2.23	3.15	9/13/2011	284976.5	3844945.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	3	0.1	Scrap Bin	None	
UXO-01#2.23-00029	UXO-01#2.23	295.13	9/13/2011	284987.5	3844948.25	QC	QC Seed	QC Seed	N/A	N/A	1	4	0.5	Consolidation Poir	None	
UXO-01#2.23-00030	UXO-01#2.23	33.94	9/13/2011	284953.5	3844949.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.4	Scrap Bin	None	
UXO-01#2.23-00031	UXO-01#2.23	2.68	9/12/2011	284920.75	3844949.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.2	Scrap Bin	None	
UXO-01#2.23-00032	UXO-01#2.23	6.14	9/13/2011	284964	3844951	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00033	UXO-01#2.23	10.78	9/13/2011	284942.25	3844951.5	Cultural Debris	Scrap	N/A	N/A	N/A	3	1	0.1	Scrap Bin	None	
UXO-01#2.23-00034	UXO-01#2.23	5.86	9/13/2011	284942.25	3844952.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	2	0.15	Scrap Bin	None	
UXO-01#2.23-00035	UXO-01#2.23	3.48	9/12/2011	284932.25	3844952.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-01#2.23-00036	UXO-01#2.23	123.7	9/13/2011	284953	3844952.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00037	UXO-01#2.23	2.82	9/13/2011	284987.25	3844953	Cultural Debris	Scrap	N/A	N/A	N/A	19	4	0.1	Scrap Bin	None	
UXO-01#2.23-00038	UXO-01#2.23	5.17	9/13/2011	284975.5	3844954	Cultural Debris	Scrap	N/A	N/A	N/A	5	4	0.25	Scrap Bin	None	
UXO-01#2.23-00039	UXO-01#2.23	2.96	9/13/2011	284987.25	3844954	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00040	UXO-01#2.23	8.67	9/13/2011	284963.5	3844955.25	Cultural Debris	Scrap	N/A	N/A	N/A	3	2	0.3	Scrap Bin	None	
UXO-01#2.23-00041	UXO-01#2.23	2.59	9/12/2011	284918.25	3844956.75	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00042	UXO-01#2.23	23.1	9/13/2011	284963.25	3844958	Cultural Debris	Scrap	N/A	N/A	N/A	4	10	0.2	Scrap Bin	None	
UXO-01#2.23-00043	UXO-01#2.23	22.14	9/13/2011	284963.5	3844958	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.2	Scrap Bin	None	
UXO-01#2.23-00044	UXO-01#2.23	3.36	9/12/2011	284917.25	3844958.5	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00045	UXO-01#2.23	2.59	9/12/2011	284931.5	3844958.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.2	Scrap Bin	None	
UXO-01#2.23-00046	UXO-01#2.23	3.36	9/13/2011	284986	3844958.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00047	UXO-01#2.23	9.93	9/13/2011	284975	3844959	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00048	UXO-01#2.23	2.74	9/12/2011	284909.25	3844959.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00049	UXO-01#2.23	2.51	9/12/2011	284909	3844960.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00050	UXO-01#2.23	2.69	9/12/2011	284917	3844960.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00051	UXO-01#2.23	7.86	9/13/2011	284951.5	3844961	Cultural Debris	Scrap	N/A	N/A	N/A	1	20	0.4	Scrap Bin	None	
UXO-01#2.23-00052	UXO-01#2.23	4.78	9/13/2011	284962.75	3844961	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00053	UXO-01#2.23	5.17	9/13/2011	284974.25	3844961.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00054	UXO-01#2.23	4.41	9/13/2011	284962.5	3844962.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00055	UXO-01#2.23	2.64	9/12/2011	284908.75	3844962.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00056	UXO-01#2.23	3.44	9/12/2011	284916.75	3844963	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.4	Scrap Bin	None	
UXO-01#2.23-00057	UXO-01#2.23	2.52	9/12/2011	284931	3844963.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00058	UXO-01#2.23	5.38	9/13/2011	284951	3844963.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	1	Scrap Bin	None	

TABLE B-1  
 MEC Intrusive Investigation Results  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-01#2.23-00059	UXO-01#2.23	2.6	9/12/2011	284916.75	3844964	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00060	UXO-01#2.23	6.26	9/13/2011	284962.75	3844964.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00061	UXO-01#2.23	3.13	9/12/2011	284896.75	3844964.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00062	UXO-01#2.23	3.48	9/13/2011	284974	3844965.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00063	UXO-01#2.23	17.24	9/12/2011	284930.75	3844965.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00064	UXO-01#2.23	144.92	9/13/2011	284984.75	3844966.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	1	Scrap Bin	None	
UXO-01#2.23-00065	UXO-01#2.23	5.79	9/13/2011	284940.5	3844967.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00066	UXO-01#2.23	3.08	9/12/2011	284896.5	3844968.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-01#2.23-00067	UXO-01#2.23	2.86	9/13/2011	284973.75	3844969.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00068	UXO-01#2.23	3.48	9/12/2011	284896.5	3844970.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	1	Scrap Bin	None	
UXO-01#2.23-00069	UXO-01#2.23	9.69	9/13/2011	284950	3844970.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00070	UXO-01#2.23	12.07	9/13/2011	284950.25	3844970.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	Shared with 70
UXO-01#2.23-00071	UXO-01#2.23	2.64	9/12/2011	284929.75	3844970.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	5	0.1	Scrap Bin	None	
UXO-01#2.23-00072	UXO-01#2.23	240.55	9/13/2011	284940	3844970.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00073	UXO-01#2.23	3.48	9/13/2011	284961.5	3844971.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00074	UXO-01#2.23	4.24	9/13/2011	284961	3844973.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00075	UXO-01#2.23	2.66	9/13/2011	284973.25	3844973.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00076	UXO-01#2.23	4.33	9/13/2011	284983.5	3844973.5	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Gas line below 24 inches
UXO-01#2.23-00077	UXO-01#2.23	7.68	9/12/2011	284929.25	3844974.25	Cultural Debris	Scrap	N/A	N/A	N/A	3	8	0.1	Scrap Bin	None	
UXO-01#2.23-00078	UXO-01#2.23	4.02	9/13/2011	284983.25	3844974.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	3	0.1	Scrap Bin	None	
UXO-01#2.23-00079	UXO-01#2.23	6.03	9/13/2011	284949.5	3844975.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	4	0.2	Scrap Bin	None	
UXO-01#2.23-00080	UXO-01#2.23	4.24	9/12/2011	284915	3844975.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00081	UXO-01#2.23	5.96	9/13/2011	284949.5	3844977	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-01#2.23-00082	UXO-01#2.23	3.23	9/13/2011	284960.5	3844977.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00083	UXO-01#2.23	77.81	9/13/2011	284938.5	3844978.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	8	2	Scrap Bin	None	More below 24 inches
UXO-01#2.23-00084	UXO-01#2.23	3.99	9/13/2011	284949.25	3844978.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.2	Scrap Bin	None	
UXO-01#2.23-00085	UXO-01#2.23	2.71	9/12/2011	284914.25	3844980.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00086	UXO-01#2.23	4.86	9/12/2011	284906.75	3844980.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	10	0.25	Scrap Bin	None	
UXO-01#2.23-00087	UXO-01#2.23	4.66	9/12/2011	284928	3844981	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00088	UXO-01#2.23	13.66	9/13/2011	284960	3844982.5	Cultural Debris	Scrap	N/A	N/A	N/A	3	2	0.1	Scrap Bin	None	
UXO-01#2.23-00089	UXO-01#2.23	10.07	9/13/2011	284983	3844983.25	Cultural Debris	Scrap	N/A	N/A	N/A	3	3	0.1	Scrap Bin	None	
UXO-01#2.23-00090	UXO-01#2.23	5.82	9/13/2011	284948.5	3844983.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00091	UXO-01#2.23	2.71	9/13/2011	284959.5	3844986	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-01#2.23-00092	UXO-01#2.23	70.67	9/12/2011	284894.5	3844986.75	Cultural Debris	Scrap	N/A	N/A	N/A	4	3	8	Scrap Bin	None	
UXO-01#2.23-00093	UXO-01#2.23	2.69	9/13/2011	284948	3844987	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00094	UXO-01#2.23	5.82	9/13/2011	284937.75	3844987.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00095	UXO-01#2.23	2.81	9/12/2011	284912.75	3844987.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.4	Scrap Bin	None	
UXO-01#2.23-00096	UXO-01#2.23	133.59	9/14/2011	284970.5	3844989.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00097	UXO-01#2.23	2.91	9/12/2011	284912.25	3844990.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	1	Scrap Bin	None	
UXO-01#2.23-00098	UXO-01#2.23	438.09	9/13/2011	284947.25	3844992.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	24	0.1	Scrap Bin	None	
UXO-01#2.23-00099	UXO-01#2.23	3.22	9/12/2011	284925.5	3844993.75	Cultural Debris	Scrap	N/A	N/A	N/A	2	8	3	Scrap Bin	None	
UXO-01#2.23-00100	UXO-01#2.23	2.71	9/12/2011	284893.75	3844994.75	Cultural Debris	Scrap	N/A	N/A	N/A	3	6	0.2	Scrap Bin	None	
UXO-01#2.23-00101	UXO-01#2.23	4.09	9/14/2011	284893.5	3844997.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00102	UXO-01#2.23	8.19	9/13/2011	284969	3844998	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00103	UXO-01#2.23	7.4	9/13/2011	284935.75	3844999.5	Cultural Debris	Scrap	N/A	N/A	N/A	5	5	0.1	Scrap Bin	None	
UXO-01#2.23-00104	UXO-01#2.23	6.27	9/12/2011	284911.5	3845000.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	4	2	Scrap Bin	None	
UXO-01#2.23-00105	UXO-01#2.23	4.16	9/14/2011	285052.75	3845000.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00106	UXO-01#2.23	4.02	9/12/2011	284924	3845000.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00107	UXO-01#2.23	4.95	9/13/2011	284945.5	3845000.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00108	UXO-01#2.23	7.14	9/12/2011	284935.25	3845002.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00109	UXO-01#2.23	2.75	9/14/2011	284957.5	3845002.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00110	UXO-01#2.23	13.13	9/13/2011	284945.5	3845003.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	8	0.5	Scrap Bin	None	
UXO-01#2.23-00111	UXO-01#2.23	11.4	9/12/2011	284923	3845004.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00112	UXO-01#2.23	2.64	9/13/2011	284957.25	3845004.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00113	UXO-01#2.23	9.02	9/12/2011	284935.25	3845005.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00114	UXO-01#2.23	3.2	9/13/2011	284945	3845006.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00115	UXO-01#2.23	2.89	9/12/2011	284910.5	3845010.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00116	UXO-01#2.23	2.58	9/12/2011	284910.5	3845012.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	

TABLE B-1  
 MEC Intrusive Investigation Results  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-01#2.23-00117	UXO-01#2.23	2.82	2/1/2012	284967.5	3845013	Cultural Debris	Scrap	N/A	N/A	N/A	6	10	0.5	Scrap Bin	None	
UXO-01#2.23-00118	UXO-01#2.23	2.54	9/12/2011	284922	3845013.25	Cultural Debris	Scrap	N/A	N/A	N/A	5	4	0.5	Scrap Bin	None	
UXO-01#2.23-00119	UXO-01#2.23	7.18	9/12/2011	284933.5	3845014.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-01#2.23-00120	UXO-01#2.23	3.24	9/14/2011	285049.25	3845015.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00121	UXO-01#2.23	70.76	9/13/2011	284956.25	3845015.75	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Gas line below 24 inches
UXO-01#2.23-00122	UXO-01#2.23	5.17	9/12/2011	284933.25	3845017.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.25	Scrap Bin	None	
UXO-01#2.23-00123	UXO-01#2.23	3.48	9/12/2011	284921	3845017.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00124	UXO-01#2.23	3.81	9/13/2011	284881.25	3845019.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	1	0.1	Scrap Bin	None	
UXO-01#2.23-00125	UXO-01#2.23	11.61	9/14/2011	284891.25	3845020.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	1.25	Scrap Bin	None	
UXO-01#2.23-00126	UXO-01#2.23	3.75	9/12/2011	284881	3845020.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00127	UXO-01#2.23	6.96	9/12/2011	284921	3845020.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00128	UXO-01#2.23	5.52	9/12/2011	284932.75	3845021.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00129	UXO-01#2.23	130.26	9/13/2011	284955.5	3845022.25	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00130	UXO-01#2.23	4.48	9/12/2011	284920.5	3845023.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.4	Scrap Bin	None	
UXO-01#2.23-00131	UXO-01#2.23	21.3	9/13/2011	284967.25	3845024.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00132	UXO-01#2.23	14	9/12/2011	284920.5	3845024.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00133	UXO-01#2.23	2.57	9/13/2011	284941	3845025.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00134	UXO-01#2.23	6.16	9/12/2011	284920.25	3845026.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.3	Scrap Bin	None	
UXO-01#2.23-00135	UXO-01#2.23	23.11	9/13/2011	284955.25	3845026.5	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00136	UXO-01#2.23	3.74	9/13/2011	284954.25	3845028.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00137	UXO-01#2.23	2.78	9/13/2011	284940.25	3845029	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00138	UXO-01#2.23	9.07	9/12/2011	284920	3845029.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	1	Scrap Bin	None	
UXO-01#2.23-00139	UXO-01#2.23	128.88	9/12/2011	284909.5	3845029.75	Facility Resource	Facility Resource	Utility	N/A	N/A	1	12	0	Left in Place	None	Buried cable
UXO-01#2.23-00140	UXO-01#2.23	2.79	9/13/2011	284939.75	3845031	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00141	UXO-01#2.23	5.44	9/12/2011	284931.25	3845031.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.4	Scrap Bin	None	
UXO-01#2.23-00142	UXO-01#2.23	7.61	9/13/2011	284953.25	3845032	Cultural Debris	Scrap	N/A	N/A	N/A	2	1	0.1	Scrap Bin	None	
UXO-01#2.23-00143	UXO-01#2.23	5.92	9/13/2011	284939.5	3845032.75	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00144	UXO-01#2.23	4.23	9/12/2011	284920	3845034	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00145	UXO-01#2.23	3.23	9/13/2011	284964.25	3845035.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00146	UXO-01#2.23	2.82	9/13/2011	284939.5	3845036.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00147	UXO-01#2.23	6.39	9/13/2011	284951.75	3845036.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00148	UXO-01#2.23	2.58	9/12/2011	284930.25	3845039	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	3	Scrap Bin	None	
UXO-01#2.23-00149	UXO-01#2.23	3.04	9/12/2011	284919.25	3845040	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00150	UXO-01#2.23	73.31	9/13/2011	284962	3845040.25	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00151	UXO-01#2.23	2.72	9/12/2011	284930	3845040.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00152	UXO-01#2.23	169.62	9/13/2011	284939.75	3845044.25	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Utility below 24 inches
UXO-01#2.23-00153	UXO-01#2.23	23.93	9/13/2011	284959.5	3845049.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00154	UXO-01#2.23	2.77	9/12/2011	284928.75	3845050	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	2	Scrap Bin	None	
UXO-01#2.23-00155	UXO-01#2.23	24.66	9/12/2011	284917.5	3845053.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.25	Scrap Bin	None	
UXO-01#2.23-00156	UXO-01#2.23	4.65	9/12/2011	284917.75	3845055.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00157	UXO-01#2.23	8.07	9/12/2011	284917.25	3845058	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.5	Scrap Bin	None	
UXO-01#2.23-00158	UXO-01#2.23	5.21	9/13/2011	284939.5	3845059.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	3	2	Scrap Bin	None	
UXO-01#2.23-00159	UXO-01#2.23	24.34	9/12/2011	284927.5	3845062	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	5	Scrap Bin	None	
UXO-01#2.23-00160	UXO-01#2.23	5.58	9/13/2011	284966	3845062	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00161	UXO-01#2.23	69.87	9/13/2011	284965.5	3845065	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Utility line below 24 inches
UXO-01#2.23-00162	UXO-01#2.23	85.09	9/12/2011	284926.75	3845068.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00163	UXO-01#2.23	8.08	9/13/2011	284965	3845068.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	2	0.1	Scrap Bin	None	
UXO-01#2.23-00164	UXO-01#2.23	2.78	9/13/2011	284956.25	3845071	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00165	UXO-01#2.23	5.92	9/12/2011	284915	3845073	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00166	UXO-01#2.23	5.17	9/12/2011	284926	3845073.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00167	UXO-01#2.23	4.11	9/12/2011	284926	3845074.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00168	UXO-01#2.23	3.82	9/12/2011	284915	3845075	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00169	UXO-01#2.23	4.68	9/12/2011	284925.5	3845078.5	Cultural Debris	Scrap	N/A	N/A	N/A	2	8	0.5	Scrap Bin	None	
UXO-01#2.23-00170	UXO-01#2.23	2.74	9/12/2011	284906.75	3845083.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00171	UXO-01#2.23	2.9	2/1/2012	285086.25	3845084.5	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00172	UXO-01#2.23	99.39	9/12/2011	284914	3845085.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.2	Scrap Bin	None	
UXO-01#2.23-00173	UXO-01#2.23	2.92	9/14/2011	285048.5	3845086.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00174	UXO-01#2.23	4.32	9/12/2011	284894.25	3845091.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	

TABLE B-1  
 MEC Intrusive Investigation Results  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-01#2.23-00175	UXO-01#2.23	9.14	9/12/2011	284894	3845093	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00176	UXO-01#2.23	3.61	9/12/2011	284923.5	3845095.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00177	UXO-01#2.23	2.7	9/13/2011	285048.75	3845097	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00178	UXO-01#2.23	28.88	9/12/2011	284906.25	3845101.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00179	UXO-01#2.23	7.41	9/13/2011	284977	3845102.25	Cultural Debris	Scrap	N/A	N/A	N/A	2	6	0.1	Scrap Bin	None	
UXO-01#2.23-00180	UXO-01#2.23	2.56	9/12/2011	284913.5	3845103	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	Shared with 181
UXO-01#2.23-00181	UXO-01#2.23	2.9	9/12/2011	284913.75	3845103	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00182	UXO-01#2.23	2.72	9/12/2011	284913.75	3845105	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00183	UXO-01#2.23	13.72	9/13/2011	284987.25	3845124	Cultural Debris	Scrap	N/A	N/A	N/A	2	4	0.2	Scrap Bin	None	
UXO-01#2.23-00184	UXO-01#2.23	19.42	9/13/2011	284987.25	3845127.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00185	UXO-01#2.23	20.72	9/14/2011	285045	3845128.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00186	UXO-01#2.23	2.56	9/14/2011	285033.25	3845132.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00187	UXO-01#2.23	14.64	9/13/2011	284987.25	3845135	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00188	UXO-01#2.23	2.52	9/13/2011	284986	3845140	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00189	UXO-01#2.23	1.48	9/14/2011	285017.42	3844924.6	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00190	UXO-01#2.23	3.42	9/14/2011	285014.51	3844948.02	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00191	UXO-01#2.23	2.33	9/14/2011	284994.79	3844993.79	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-01#2.23-00192	UXO-01#2.23	122.43	9/14/2011	285000.22	3844939.02	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00193	UXO-01#2.23	2.1	9/13/2011	284981.04	3844999.61	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.25	Scrap Bin	None	
UXO-01#2.23-00194	UXO-01#2.23	3.76	9/13/2011	284967.28	3845014.03	Cultural Debris	Scrap	N/A	N/A	N/A	1	10	0.5	Scrap Bin	None	Shared with 117
UXO-01#2.23-00195	UXO-01#2.23	1.85	9/13/2011	284950.61	3845041.95	Cultural Debris	Scrap	N/A	N/A	N/A	5	4	0.25	Scrap Bin	None	
UXO-01#2.23-00196	UXO-01#2.23	10.45	9/12/2011	284913.43	3845092.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-01#2.23-00197	UXO-01#2.23	48.97	9/12/2011	284918.2	3845048.43	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Shared with 198
UXO-01#2.23-00198	UXO-01#2.23	866.18	9/12/2011	284908.54	3845046.31	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Culvert
UXO-01#2.23-00199	UXO-01#2.23	9.57	9/14/2011	284907.75	3845063.77	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.2	Scrap Bin	None	
UXO-01#2.23-00200	UXO-01#2.23	9.79	9/12/2011	284907.88	3845060.6	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00201	UXO-01#2.23	15.94	9/12/2011	284906.16	3845096.98	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00202	UXO-01#2.23	10.9	9/12/2011	284894.12	3845089.31	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00203	UXO-01#2.23	21.66	9/12/2011	284895.18	3845080.05	Cultural Debris	Scrap	N/A	N/A	N/A	1	15	3	Scrap Bin	None	
UXO-01#2.23-00204	UXO-01#2.23	11.14	9/12/2011	284895.44	3845077.93	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.25	Scrap Bin	None	
UXO-01#2.23-00205	UXO-01#2.23	3.37	9/12/2011	284895.97	3845073.96	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00206	UXO-01#2.23	524.74	9/12/2011	284897.43	3845059.14	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Culvert
UXO-01#2.23-00207	UXO-01#2.23	2930.96	9/12/2011	284897.69	3845057.82	Facility Resource	Facility Resource	Utility	N/A	N/A	1	24	0	Left in Place	None	Culvert
UXO-01#2.23-00208	UXO-01#2.23	135.66	9/12/2011	284898.62	3845048.96	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00209	UXO-01#2.23	13.17	9/13/2011	284958.55	3845054.38	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00210	UXO-01#2.23	8.14	9/12/2011	284900.6	3845030.7	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.6	Scrap Bin	None	
UXO-01#2.23-00211	UXO-01#2.23	18.5	9/12/2011	284901	3845026.34	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00212	UXO-01#2.23	24.01	9/12/2011	284901.53	3845023.43	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00213	UXO-01#2.23	15.95	9/12/2011	284902.72	3845012.58	Cultural Debris	Scrap	N/A	N/A	N/A	5	20	0.1	Scrap Bin	None	
UXO-01#2.23-00214	UXO-01#2.23	10.84	9/12/2011	284903.91	3845002.26	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00215	UXO-01#2.23	10.43	9/12/2011	284904.31	3845000.27	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.5	Scrap Bin	None	
UXO-01#2.23-00216	UXO-01#2.23	5.05	9/14/2011	284904.44	3844998.16	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00217	UXO-01#2.23	2.39	9/12/2011	284907.35	3844972.76	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00218	UXO-01#2.23	2.46	9/12/2011	284895.58	3844976.59	Cultural Debris	Scrap	N/A	N/A	N/A	2	6	0.2	Scrap Bin	None	
UXO-01#2.23-00219	UXO-01#2.23	3.26	9/12/2011	284895.05	3844981.22	Cultural Debris	Scrap	N/A	N/A	N/A	3	6	0.5	Scrap Bin	None	
UXO-01#2.23-00220	UXO-01#2.23	228.93	9/12/2011	284891.47	3845016.28	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00221	UXO-01#2.23	3.64	9/12/2011	284892.67	3845004.51	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.3	Scrap Bin	None	
UXO-01#2.23-00222	UXO-01#2.23	14.58	9/12/2011	284890.68	3845024.62	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.25	Scrap Bin	None	
UXO-01#2.23-00223	UXO-01#2.23	45.89	9/12/2011	284890.15	3845030.57	Cultural Debris	Scrap	N/A	N/A	N/A	4	6	0.3	Scrap Bin	None	
UXO-01#2.23-00224	UXO-01#2.23	9.09	9/12/2011	284890.02	3845032.42	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00225	UXO-01#2.23	66.71	9/12/2011	284888.56	3845046.05	Cultural Debris	Scrap	N/A	N/A	N/A	2	3	0.4	Scrap Bin	None	
UXO-01#2.23-00226	UXO-01#2.23	5.5	9/12/2011	284889.49	3845036.13	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00227	UXO-01#2.23	10.07	9/12/2011	284887.11	3845059.28	Cultural Debris	Scrap	N/A	N/A	N/A	2	12	2	Scrap Bin	None	
UXO-01#2.23-00228	UXO-01#2.23	279.38	9/12/2011	284886.18	3845071.18	Cultural Debris	Scrap	N/A	N/A	N/A	1	5	0.1	Scrap Bin	None	
UXO-01#2.23-00229	UXO-01#2.23	10.79	9/12/2011	284877.45	3845055.44	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-01#2.23-00230	UXO-01#2.23	8.24	9/12/2011	284877.72	3845052.4	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00231	UXO-01#2.23	2.83	9/12/2011	284878.38	3845047.37	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.2	Scrap Bin	None	
UXO-01#2.23-00232	UXO-01#2.23	8.12	9/12/2011	284879.17	3845040.89	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	1	Scrap Bin	None	

TABLE B-1  
 MEC Intrusive Investigation Results  
 Site UXO-01 (ASR # 2.23) Expanded SI Report  
 MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-01#2.23-00233	UXO-01#2.23	11.02	9/12/2011	284879.3	3845038.64	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-01#2.23-00234	UXO-01#2.23	8.38	9/12/2011	284879.83	3845034.8	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	1.4	Scrap Bin	None	
UXO-01#2.23-00235	UXO-01#2.23	10.6	9/12/2011	284880.1	3845030.17	Cultural Debris	Scrap	N/A	N/A	N/A	2	8	0.5	Scrap Bin	None	
UXO-01#2.23-00236	UXO-01#2.23	6.16	9/12/2011	284880.63	3845025.01	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	0.1	Scrap Bin	None	
UXO-01#2.23-00237	UXO-01#2.23	5.83	9/12/2011	284881.95	3845014.03	Cultural Debris	Scrap	N/A	N/A	N/A	1	8	0.1	Scrap Bin	None	
UXO-01#2.23-00238	UXO-01#2.23	6.75	9/12/2011	284882.21	3845010.06	Cultural Debris	Scrap	N/A	N/A	N/A	2	3	0.1	Scrap Bin	None	
UXO-01#2.23-00239	UXO-01#2.23	6.74	9/12/2011	284882.74	3845004.91	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-01#2.23-00240	UXO-01#2.23	3.3	9/14/2011	285044.75	3844950.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-01#2.23-00241	UXO-01#2.23	2.88	9/14/2011	285031.5	3845022.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-01#2.23-00242	UXO-01#2.23	2.83	9/14/2011	285031	3845026	Cultural Debris	Scrap	N/A	N/A	N/A	5	4	0.25	Scrap Bin	None	
UXO-01#2.23-00243	UXO-01#2.23	17.61	9/13/2011	284988.25	3845130.25	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-01#2.23-00244	UXO-01#2.23	7.84	9/13/2011	284988	3845134.5	Cultural Debris	Scrap	N/A	N/A	N/A	4	8	0.2	Scrap Bin	None	
UXO-01#2.23-00245	UXO-01#2.23	8.4	9/13/2011	284987.25	3845139.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	24	0.1	Scrap Bin	None	
UXO-01#2.23-00246	UXO-01#2.23	5.53	9/13/2011	284985.5	3845146.75	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-01#2.23-00247	UXO-01#2.23	4.09	9/14/2011	285023.05	3845099.5	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00248	UXO-01#2.23	7.07	9/14/2011	285018.53	3845033.77	No Contact	No Contact	Greater than 2 feet	N/A	N/A	0	24	0	Left in Place	None	
UXO-01#2.23-00249	UXO-01#2.23	1.68	9/14/2011	285016.14	3844945.92	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	

QC - quality control  
 TBD - to be determined  
 N/A - not applicable  
 UXO - unexploded ordnance  
 UTM - Universal Transverse Mercator, Zone 18