Final
Work Plan
Engineering Evaluation/Cost Analysis
Former Camp Hero
Montauk, New York

Prepared by

PARSONS, INC.

U.S. Army Corps of Engineers
New York District
and
U.S. Corps of Engineers
Huntsville Center

Contract No. DACA87-00-D-0038
Task Order 0002

Don Silkebakken, P.E.

April 2001

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April 16, 2001

U.S. Army Engineering & Support Center
ATTN: CEHNC-OE-DC (Roland Belew)
4820 University Square
Huntsville, AL 35816-1822
256-895-1553

Subject: Contract DACA87-00-D-0038, Delivery Order 0002
Draft-Final/Final EE/CA Work Plan Deliverable for EE/CA at the Former Camp Hero, Montauk, New York

Dear Mr. Belew:

Enclosed please find three (3) copies of the Draft-Final Work Plan for the former Camp Hero Engineering Evaluation/Cost Analysis Project for your review. Six (6) copies have simultaneously been forwarded to Ms. Luz Spann-LaBato, USACE New York District. All USAESCH comments on the Draft document have been addressed with the Form 7 responses included as Appendix F with the exception of inclusion of the MSD Worksheets. As they were not available at the time of printing they will be forwarded for inclusion in the document following receipt from USAESCH. Any comments originating during the document backcheck will be addressed via slip page inserts to the Draft-Final document. In addition, the Final cover page and spine are beneath the Draft-Final cover and spine in the binder. Following backcheck, the Draft-Final versions can be removed. Following USAESCH approval, the document will be posted in the public portion of the project website (without password protection) at www.projecthost.com shortly.

If you have any questions regarding this letter or need additional information, please contact me at (678) 969-2384 or (404) 606-0346 (cell).

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Don Silkebakken, P.E.
Project Manager

cc: Luz Spann-LeBato – CENAN (6 copies)
Greg Hedrick, (Parsons)
Project File (739306)

WORK PLAN

ENGINEERING EVALUATION / COST ANALYSIS
FORMER CAMP HERO

MONTAUK, NY

Prepared for

U.S. Army Corps of Engineers
New York District

and

U. S. Army Corps of Engineers
Huntsville Center

Contract Number DACA87-95-D-0038
Task Order 0003

Prepared by

PARSONS, INC.
100 West Walnut Street
Pasadena, California 91124

April 2001

4/16/01

Don Silkebakken, P.E.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAA	antiaircraft artillery
ACWP	actual cost of work produced
ACWS	Aircraft Control and Warning Squadron
AOIs	Areas of Interest
AR	Army Regulation
ARAR	Applicable or Relevant and Appropriate Requirement
ASR	Archives Search Report
ATF	Bureau of Alcohol, Tobacco, and Firearms
ATFP	Bureau of Alcohol, Tobacco, and Firearms Publication
BAC	budgeted at completion
BATF	Bureau of Alcohol, Tobacco, and Firearms
BCWP	budgeted cost of work produced
BCWS	budgeted cost of work scheduled
BIP	blown in place
CADD	computer aided drafting and design
CAP	contractor-acquired property
CEMP-RF	U.S. Army Corps of Engineers Military Projects Office
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CENAN	Corps of Engineers, New York District
CFR	Code of Federal Regulations
CV	cost variance
CWM	chemical warfare materiel
CX	Center of Expertise
DERP	Defense Environmental Restoration Program
DGPS	differential global positioning system
DID	data item description
DO	Delivery Order
DoD	U.S. Department of Defense

DOT	Department of Transportation
DQOs	data quality objectives
EAC	estimated at completion
EE/CA	Engineering Evaluation/Cost Analysis
EM	electromagnetics
EOD	explosive ordnance disposal
EPA	Environmental Protection Agency
EPP	Environmental Protection Plan
ETC	estimated to complete
F	Fahrenheit
FDE	Findings of Fact and Determination of Eligibility
ft	foot
FUDS	Formerly Used Defense Site
GFP	government furnished property
GIS	geographic information system
GPS	global positioning system
HE	high explosive
HTW	hazardous and toxic waste
IA	institutional analysis
IC	institutional controls
ID	Identification
INPR	Inventory Project Report
MGE	modular GIS environment
mm	millimeter
MPM	most probable munition
MSD	minimum separation distance
NAD83	North American Datum, 1983
NCP	National Contingency Plan
NDAI	no DoD action indicated

NEPA	National Environmental Policy Act
NEW	net explosive weight
NGS	National Geodetic Survey
nT	nanotesla
NTCRA	non-time-critical removal actions
NTP	notice to proceed
NYS DEC	New York State Department of Environmental Conservation
OE	ordnance and explosives
OSHA	Occupational Safety and Health Administration
PAE	preliminary assessment of eligibility
Parsons	Parsons, Inc.
PC	personal computers
PM	project manager
PPE	personal protective equipment
QA	quality assurance
QC	quality control
QCI	Quality Conformance Inspection
QCP	Quality Control Plan
QCS	quality control specialist
QIA	Qualitative Impact Analysis
RAC	risk assessment code
RAM	random access memory
ROE	right-of-entry
RTK	real-time kinetic
SARA	Superfund Amendments and Reauthorization Act
SI	site investigation
SM	Site Manager
SOP	Standard Operating Procedure
SOW	Statement of Work

SRE	Site Risk Evaluation
SSHP	Site Safety and Health Plan
SUXOS	senior UXO supervisor
SV	scheduled variance
TCRA	time critical removal action
TDMD	time domain metal detector
TEU	Technical Escort Unit
TM	Technical Manual
TPP	Technical Project Planning
TSSDS	Tri-Services Spatial Data Standards
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville
USGS	U.S. Geological Survey
UXO	unexploded ordnance
UXOSO	UXO Safety Officer
UXOQCS	UXO quality control specialist
VAC	variance at completion
WAN	wide-area network
WP	Work Plan
WTP	Work Task Proposal

SECTION 1
INTRODUCTION

1.1 PROJECT AUTHORIZATION

Parsons Engineering Science, Inc. (Parsons ES) received Contract No. DACA87-00-D-0038, Task Order No. 0002, from the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville (USAESCH) to conduct an Engineering Evaluation/Cost Analysis (EE/CA) at the former Camp Hero, Montauk, New York. The EE/CA will implement ordnance and explosives (OE) risk management actions consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). In accordance with the NCP, on-site actions will not require Federal, State, or local permits; however, substantive permit requirements will be fulfilled. The EE/CA will adhere to the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) and relevant U.S. Army regulations (AR) and guidance for OE programs.

1.2 PURPOSE AND SCOPE

1.2.1 The purpose of the EE/CA is to characterize OE concentration and location, identify potential safety problems associated with the OE, study risk management alternatives, recommend proposed alternatives, and document the selection of an alternative for the individual areas within the site. The objective of the EE/CA project is to select the most appropriate OE response action necessary to reduce public safety risk associated with OE/unexploded ordnance (UXO). The EE/CA investigation is to be conducted on approximately 52.91 acres of the approximately 468.69 acres that comprise the former Camp Hero (the Camp).

1.2.2 This Work Plan (WP) details the OE investigation activities as defined in the USAESCH Statement of Work (SOW) for Task Order No. 0002, dated 7 November 2000 (see Appendix A). The EE/CA will focus on conventional OE/UXO risks requiring non-time-critical removal actions (NTCRAs) within the boundaries of the Camp. The objective of this WP is to present the facility background, objectives, procedures, personnel, and equipment to be used for the EE/CA activities. During the EE/CA, site characterization efforts involving geophysical survey and intrusive sampling will be conducted to determine or classify those portions of the Camp that are contaminated or potentially contaminated with OE/UXO and to estimate the type and density of OE/UXO contamination.

1.2.3 This WP describes the major components of the work that will be conducted to complete the EE/CA for the Camp, which include the following:

- Obtain and review historical records, including the Archives Search Report (ASR) and other data that may be provided by the USAESCH;
- Document the technical project planning process and stakeholder involvement;
- Develop a geophysical mapping strategy based on the results of the geophysical equipment prove-out;
- Establish a GIS database for the project;
- Perform a geophysical investigation and evaluation of the geophysical data;
- Perform intrusive investigation;
- Determine the presence or absence of OE contamination, and dispose of any conventional OE encountered;
- Perform an institutional analysis;
- Provide an impact analysis;
- Prepare an EE/CA report;
- Prepare an Action Memorandum;
- Provide technical support to the government for meetings;
- Provide project management; and
- Provide monthly electronic copies of all project documentation.

1.3 WP ORGANIZATION

This WP is organized in accordance with USAESCH Data Item Description (DID) OE-001 guidance to provide each of the applicable required sub plan components as specified in the SOW. Table 1.1 outlines the Sections and Appendices to be included in this document.

TABLE 1.1

Content of the EE/CA Work Plan for the Former Camp Hero

Section	Content
Section 1	Introduction
Section 2	Site Description
Section 3	Project Management
Section 4	Overall Approach to OE EE/CA
Section 5	Scope of Work by Task
Section 6	Site Characterization Planning and Operations
Section 7	OE Planning and Operations
Section 8	Site Safety and Health Plan
Section 9	Environmental Protection
Section 10	Data Management Plan
Section 11	Quality Control
Section 12	References
Appendix A	Statement of Work
Appendix B	Site Safety and Health Plan
Appendix C	Resumes of Key Personnel
Appendix D	Project Schedule
Appendix E	Minimum Separation Distances
Appendix F	Response to Comments
Appendix G	Applicable Data Item Descriptions

Section	Content
Appendix H	Basic Safety Concepts and Considerations for Ordnance and Explosives (OE) Operations
Appendix I	Property Owner Spreadsheets
Appendix J	Geophysical Meandering Path (Transects) Start and End Points and Geophysical Grid Coordinates

SECTION 2
SITE DESCRIPTION

2.1 PROJECT LOCATION

The former Camp Hero, consisting of 468.69 acres, is located on the extreme eastern tip of the south fork of Long Island, New York, approximately 5 miles east of the Village of Montauk (Figure 2.1). The Camp is bounded by Montauk Highway (Route 27) to the north, the Atlantic Ocean to the south, Montauk Point State Park to the east, and an undeveloped nature preserve owned by the state to the west. The Camp is located in Suffolk County, NY. A general layout map of the Former Camp Hero is provided on Figure 2.2.

2.2 PHYSICAL DESCRIPTION

2.2.1 Terrain and Vegetation

The entire project area land rises abruptly along the oceanfront and then gradually slopes northward. Several high points are in the area, and in general the land contour consists of numerous ridges and depressions. Most of the general topography drains into swamps, situated throughout the area. There is also approximately 5,500 feet of man-made drainage ditches on the site. The entire area, with the exception of the developed structures, roadways, oceanfront, and southern bluff area, is covered with a dense growth of scrub oak and brush. Oyster Pond is situated to the north of the former Camp Hero, and larger Lake Montauk is to the west.

2.2.2 Geologic and Soil Conditions

The soils of Suffolk County are a complex mixture of weathered mineral material, organic matter, water, air, and living organisms. The mineral material, mainly granite, is a result of glacial till deposited during the Wisconsin Age. The glacial till, together with the water or wind-deposited silt, clay, and sand, combined to form Suffolk County's soils. Those soils are of the Bridgehampton, Escarpment, Montauk, Muck, Wallington, and Whitman series.

2.2.3 Climate

The former Camp Hero is subjected to warm, humid summers and mild winters. The annual average rainfall is approximately 46 inches with the most rain falling in March, April, and August. The former Camp Hero is sometimes subject to coastal tropical storms occurring in the late summer or fall capable of producing high winds and heavy rains. Average yearly snowfall is 29 inches, with most of the snow falling from December through March. The average annual temperature is 52.2 degrees F. The average winter months (December through February) temperature is 30.9 degrees F, and the average summer months (June through August) is 71.1 degrees F.

2.3 SITE HISTORY

2.3.1 Military site history at the former Camp Hero begins well before the World War II era. Revolutionary War and War of 1812 American and British warships reportedly used the "Montauk Bluffs" for firing practice with cannons. Teddy Roosevelt and his Rough Riders, part of an estimated 29,500 men force returning from the Cuba, Puerto Rico, and Florida campaigns of the Spanish American War in 1898, camped in the Fort Pond Bay area of Montauk. Their camp was called Camp Wikoff and served as a quarantine station for these returning soldiers. Camp Wikoff was active for only a few months.

2.3.2 Between WWI and WWII, a Navy observation post housing two reconnaissance blimps were stationed at a hangar adjacent to the current Montauk Tower, and a number of oceangoing seaplanes were positioned at a Naval Base on Fort Pond Bay. From about 1921 until around 1923, thousands of soldiers from Regular Army, National Guard, and Citizen Military Training Corps Field Artillery units camped and trained in the Montauk area. A campsite on the east side of Fort Pond Bay, presumably named Camp Walsh, was chosen to accommodate the training units. From 1936 through the 1970s, Army Air Corps planes conducted bombing target practice on an island off of Montauk Point known as Gardiner's Point. This island also contained an abandoned Spanish American War Fort known as Fort Tyler. In 1942, the Department of the Navy built a facility on Fort Pond Bay to develop and test torpedo propulsion systems. This facility remained in existence until the end of WWII.

2.3.3 The former Camp Hero was established in early 1942 as a Coastal Defense Installation to defend the approaches to New York and was named in honor of Major General Andrew Hero. Three self sufficient batteries (Battery 112, 113, and 216) and supporting facilities were constructed which included barracks, mess halls, hospital facilities, a motor repair shop, a recreation facility, sentry boxes, and water supply and sewage facilities. A total of 600 enlisted men and 37 officers were stationed at the Camp. Battery 216 contained two M1903A2 6-inch shielded guns that were delivered to the battery in January 1943. Battery 113 (also known as Battery Dunn) consisted of two Navy MKIIM1 16-inch casemated guns that were completed on June 5, 1943. The guns of Battery 112 were identical to Battery 113 and were completed on January 12, 1944. Additionally, 37mm weapons and .50-caliber antiaircraft weapon platoons were assigned to protect the Camp from air attack. The Camp's weaponry was periodically fired to practice over water but was never fired as a result of an act of hostility.

2.3.4 The Camp was placed on inactive status on July 31, 1947 and ultimately declared surplus by the Department of the Army on December 31, 1949. Simultaneously a portion of the former Camp Hero lands was also transferred to the Department of the Air Force for an aircraft control and warning station. On January 24, 1951 the former

Camp Hero was withdrawn from surplus and designated for use as a firing range and field exercise area for antiaircraft artillery (AAA) from Fort Totten, NY. Arrangements were made for the permanent Army AAA cadre at the Camp. 90mm and quad .50 caliber antiaircraft artillery began firing exercises from firing positions established in the southern bluff overlooking the Atlantic Ocean.

2.3.5 In 1952 the Air Force property was renamed the Montauk Air Force Station and was occupied by the 773rd Aircraft Control and Warning Squadron (ACWS). Training continued using 90mm and 120mm guns, 3.5-inch rockets, and .50 caliber guns until 1957. The facility was inactive until October 1958 when the 773rd ACWS was redesignated as the 773rd Radar Squadron with a new mission to provide surveillance data of air traffic in the area. In order to accomplish this mission, an advanced Specific Frequency Diversity Search Radar was built in late 1960. The facility was closed in 1982. Between 1974 and 1984 all site lands were transferred to State, Local, and other Federal agencies.

2.4 CURRENT LAND USE

2.4.1 The current landowners of the former Camp Hero include:

- State of New York, New York State Parks Commission (415.35 acres);
- Town of East Hampton (46.19 acres);
- Montauk Historical Society Lighthouse Commission, leased for 30 years from the Department of Transportation, U.S. Coast Guard (6.29 acres); and
- 0.86 acres of unresolved real estate ownership, attributed to erosion or poor survey techniques at the time of land procurement.

2.4.2 The majority of former Camp Hero consists of approximately 756,492 acres of offshore firing area. The potential ordnance in the offshore area is not considered by USACE to be a public risk since exposure pathways are incomplete. The State of New York, New York State Parks Commission, owns the largest land parcel which is designated as limited access public park land. Controlled public access is allowed on the southern bluff area by permit only to fisherman during season. Following removal of any former military hazards, future land use is for unrestricted public use including hiking, fishing, camping, and other recreational uses.

2.4.3 The 46.19 acres owned by the Town of East Hampton are used for low-income housing, which consists of 27 former Air Force housing units and a small amount of East Hampton Town-owned undeveloped property. Future land use is anticipated to remain the same.

2.4.4 The U.S. Coast Guard operates an automated beacon light atop the old lighthouse. The property around the lighthouse is leased to the Montauk Historical

Society and includes the old Camp Hero Fire Control/37mm AAA Station. The area is regularly open to the public. Future land use is anticipated to remain the same.

2.5 PREVIOUS INVESTIGATIONS AND RECORDS REVIEW

2.5.1 DERP-FUDS Field Inspection for Preliminary Assessment

During October 1990 CENAN conducted a Preliminary Assessment of Eligibility (PAE) of the former Camp Hero (Site Number CO2NY002400) to gather data regarding potential applicability of DERP-FUDS. The PAE was revised in July 1998. At that time, it was determined that the U.S. Army and Air Force formerly used the site.

2.5.2 Findings and Determination of Eligibility

The Findings and Determination of Eligibility (FDE) was signed on September 2, 1991 and concluded the following:

- The site consisted of 468.49 acres used from August 1944 to April 1983 and was eligible for restoration under the purview of DERP-FUDS. However, the ASR discovered that actual fee acres consisted of 468.69 acres.
- A use agreement, three leases, one permit, and numerous cable and utility easements outside of the 468.69-acre fee parcel of the former Camp Hero land were included in Camp Hero land acquisition. A 0.03-acre parcel in front of the Montauk Point Lighthouse in which a fire control tower housed a 37mm AAA weapons section was the only addition to site land that had a significant OE relevance.
- In addition to use agreement lands, an ocean firing zone (consisting of 756,491.75 acres) and a near shore ordnance area (consisting of 44.99 acres) were determined to exist due to coastal defense and AAA firing activities at Camp Hero, and should be included with site acreage.
- The 756,491.75-acre ocean firing area (designated in the ASR as Area L), although FUDS qualified, should not be added to the FUDS database in accordance with Headquarters, CEMP-RF memorandum, dated 15 March 1994.

2.5.3 1998 Feasibility Study and Hazardous Materials Survey Preliminary Report

In June 1998 Cashin Associates, P.C. of Hauppauge, New York, conducted a Feasibility Study and Hazardous Materials Survey Preliminary Report for the New York Office of Parks, Recreation, and Historic Preservation, Babylon, New York (Cashin, 1998). The report identified several areas that had an actual or potential hazardous and toxic waste (HTW) presence based on the presence of former military buildings and refuse found on-site. In addition to the HTW, projectile fragments were discovered along the southern bluffs of the site (later designated as Area K), indicating the potential presence of OE.

2.5.4 2000 Archives Search Report

2.5.4.1 In February of 2000 the USACE, Rock Island District, conducted a records search and site inspection for the former Camp Hero. The final report, the ASR, documents the extent and nature of their findings relating to the presence of OE/UXO contamination (USACE, 2000a,b). The former Camp Hero was divided into 13 areas (A through M) for evaluation purposes based on historical land use and other factors. The site was visually inspected November 9 through November 14, 1999. The ASR reconnaissance team classified three areas as having "confirmed" ordnance present as a result of physical OE evidence, credible interview accounts, or historical verification. The three areas are:

- Area H – Ordnance Destruction Range (8 acres);
- Area K – Near Shore Ordnance Area (44.88 acres); and
- Area L – Off Shore Ordnance Area (756,491.75 acres)

2.5.4.2 During the ASR Site Inspection OE items were observed weathering from the bluff on the southern edge of Area H and adjacent to Area K. These items included projectile fragments, functioned fuzes, .50 caliber casings, and .50 caliber bullets. In the northern portion of Area H additional OE was observed including a fragmentation bomb body, projectile fragments and bases, and a 3.5-inch rocket (USACE, 2000a,b). No historical documentation of military activities could be located to substantiate the use of this area, however, the ASR team concluded the area was used for destruction of ammunition. A cursory geophysical survey identified numerous subsurface ferrous material in the area. The ASR noted historical ordnance discoveries in the immediate area and the possible connection with the continuously eroding bluff separating Area H and Area K.

2.5.4.3 Items similar to those encountered in Area H were also observed in Area K including projectile fragments, expended fuzes, .50 caliber bullets, and other OE debris. The ASR cited a 1962 discovery of a 90mm projectile (presumably live) which led to an investigation and clearance of over 200 OE items including historic cannon balls, WWI/WWII vintage projectiles, fuzes, a hand grenade, and several unidentifiable OE (USACE, 2000a,b). Subsequent incidents were reported throughout the 1990s including the discovery of a live 3.5-inch rocket in 1997.

2.5.4.4 Area L was not visually inspected as part of the ASR study. However, significant documentation exists to confirm the presence of OE within the area. Area L was determined to have "confirmed ordnance presence" based on its historical use of 6-inch and 16-inch coastal defense guns and AAA battalions in drone target practice. A 1993 National Ocean Service Coast and Geodetic Survey LORAN-C Map for Block Island displays three areas in the ocean south and southwest of the former Camp Hero shoreline which are identified as unexploded ordnance hazard. Despite the lack of field confirmation, the ASR concluded a substantial remaining OE presence is certain to exist in this area, due to the volume of artillery fire which occurred and the numerous discoveries of OE items in the Near Shore Ordnance Area (Area K) over the years, especially after severe storm events. However, as described in Subsection 2.5.2, Area L was not included in the scope for the current EE/CA investigation.

2.5.4.5 Areas B through G, I, J, and M were classified as "no ordnance presence" based on the absence of historical, interview, or physical evidence of remaining OE presence in these areas since site closure. Areas A through G, I, J, and M received RAC scores of 5 and "no DOD action indicated" (NDAI) was recommended (USACE, 2000b). As a result the EE/CA investigation will not include further investigation of these areas unless additional evidence is obtained during the course of the study that warrants reevaluation.

2.5.4.6 Area A (Fire Control/37mm AAA Station) was also initially classified as "no ordnance presence" in the ASR. The small 0.03-acre flat parcel lies outside of the outside of the former Camp Hero reservation on lands gained through use agreement with the U.S Coast Guard and the Department of the Navy. Historical documents reflect the placement of a 37mm (later changed to 40mm) automatic weapons section on the roof of the fire control tower adjacent to (and immediately east of) the lighthouse. The parcel was added to the EE/CA project scope based on subsequent review by USAESCH.

2.5.4.7 The ASR identified a single historical excerpt which described limited chemical warfare training at Camp Hero in 1945. The exact location was not specified. An Artillery Battalion (Mustard-HD) held a Gas Identification Exercise during which men were sent into clouds of mustard, phosgene, and lewisite agents. The ASR team was unable to find additional interview, historical, or physical evidence of a remaining CWM presence at the Camp. The ASR concluded "it was believed that this was a singular or infrequent training event at Camp Hero, conducted by a specialized, external training source."

2.5.5 2000 Site Visit

2.5.5.1 In December 2000 a reconnaissance team from Parsons visited the former Camp (Parsons, 2001a). The purpose of the Site Visit was to survey the former Camp Hero for familiarity, visually inspect areas identified as confirmed or potentially contaminated with OE in the ASR, photograph the Areas of Interest (AOIs) for potential EE/CA, and meet with local regulatory agencies.

2.5.5.2 The Site Visit encompassed two days. Extensive reconnaissance of both Area H and Area K was conducted. Numerous OE fragments were observed on the ground surface at both locations. The UXO-qualified and USAESCH approved team escort performed a limited geophysical screening using a Schonstedt magnetic locator. Although nonintrusive, this screening indicated the presence of magnetic rocks at the site.

2.6 SUMMARY OF OE RISK

2.6.1 As part of the ASR, an OE risk assessment was conducted for the Camp in its entirety using the procedure developed by USACE in accordance with MIL-STD-

882C and AR 385-10. The output is a Risk Assessment Code (RAC) score used to assess the risk involved based on potential OE hazards identified at the site. The RAC scores are composed of two factors, hazard severity and hazard probability, which are combined to yield a score ranging from 1 (further investigation warranted) to 5 (NDAI).

2.6.2 Areas H, K, and L received RAC scores of 1 (USACE, 2000b). Areas H and K were recommended for the performance of an EE/CA. Area L was not included in the EE/CA investigation as discussed previously. Areas A through G, I, J, and M received RAC scores of 5 and were recommended for NDAI. Listed below is a brief summary of the ASR-designated areas including those not identified for investigation in this EE/CA.

2.6.1 Area A – Fire Control Station/37mm AAA Station

The Fire Control Station/37mm AAA Station was classified as no ordnance presence and was recommended for NDAI. However, the parcel was added to the EE/CA project scope based on subsequent review by USAESCH. Area A is approximately 0.03 acres of flat grassy land and contained a fire control tower, auxiliary power plant, and a 37mm (later 40mm) AAA position to defend Camp Hero in the event of air attack.

2.6.2 Area B – Battery 216

Battery 216 is considered to be an area of no ordnance presence, and is recommended for NDAI. The area is approximately 2.90 acres. No historical, interview, or physical evidence could be located to substantiate a remaining OE or OE debris presence in this area.

2.6.3 Area C – AAA Firing Area

The AAA Firing Area is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 5.80 acres.

2.6.4 Area D – AAA Battalion Bivouac Area

The AAA Battalion Bivouac Area is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 11.00 acres.

2.6.5 Area E – Battery 113 (Dunn)

Battery 113 (Dunn) is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 1.80 acres.

2.6.6 Area F – Battery 112

Battery 112 is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 2.23 acres.

2.6.7 Area G – Makeshift Small Arms Firing Range

The Makeshift Small Arms Firing Range is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 0.60 acres.

2.6.8 Area H – Ordnance Destruction Range

The Ordnance Destruction Range is considered to be an area of confirmed ordnance presence. An EE/CA investigation is planned for this area. The area is approximately 8.00 acres.

2.6.9 Area I – Target Plane Launching Area

The Target Plane Launching Area is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 1.00 acres.

2.6.10 Area J – Plotting/Switchboard Rooms

The Plotting/Switchboard Rooms are considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 0.50 acres.

2.6.11 Area K – Near Shore Ordnance Area

The Near Shore Ordnance Area is considered to be an area of confirmed ordnance presence. An EE/CA investigation is planned for this area. The area is approximately 44.88 acres.

2.6.12 Area L – Off Shore Ordnance Area

The Off Shore Ordnance Area is considered to be an area of confirmed ordnance presence, but due to technical and economical feasibility restrictions, no EE/CA is currently planned for this area. The area is approximately 756,525.00 acres.

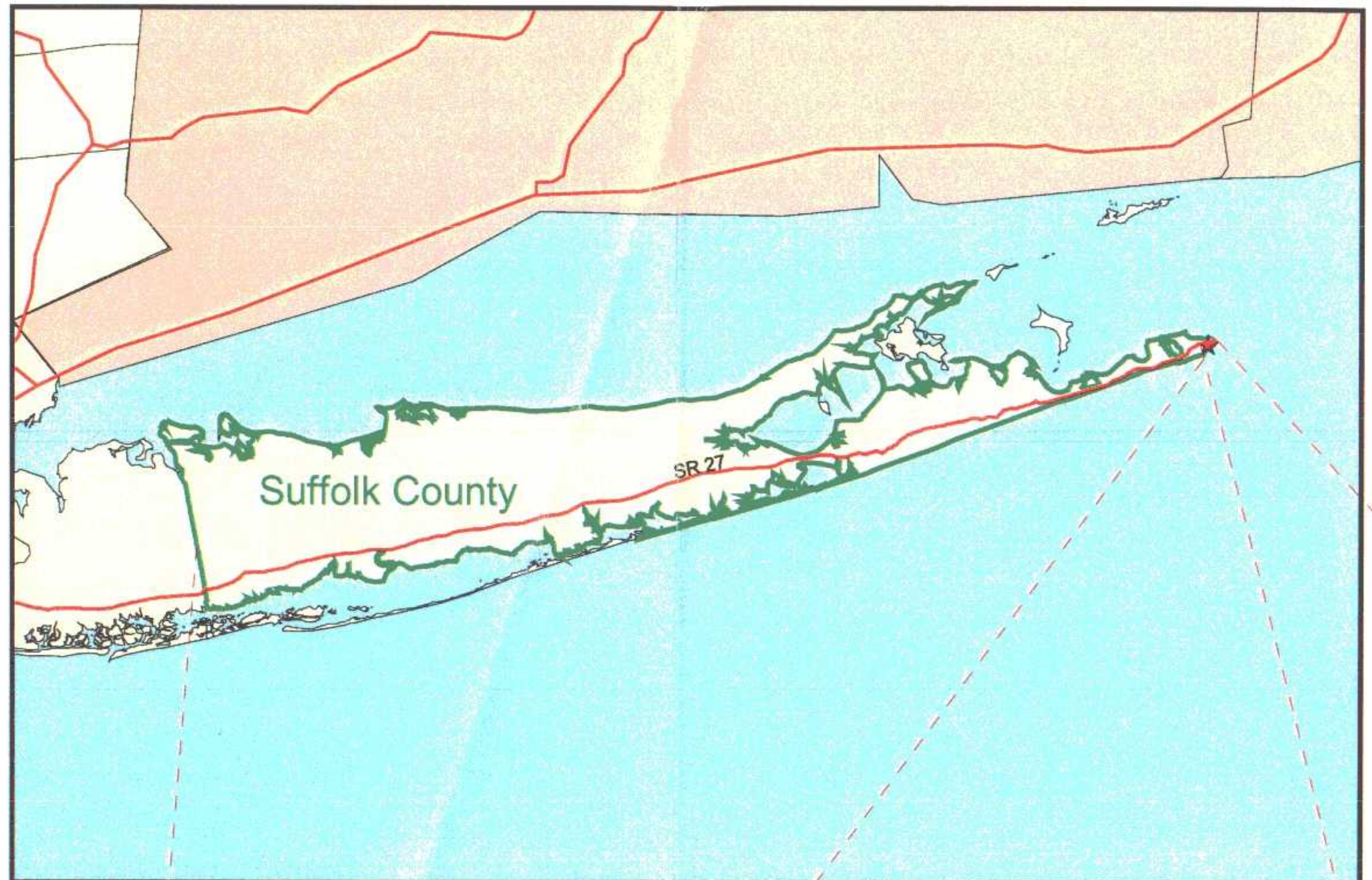
2.6.13 Area M – All Other Lands

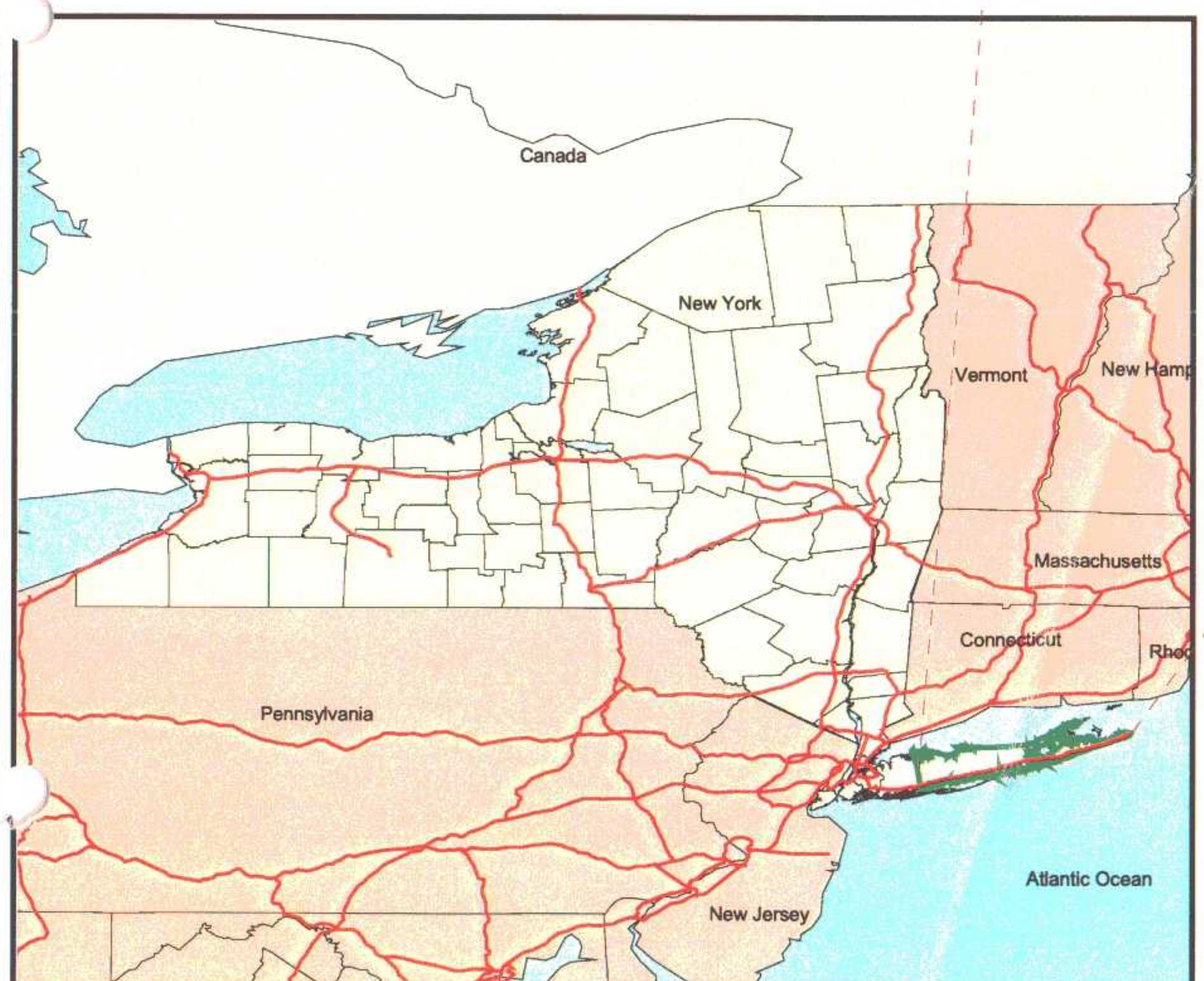
Area M is made up of all former Camp Hero lands that does not include those previously mentioned. It is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 434.86 acres.

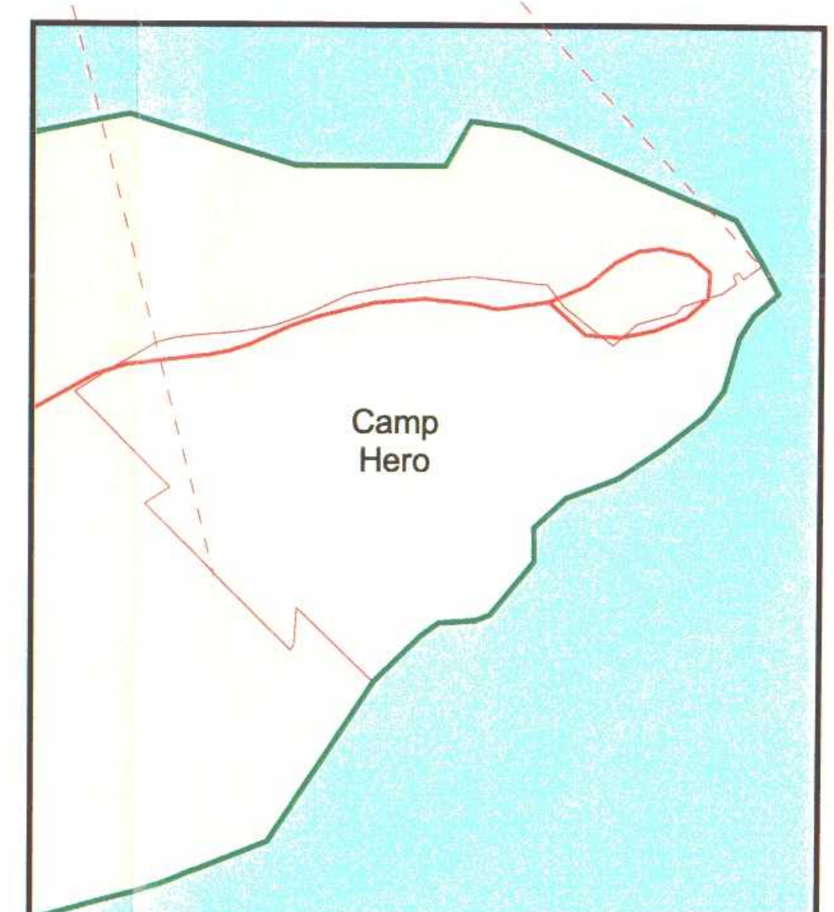
Figure 2.1

General Location Map

Former Camp Hero
Suffolk County
Long Island, New York







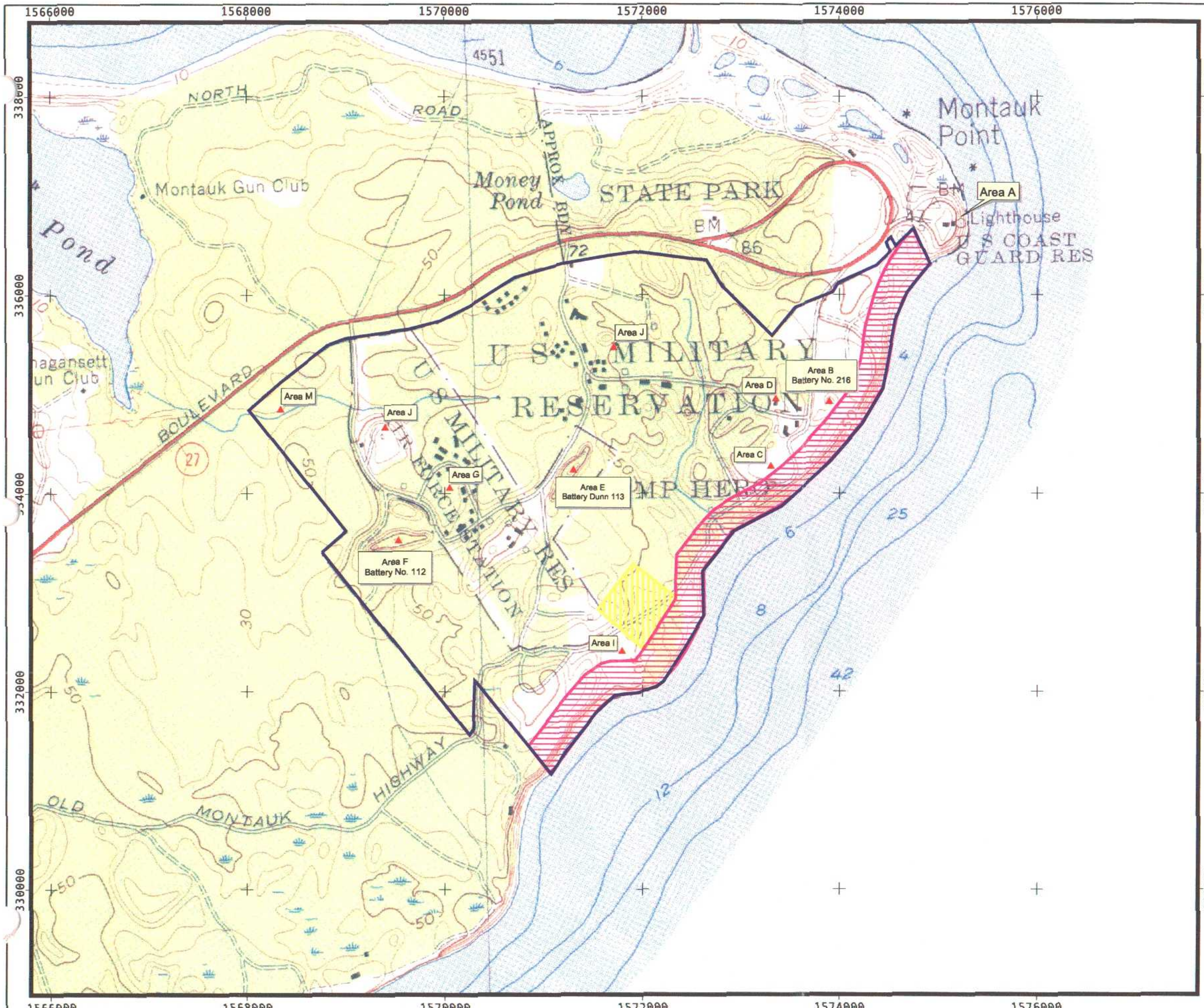


Figure 2.2

Areas of Interest

Former Camp Hero
Montauk, New York

Legend

- Former Camp Hero
- Area A - Fire Control/37mm/ AAA Station - .03 Acres
- Area K- Near Shore Ordnance Area - 44.88 Acres
- Area H - Ordance Destruction Range - 8.0 Acres
- Other ASR Sites of Interest

N

500 0 500 1000 Feet

PARSONS ENGINEERING SCIENCE, INC.	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER	
DESIGNED BY: MAD	Former Camp Hero Montauk, New York Suffolk County	
DRAWN BY: MAD		
CHECKED BY: DMS	SCALE: 1:12000	PROJECT NUMBER: 739306
SUBMITTED BY: DMS	DATE: March, 2001	PAGE NUMBER: 2-10
	FILE: j:\gis\738306\av\location.apr	

Table 2.1
Conceptual Site Model
Camp Hero EE/CA, Montauk, NY

Site	Acreage	Site Type	Past DoD Activities	OE Related Items Found Since Closure	Post-DoD Land Use and Current Land Use	Recommended Geophysical Investigations	Recommended Site Investigation Field Sampling
1. Area A – Fire Control/37mm Training	0.03	Possible OE	Fire control tower and auxiliary power plant for the tower. 37mm anti-aircraft position.	None	Functioning lighthouse nearby	Strategically locate and survey transects and/or grids to provide representative area coverage to statistically assess UXO density and risk as well as define remediation costs.	No environmental sampling proposed.
2. Area H – Ordnance Destruction Range	8.00	Confirmed OE	Determined to be used for destruction of ammunition (no historical documentation)	Projectiles, projectile fragments, a 3.5-inch rocket, functioned projectile fuzes, fuze debris, a 1942 0.50-caliber cartridge casing, a 0.50-caliber bullet, an empty 17- to 23-pound fragmentation bomb body, and projectile bases.	Undeveloped	Geophysically map the entire 8 acres and intrusively investigate candidate ordnance anomalies based on prove out data.	No environmental sampling proposed.
3. Area K – Near-Shore Ordnance Area	44.88	Confirmed OE	Bluffs and shoreline have been target area for passing warships and other guns.	In 1962, 200 OE items including cannon balls, modern artillery projectiles (including a 90mm projectile), projectile fuzes, practice rockets, an intact hand grenade, and 70 rounds of assorted ammunition were removed. At later dates, a 3.5-inch rocket, functioned projectile fuzes, fuze debris, a 1942 0.50-caliber cartridge casing, a 0.50 –caliber bullet. And several unidentified objects were also found.	Undeveloped, sports fishing	Strategically locate and survey transects and/or grids to provide representative area coverage to statistically assess UXO density and risk as well as define remediation costs.	No environmental sampling proposed.

SECTION 3
PROJECT MANAGEMENT PLAN

3.1 PROJECT OBJECTIVES

The objective of this project is to prepare an EE/CA that recommends and justifies appropriate OE response alternatives for identified Areas of Interest (AOIs) at the Camp. These objectives will be accomplished by characterizing OE contamination, analyzing risk management alternatives, and recommending feasible OE risk reduction alternatives.

3.2 PROJECT ORGANIZATION

Several organizations are directly involved in the Camp EE/CA project. Figure 3.1 is a project organization chart showing key personnel and project organization details. The technical team consists of the CENAN, USAESCH, Parsons, and USA Environmental, Inc. (USA). The roles of these team members are described below.

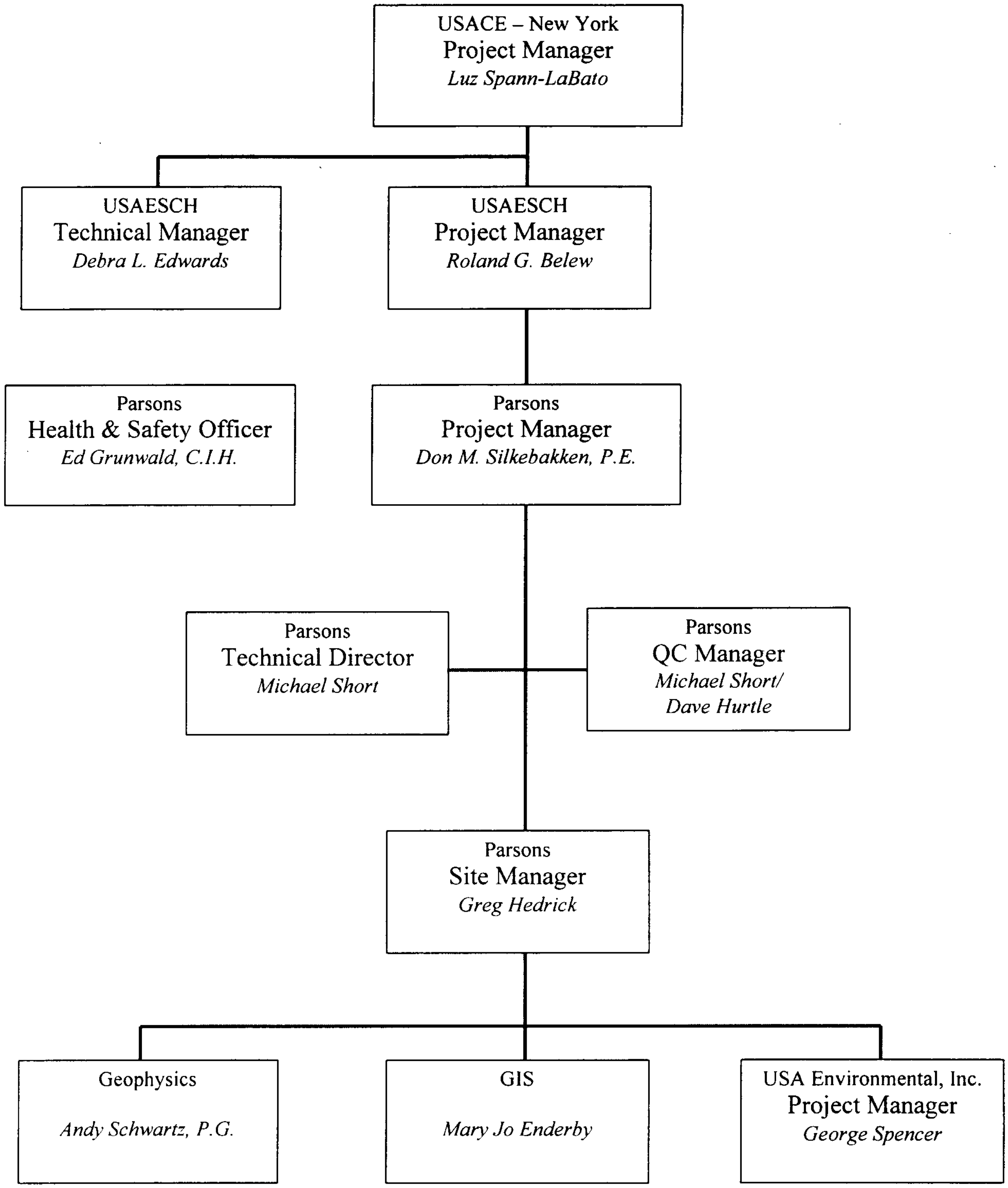
3.2.1 U.S. Army Corps of Engineers, New York District

CENAN is the life cycle PM and funding agency for this project. CENAN's responsibilities include review of project plans and documents, obtaining rights-of-entry (ROE) to properties in the investigation areas, working with the news media and the public, and coordinating with State and local regulatory agencies on issues pertaining to protection of ecological and cultural resources.

3.2.2 U.S. Army Engineering and Support Center, Huntsville

USAESCH is the lead technical agency for this project. USAESCH responsibilities include procurement of architect/engineer services, direction of the EE/CA contractor, review and coordination of project plans and documents, and working with the news media and the public. USAESCH also provides technical expertise for OE activities. As the technical project manager, USAESCH is responsible for directing the EE/CA contractor and controlling the budget and schedule.

FIGURE 3.1
ORGANIZATIONAL STRUCTURE FOR
FORMER CAMP HERO EE/CA



3.2.3 Parsons, Inc.

Parsons is the prime contractor to USAESCH and will provide overall engineering support and services for the EE/CA. Parsons is responsible for performance of the activities detailed in the SOW (Appendix A). Parsons is also responsible for schedule and budget control. Parsons will provide overall engineering support and services for this project. Parsons will provide personnel to perform the geophysical survey activities, evaluate the data, and perform reacquisition of anomalies. Parsons will also provide some or all of the UXO services needed to support these activities that include escort and visual OE clearance of areas and access routes. Personnel from the UXO subcontractor may augment the Parsons UXO personnel. In either case qualified UXO personnel, approved by USAESCH and in accordance with DID OE-025, will be utilized. Parsons will provide geographic information system (GIS) services including incorporation of the real estate data, geophysical investigation data, and intrusive investigation data. Parsons will also conduct a qualitative risk evaluation including definition of how UXO densities were determined. USAESCH's Contracting Officer directs all work to be performed by Parsons and its subcontractors.

3.2.3 USA Environmental, Inc.

USA Environmental, Inc. is a subcontractor to Parsons. As such, USA will provide UXO services needed to conduct the intrusive field investigation. Services provided by USA may also include escort and visual OE clearance of areas designated for geophysical investigation and access routes identified by Parsons, clearing brush from these areas (as necessary), and performance of intrusive investigations of anomalies identified and reacquired by Parsons. USA will be responsible for all UXO operations, including handling, detonating, and disposing of OE. USA will provide properly trained and qualified personnel for all UXO operations in accordance with DID OE-025.

3.3 PROJECT PERSONNEL

Personnel performing work in support of the EE/CA will meet the qualifications required by DID OE-025. Resumes of Parsons key personnel scheduled to perform work on this project are presented in Appendix C. Prior to mobilization to conduct field investigations, certifications and medical forms will be provided to USAESCH for approval for all UXO personnel (or USAESCH database number, if applicable). Table 3.1 lists key technical contacts for the project.

3.3.1 Project Manager

3.3.1.1 Don Silkebakken will serve as the Parsons Project Manager (PM) for the former Camp Hero EE/CA project. He has over nine years of project management experience with five directly pertaining to UXO EE/CA projects. He will be responsible for communicating with USAESCH all aspects of the project including overseeing the overall performance of all individuals on the project team, coordinating all contract and subcontract work, and resolving problems. He will also be responsible for controlling the contractual cost and schedule targets and coordinating the implementation of site characterization activities, GIS activities and data management effort, and report preparation.

3.3.1.2 The PM will interface directly with subcontractors to keep the subcontractors advised of scope of work, schedule, and budget. The PM will ensure that the subcontractor costs are within budget and schedule commitments are achieved.

3.3.2 Site Manager

3.3.2.1 The Parsons Site Manager (SM) will manage all field investigation activities under the direction of the Parsons PM. Specific responsibilities include scheduling daily safety meetings, scheduling and coordinating field team activities, and submitting a Daily Activities Report to the Parsons PM. The SM will be responsible for direct oversight of subcontractor activities during the field investigation and will review the subcontractors' weekly status reports. The SM will coordinate with the PM as necessary to take corrective actions to assure that budgets and schedules are enforced during the field investigation. Duties will also include enforcing compliance with the project Site Safety and Health Plan (SSHP, Appendix B) and general daily field operating procedures. The SM will report any quality control (QC) failures and corrective actions to the PM and QC Manager. The SM will meet the requirements for the labor categories of Environmental Engineer or Geologist, as defined in DID OE-025.

3.3.3 QC Manager

The QC Manager is independent of the project team and is responsible for reviewing all QC procedures to be used in the project, reviewing subcontractor system audits and QC procedures to ensure compliance with the project QC guidelines in the WP. The QC Manager will perform a quality review to ensure the quality of deliverables from the project team to USAESCH and interaction and communication with subcontractor, USAESCH QC and CENAN personnel.

3.3.4 UXO Contractor Personnel

UXO personnel (provided directly by Parsons or through USA) required for this project will include a EOD-qualified Senior UXO Supervisor and UXO technicians of various degrees, all of whom meet the specific requirements outlined in DID OE-025. Non-UXO qualified personnel will not perform any handling of OE/UXO at any time or under any conditions. Any additional personnel who may be assigned to the project field team will meet the qualifications required in the SOW and per DID OE-025.

TABLE 3.1
KEY TECHNICAL CONTACTS FOR
FORMER CAMP HERO EE/CA

Organization	Name	Telephone/e-mail
US Army Engineering Center, Huntsville PO Box 1600 4820 University Square Huntsville, AL 35807-4301	Mr. Roland G. Belew Project Manager	(256) 895-1553 (voice) (256) 895-1378 (fax) Roland.G.Belew@hnd01.usace.army.mil
US Army Engineering Center, Huntsville PO Box 1600 4820 University Square Huntsville, AL 35816-1822	Ms. Debra L. Edwards Technical Manager	(256) 895-1626 (voice) (256) 895-1378 (fax) Debra.L.Edwards@hnd01.usace.army.mil
USACE, New York District ATTN: CENAN-PP-E State Highway 18, Turnpike Metroplex Building, Suite 205 East Brunswick, NY 08816	Luz Spann-LaBato District Project Manager	(732) 435-0079 (voice) (732) 249-0734 (fax) Luz.O.Spann-LaBato@nan02.usace.army.mil
Parsons 5390 Triangle Parkway Suite 100 Norcross, GA 30092	Mr. Don Silkebakken, P.E. Project Manager	(678) 969-2384 (voice) (770) 446-4910 (fax) don.silkebakken@parsons.com
Parsons 5390 Triangle Parkway Suite 100 Norcross, GA 30092	Mr. Greg Hedrick Site Manager	(678) 969-2397 (voice) (770) 446-4910 (fax) greg.hedrick@parsons.com
Parsons 100 West Walnut Street Pasadena, CA 91124	Mr. Michael Short Technical Director	(626) 440-3115 (voice) (626) 440-4000 (fax) michael.short@parsons.com
Parsons 5390 Triangle Parkway Suite 100 Norcross, GA 30092	Mr. Andy Schwartz, Geophysical Coordinator	(678) 969-2424(voice) (770) 446-4910 (fax) andrew.schwartz@parsons.com
Parsons 5390 Triangle Parkway Suite 100 Norcross, GA 30092	Ms. Mary Jo Enderby, Project GIS Manager	(678) 969-2441 (voice) (770) 446-4910 (fax) maryjo.black@parsons.com
USA Environmental, Inc. 5802 Benjamin Center Drive, Suite 101 Tampa, Florida 33634	Mr. George Spencer Project Manager	(813) 884-5722 (voice) (813) 884-1876 (fax) usaoperations@msn.com

3.4 Project Communications and Reporting

3.4.1 Communications for this project will generally flow along the lines established by the organization depicted previously in Figure 3.1. All communications between Parsons and the USAESCH and/or CENAN will primarily be directed through the respective Project Managers or the Contracting Officer at USAESCH. Communication directly between Parsons and other government entities associated with this project will only occur when directed by USAESCH.

3.4.2 All aspects of importance to the administration of the contract must be substantiated by permanent records, such as written correspondence, notes, and photographs. It is essential to summarize important non-written communications with notes covering conferences, telephone calls, and discussions, giving the date, location, parties involved, and important aspects discussed. Written correspondence is the most deliberate, as well as the most important, of the three general types of contractual communication (i.e., person to person, telephone calls, and written correspondence). All incoming correspondence from USACE that requires a reply must be responded to within 5 working days in one of the following ways:

- Reply in full;
- Interim reply (stating date by which full answer can be expected); or
- Acknowledgment of receipt.

3.4.1 Office Project Communications and Reporting

3.4.1.1 All primary correspondence will be sequentially numbered. Monthly reports of progress will be prepared and provided to the USAESCH PM, with copies of the cover letter provided to AE Contracts.

3.4.1.2 Parsons will utilize a dedicated Web page for the Camp Hero project. This Web page will be updated monthly with new information about the project and will be used to post copies of monthly reports, documents, and other correspondence as desired by USAESCH. Access to sensitive information (such as draft documents and financial information) will be password protected as determined necessary by USAESCH. Access to the Web page will be gained through the Internet at http://www.projecthost.com.

3.4.1.3 The Parsons PM is responsible for issuing the following documents throughout the project:

1. Meeting Minutes (due 10 calendar days after a meeting);
2. Record of Telephone Conversations (due with the monthly progress report);
3. Project Control and Reporting (submitted with this document); and
4. Monthly Progress Reports (due by the 10th day of the following month).

Additionally, CD-ROMs containing all documentation will be submitted with the monthly progress report.

3.4.1.4 A monthly progress report will be issued pursuant to the terms of the contract. The monthly progress report will include a summary of the work performed during the reporting period as well as the work that is planned to be performed in the upcoming period. The report will state whether current work is on schedule. If the work is not on schedule, Parsons will state what actions are anticipated in order to get back on-schedule. The report will summarize the results of meetings and telephone conversations that occurred during the reporting period. An earned value analysis of current and cumulative expenditures with respect to the baseline schedule and labor plan will be performed. Variance analysis will be included in the report as necessary.

3.4.1.5 Included in the monthly progress report will be summaries and projections of costs. These summaries will provide a record of expenditures as well as projection of cost for each task. Data will be presented both in a tabular and graphical format. Data on the following will be provided:

- Budgeted Cost of Work Scheduled (BCWS) - original budget for work scheduled to date.
- Budgeted Cost of Work Produced (BCWP) - original budget for physical work accomplished.
- Actual Cost of Work Produced (ACWP) - actual cost of physical work accomplished.
- Schedule Variance (SV) - Difference between funds anticipated to be spent and those spent for the time period completed.
- Cost Variance (CV) - difference between what was budgeted versus actual for work produced.
- Budgeted at Completion (BAC) - original budget for total task.
- Estimated to Complete (ETC) - total funds needed to complete remaining work based on current progress.
- Estimated at Completion (EAC) - total funds expected to be spent at completion based on current progress.
- Variance at Completion (VAC) - difference between what was proposed to be spent and what was actually spent at completion.

These data points will be used as a tool in management of project schedule and costs.

3.4.2 Field Project Communications and Reporting

During field efforts, records will be maintained in the project field office with copies delivered weekly to the project files in Atlanta, Georgia. Following completion of the fieldwork, all files will be delivered to the project files in Atlanta. The following communications will be documented in a chronological communications log maintained by the Parsons SM and the USA senior UXO supervisor (SUXOS):

- Each and every occasion that OE/UXO is encountered;
- When work is stopped for safety reasons;
- Health and safety violations; and
- Personnel changes and reason for changes.

3.4.3 Records Management

Hard copies of primary records for the project will be retained in the project files located in the Document Control Center in the Parsons Atlanta, Georgia office located at 5390 Triangle Parkway, Suite 100, Norcross, GA 30092. Such records will include the Task Order and any modifications, correspondence including meeting minutes and monthly reports, draft submittals, responses to comments and final submittals, and correspondence received from USAESCH or other agencies. Electronic versions of working products will be retained within the Parsons Atlanta network server. Access to all servers is password controlled. Historic records and documents, including ASRs, previous study reports, and related items will be retained in working files located in the Parsons PM's office. Master GIS information will be retained on the Atlanta GIS Server during the course of the project. Access is limited by password to only those individuals manipulating the data. Copies of these data will be provided on CD-ROM as required by the SOW.

3.5 PROJECT DELIVERABLES

Project deliverables will meet the schedule requirements of the project (Appendix D) and will be prepared in the format indicated in the SOW.

3.5.1 Report Deliverables

3.5.1.1 Parsons will submit all deliverables to USAESCH and other reviewers shown in Paragraph 3.5.1.2 in accordance with the SOW. Deliverables will receive internal Parsons reviews prior to submittal to other organizations. The following deliverables are required under the SOW:

- Abbreviated Site Safety and Health Plan (completed);
- Work Task Proposal (completed);
- Draft and Final Geophysical Equipment Prove-Out WP (completed);
- Draft and Final Geophysical Equipment Prove-Out Report (completed);
- Draft, Draft-Final, and Final EE/CA Work Plan;
- Technical Project Planning Documentation;
- Risk Evaluation and QC Report;
- Draft and Final EE/CA Report;
- Draft Action Memorandum; and
- Final Action Memorandum and Responsiveness Summary.

3.5.1.2 The addresses for deliverable are listed below. The number of copies for each deliverable will be in accordance with the SOW.

Table 3.2 Deliverable Distribution Addresses

ADDRESSEE	QUANTITY* Draft/Final
Commander US Army Corps of Engineers, Huntsville Center ATTN: CEHNC-OE-DC (Roland Belew) 4820 University Square P.O. Box 1600 Huntsville, AL 35807-4301	6/6
Commander US Army Corps of Engineers, New York District ATTN: CENAN-PP-E (Luz Spann-LaBato) State Highway 18 Turnpike Metroplex Building, Suite 205 East Brunswick, NY 08816	6/6

*Submittals will also be posted electronically on the Internet at www.projecthost.com.

3.5.2 Sampling Data

Sampling data will be compiled daily onsite on specialized personal computers. All data compilation and tabulation will be in accordance with Section 4 – Overall Approach to OE EE/CA. Photographic records of field activities will also be obtained, as appropriate.

3.6 PROJECT SCHEDULE

The project schedule was initiated with the Notice to Proceed (NTP) dated December 5, 2000, and will end with the completion of the Final EE/CA Action Memorandum. The period of performance ends December 31, 2001. The present overall schedule is presented in Appendix D.

3.7 PERIODIC REPORTING

Parsons will prepare monthly progress reports as described in Subsection 3.4. In addition to the monthly reports, daily field reports will be prepared by the SM and submitted to the USAESCH PM and the Parsons PM. The daily field reports will document the daily work progress and will include weather conditions, daily and cumulative geophysical survey area totals, daily and cumulative anomaly reacquisition totals, daily and cumulative intrusive investigation totals, health and safety issues, visitor log, UXO/OE items encountered, OE demolition details, and any other pertinent information related to the investigation.

3.8 COSTING AND BILLING

The purpose of Costing and Billing is to document, track, and control all costs associated with the former Camp Hero project. The costs associated with each of the thirteen tasks, as outlined in the SOW (Appendix A), will be documented in a Monthly Progress Report (see Subsection 3.4). Each task is outlined in further detail in Section 5, Scope of Work by Task.

3.9 PROJECT PUBLIC RELATIONS SUPPORT

Luz Spann-LaBato, CENAN PM, will be the overall coordinator for public affairs on this project. The following protocol will be followed during execution of this WP:

- All communications and contacts with the public will be under the direction of Luz Spann-LaBato.
- All public information contacts made during the project will be documented and forwarded immediately to Luz Spann-LaBato.
- Parsons will support, attend and participate in public meetings as directed by USAESCH. The support will include preparation and delivery of briefings, graphics, and presentations, and participation in site visits.

3.10 SUBCONTRACTOR MANAGEMENT

3.10.1 Parsons is the prime contractor on this project and has subcontracted with other firms as necessary for specific services required for conducting the EE/CA. Parsons will take all reasonable steps to assure subcontractor compliance with budget and schedule requirements.

3.10.2 Subcontractors will adhere to all applicable safety and health and QC requirements. The project SSHP (Chapter 8/Appendix B) of this WP specifies individual requirements for OE/UXO safety and health referenced in the SOW and other USAESCH health and safety requirements.

3.10.3 During the field investigation, subcontractors assigned to field activities will be required to submit weekly status reports that include information as it pertains to the field investigation tasks.

3.11 MANAGEMENT OF FIELD OPERATIONS

3.11.1 Introduction

3.11.1.1 The Parsons SM and UXO Safety Officer (UXOSO) as well as the USA SUXOS will be onsite throughout the duration of the fieldwork. Field crews mobilized for specific field tasks will consist of the following:

- Mobilization – During the first week of the field effort, Parsons and USA will mobilize equipment and personnel to the Camp. During this period the communications and sanitary facilities will be established. As a result of security concerns, equipment will not be left overnight at the site. A recreational vehicle (RV) will be used as a mobile office and will be driven to the site on a daily basis. The New York State Parks Department has approved a location for the RV near the east entrance gate to the former Camp Hero. This location was recently used by the HTW subcontractor (Cashin Associates) and has electrical and phone connections. Sanitation facilities will consist of temporary facilities. Coordination and scheduling issues for certain areas, conducted during the WP preparation, will be finalized during this time.

- Geophysical Surveys – One geophysical team will conduct surveys of the AOIs within the Camp in accordance with this WP and applicable DIDs. At a minimum each team will be comprised of one Parsons Team Leader (under the direction of the SM and trained by the Project Geophysical Coordinator) and one Parsons UXO-qualified individual (UXO Technician II or higher - see Subsection 7.10). The UXO-qualified individual will provide visual clearance and UXO avoidance for the team as well as assistant in the geophysical survey operations. The SM will ensure that the geophysical teams maintain a minimum separation of 200 feet (as required by DID OE-025) to avoid equipment interference. In addition to the survey teams, the Parsons's Project Geophysical Coordinator, or a qualified representative, will download/evaluate data in the field as well as troubleshoot the survey effort.

- Reacquisition Effort – The two types of geophysical survey techniques anticipated to be conducted at the Camp include conventional grid surveys and "meandering path" surveys (see Section 6 for detailed discussion). Reacquisition of anomalies selected for intrusive investigation in grids will be conducted by the UXO Subcontractor (USA) based on predetermined distances from surveyed corner stakes. For reacquisition of anomalies identified along the "meandering path" geophysical transects, a Parsons reacquisition team (similar to the geophysical teams described above) will reacquire the anomalies using global positioning system (GPS) coordinates.

- UXO Sampling and Excavation – One team will conduct intrusive excavation and sampling of the reacquired anomalies. Each team member will meet the qualifications specified in DID OE-025 for the UXO job function for which they are assigned. The intrusive effort is scheduled to partially overlap with the latter portion of both the geophysical and reacquisition tasks and extend beyond the demobilization of these teams until completion. QC activities will be conducted during and after the intrusive effort as described in Sections 6 and 11).

3.11.1.2 Preliminary survey locations within the AOIs were selected for geophysical investigation to provide representative sample coverage to support statistical objectives. Additional geophysical survey area may also be conducted to ensure disturbed locations identified during the field effort are investigated. Following receipt of ROEs from CENAN, a combination of grids and meandering paths will be used to collect geophysical data. The type of geophysical technique selected for a specific parcel will depend on vegetation and terrain conditions.

3.11.2 Production Rates

3.11.2.1 The average daily geophysical production rate estimated for the meandering path geophysical technique is 3.43 miles (3-foot wide footprint) per team per day (1.25 acres per day/team). This production rate estimate includes mobilization/demobilization, daily equipment testing, and intrasite travel. The average daily geophysical production rate for grids was estimated at approximately 5.5 grids (100 feet by 100 feet) per team per day (1.25 acres per day). Based on the extensive scrub oak vegetation in Area H observed during the Site Visit (Parsons, 2001a) and Geophysical Prove-Out (Parsons, 2001d) as well as the cobble beach of Area K, actual production rates will likely be lower.

3.11.2.2 An average of 30 anomalies per geophysical-acre or less will be intrusively investigated. If the number of anomalies identified for investigation significantly exceeds this estimate, the Parsons Project Geophysical Coordinator will use professional judgment and site-specific intrusive data to refine the anomaly selection process, pending USAESCH approval. The average daily reacquisition rate estimated for the meandering path is approximately 75 anomalies per team per day. As previously stated, reacquisition of anomalies in grids will be conducted by the UXO Subcontractor (USA) based on distances provided by Parsons from individual grid corners.

3.11.3 Logistics

3.11.3.1 Parsons will establish and maintain a mobile office trailer (RV) within the east gate of the New York State Parks Department property. The office trailer will be of adequate capacity to support the office space requirements of the USAESCH Safety Representative (if assigned), Parsons, and USA on-site managers. Parsons has coordinated with New York State Parks Department for arrangement of necessary utilities and facilities at the trailer site. The former geophysical prove-out test grid will be reused for daily geophysical equipment testing. Access to the AOIs will originate daily via the field office trailer following a mandatory morning meeting of all field personnel.

3.11.3.2 Parsons will conform to job site security requirements and other regulations. Parsons will notify the New York State Parks Department representative each day of the location the team will be working at the site. For Area A, the Montauk Historical Society representative will be contacted in advance to coordinate field activities at that location.

3.11.4 Field Work Mapping

The geophysical surveyors and intrusive investigators will adhere to the standard format defined in the SOW (Appendix A) in the submittal of maps, field notes, and digital files.

3.11.5 Office Hours/Holidays

The field staff will work a maximum of 40 hours per week on OE-related activities because of the inherent risk associated with OE operations. If daylight hours permit, the workweek will consist of four 10-hour days per week (Monday through Thursday), except Parsons- and USA-observed holidays. If daylight hours are insufficient to support 10-hour workdays, the workweek will consist of five 8-hour days (Monday through Friday). Parsons and USA will schedule personnel to provide adequate coverage of their operations. Work may occasionally be scheduled other than at these times due to factors such as adverse weather conditions or property owner considerations.

3.11.6 Contacts

3.11.6.1 U.S. Army Corps of Engineers

Parsons contact with the USACE will be through the USAESCH PM unless otherwise directed. A close working relationship shall be maintained with the USAESCH PM to ensure issues are addressed in a timely fashion.

3.11.6.2 Parsons, Inc.

Communications with other Parsons elements and subcontractors will be through the Parsons PM (Mr. Don Silkebakken) for administrative issues and the Parsons SM for daily field activities.

3.11.6.3 The Public

All contacts with the public or the news media should be courteous; however, questions from the public or news media regarding the site, project, or contract will be referred to the CENAN Project Manager, as discussed in Subsection 3.9 above.

3.11.6.4 Property Accountability

The Parsons office will utilize property owned by the USACE, Parsons, or USA. Periodic physical inventories will be conducted to verify the status of equipment. No property will be removed from the project site without prior clearance from the Parsons PM or his representative. Upon completion of the project, Government-furnished equipment will be returned to the Government, unless otherwise directed by the Contracting Officer.

SECTION 4
OVERALL APPROACH TO OE EE/CA

4.1 PRELIMINARY REMOVAL ACTION GOALS

4.1.1 The objective of this EE/CA investigation is to adequately characterize the nature, location, and concentration of residual OE that may be present within portions of the Camp as a result of former military training activities. This data combined with the current and future projected land use (as related to public safety) will be used to identify and analyze reasonable risk management alternatives, including OE removal if warranted. To this end, preliminary removal action goals are developed to ensure that the protection of the public and the human environment is realized. This may be achieved by determining the appropriateness of a potential response action for minimizing the public's exposure to UXO.

4.1.2 A number of factors must be considered when establishing specific objectives for a response action/removal action goal. The objectives must be able to meet the requirements set forth in the applicable or relevant and appropriate requirements (ARARs), while still being realistic and achievable in terms of cost. To attain the goal of reducing the explosive threat posed by potential UXO remaining within the AOIs, the objectives identified must be effective, implementable, and economical. The criteria of effectiveness, implementability and cost will be used to evaluate the potential response actions for the Camp in accordance with USAESCH guidance.

4.1.3 The response action/removal action objectives will guide the development of OE response alternatives for each AOI within the Camp. Furthermore, these objectives will focus the comparison of alternatives toward the goal of minimizing the explosive risk and achieving an acceptable level of protection of public safety and the human environment. These objectives include:

- Identify the degree and horizontal and vertical extent of OE contamination by AOI;
- Evaluate the effectiveness of various OE response alternatives;
- Determine the ability to implement various OE response alternatives; and
- Determine the cost to implement the various OE response alternatives.

4.2 IDENTIFICATION OF DATA QUALITY OBJECTIVES

4.2.1 Introduction

The DQOs for evaluating explosive safety risk at the Camp are based on sampling distribution, geophysical methodology, and types of UXO present. Some of the DQOs are, by necessity qualitative and are based on best professional judgement, whereas others are quantitative and are based on actual data. It should be noted that some DQOs are related to efficiencies but do not necessarily impact the risk evaluation. The DQOs will serve as standards against which project objectives will be measured.

4.2.2 Site-wide DQOs

4.2.2.1 **Representative coverage** – The intent of the geophysical data collection effort is to achieve balanced or "representative" coverage to ensure that the AOI is thoroughly investigated and the data is statistically valid. The coverage may have gaps as a result of the avoidance of sensitive environments (culturally significant areas, wetlands, protected species habitat), unsurveyable terrain (steep eroded bluffs), or thick vegetation (Area H). In such cases, the geophysical results may be extrapolated to the uninvestigated portions of the AOI. The representative geophysical coverage may also be augmented to include concentrated additional data collection of suspect disposal areas or other areas of concern identified from historical maps or documents (See Strategic Sampling Locations/Acreage).

4.2.2.2 **Minimum statistical sampling area** – For risk assessment, the 13 AOIs designated in the ASR were retained as preliminary sectors. These AOIs were assigned based primarily on historical, current, and anticipated future land use. For this EE/CA investigation three of these AOIs (Area A, Area H, and Area K) have been identified for further evaluation for the potential presence of OE. The quantity of geophysical survey acreage conducted within each AOI investigated as part of the EE/CA is contingent upon the statistical level of confidence desired in regards to a specific UXO density. For the statistics to be valid, the assumption is made that the distribution of UXO within the AOI is homogenous or that there is an equal probability of a UXO item having been deposited in any portion of the AOI. The minimum discriminator module of the UXO Calculator (version 1.4.2) was used to establish the minimum geophysical acreage within each AOI as shown in Table 4.1. A confidence level of 90% was selected with a maximum UXO density of 0.1 residual UXO/acre. Given the property will be opened to public recreational use, the most conservative UXO density was selected as appropriate.

4.2.2.3 **Strategic sampling area** – After review of the minimum statistical sampling area, Parsons concluded little additional data collection is warranted in the three AOIs to be investigated because of the conservative confidence level and residual UXO density selected. Furthermore, no suspect disposal areas, impact areas, or other disturbed areas were identified within the AOIs that would support placement of biased meandering paths or grids. Area A is only 0.03 acres, is level, and requires no brush clearance. The minimum statistical sampling requirement is 0.029 acres. As such, the AOI will be completely mapped during the geophysical investigation.

4.2.2.4 Area H is located on the bluff above the beach (Area K) but is thickly vegetated by scrub oak. The minimum statistical sampling requirement (at the selected confidence level and density) requires geophysical survey of 7.5 of the 8 acres comprising the AOI. Parsons will implement complete brush removal using mechanized equipment and subsequent mapping of the entire 8 acres.

4.2.2.5 Area K includes a rocky beach, eroded bluff face, and some moderately vegetated bluff totaling approximately 44.88 acres. The minimum statistical sampling requirement for the AOI (at the selected confidence level and density) is 18 acres. Parsons believes this amount of geophysical sampling is adequate to characterize the AOI. A combination of meandering paths and grids will be surveyed on both the bluff and beach. The steep bluff face will be surveyed from the base of the bluff upward to the maximum extent practical. Survey acreage distribution will be weighted higher in the area just below Area H were the bulk of historical OE findings have been reported.

4.2.2.6 Table 4.2 lists the Minimum Survey Test Acreage as well as the Strategic Sampling Acreage. The allocation of the strategic sample acreage was determined based on the size of the AOI, the number of OE items located in the AOI, the RAC score, and other judgmental factors.

Table 4.1
UXO Calculator Outputs
Former Camp Hero EE/CA

Area	Site Name	Total Acreage	Investigation Area (acres)		
Confidence Level = 90%			*UXO Density*		
			0.1	**0.2**	**0.5**
A	Fire Control/37mm AAA Station	0.03	0.029	0.023	0.014
H	Ordnance Destruction Range	8.00	7.5	6	3.5
K	Near Shore Ordnance Area	44.88	18	10	4.5
	TOTAL AREA=	***52.91***	***25.53***	***16.02***	***8.02***

NOTES: UXO Calculator – Minimum Discriminator Model used to evaluate required area of investigation coverage at specified UXO density values.

Typical UXO Density factors inputs are:
Residential = 0.1 UXO per acre
Industrial = 0.2 UXO per acre
Timberland = 0.5 UXO per acre

Table 4.2
Geophysical Investigation Areas
Former Camp Hero, Montauk, New York

Project Area Designation	Description/Former Usage	Approx. Size (Acres)	Potential OE Contamination	Minimum Survey Test Acreage (Representative)	Strategic Sampling Acreage	% of Area for Geophy sical Survey	Type of Survey (Meandering Path or Grid)
A	**Fire Control/37mm AAA Station**	**0.03**	**37mm and 40mm projectiles**	**0.029**	**0.001**	**100**	**Complete Mapping**
B	Battery 216	2.90	None	0	0	0	None
C	AAA Firing Area	5.80	None	0	0	0	None
D	AAA Battalion Bivouac Area	11.00	None	0	0	0	None
E	Battery 113 (Dunn)	1.80	None	0	0	0	None
F	Battery 112	2.23	None	0	0	0	None
G	Makeshift Small Arms Firing	0.60	None	0	0	0	None
H	**Ordnance Destruction Range**	**8.00**	**HE Projectiles, Projectile Fuzes, 17-To 23-Lb. Fragmentation Bombs, 3.5-Inch HE And Practice Rockets, Small Arms Ammunition**	7.5	.5	**100**	**Complete Mapping***
I	Target Plane Launching Area	1.00	None	0	0	0	None
J	Plotting/Switchboard Rooms	0.50	None	0	0	0	None

Table 4.2 (continued)
Geophysical Investigation Areas
Former Camp Hero, Montauk, New York

Project Area Designation	Description/Former Usage	Approx. Size (Acres)	Potential OE Contamination	Minimum Survey Test Acreage (Representative)	Strategic Sampling Acreage	% of Area for Geophysical Survey	Type of Survey (Meandering Path or Grid)
K	**Near Shore Ordnance Area**	**44.88**	**HE Projectiles, Projectile Fuzes, Cannon Balls, 3.5-Inch HE And Practice Rockets, Small Arms Ammunition, Hand Grenades**	**18**	**0**	**40+**	**Meandering Path, grids, and "mag and flag" along the bluff face**
L	Off Shore Ordnance Area	756,491.75	HE Projectiles, Projectile Fuzes, Cannon Balls, 3.5-Inch HE And Practice Rockets, Small Arms Ammunition, Hand Grenades	0	0	0	None
M	All Other Lands	434.86	None	0	0	0	None
EE/CA		**52.91**		**25.53**	**.501**		
Site Acres		757,005.35		**26.031**		**49.2**	

HE – High Explosives
* Mapping of Area H is contingent on approval by NY State Parks Department for mechanized brush removal.

4.2.2.7 **Geophysical Instrument Selection and Performance –** A site-specific geophysical prove-out was performed between March 5 through March 9, 2001 to determine the most appropriate geophysical survey technique/instrument capable of meeting project goals (Parsons, 2001d). The site-specific geophysical prove-out achieved the following:

- Determined the capabilities of several geophysical instruments in locating buried metallic items simulating UXO under anticipated site conditions.
- Demonstrated the use of the geophysical instruments in meandering path and grid survey scenarios.
- Compared the overall results obtained from various configurations, their applicability to the Camp, and recommended a technique (or techniques) for the geophysical investigation and anomaly reacquisition.
- Evaluated whether sensor data could be incorporated with a locating system/process [either fiducial or with a differential global positioning system (DGPS)] based on vegetation and terrain.
- Verified that the instrument(s)/technique(s) selected for geophysical surveys and reacquisition allowed for marking of anomalies in accordance with contract specifications for accuracy.

The specific geophysical instrument and techniques selected for application at the Camp are detailed in Subsection 6.6 of this Work Plan.

4.2.2.8 **Location Accuracy** – The Trimble® 4700 real-time kinetic (RTK) DGPS (or equivalent) will be used to locate anomaly locations within geophysical transects. The RTK 4700™ system survey is small and lightweight (2.7 pounds) with an integrated GPS receiver and radio modem. A Trimble® 4000 base station receiver situated at a known location is used to communicate via radio signals with the rover receiver set to the same frequency. Under ideal conditions, the accuracy of the GPS point collected is at the centimeter level.

4.2.2.9 The geophysical survey is anticipated to utilize a combination of grid and meandering path survey techniques. Since there is no significant tree cover, the DGPS unit is expected to perform within the plus or minus 20-centimeter accuracy tolerances required by DID OE-005-05. Parsons personnel will conduct all anomaly reacquisition within meandering paths. As such, the reacquisition team can ensure that the anomaly marked for intrusive investigation is the anomaly identified on the Anomaly Dig Sheets based on a comparison of the magnitude recorded during the original survey and the magnitude observed during reacquisition.

4.2.2.10 For grids, anomaly locations will be tape measured from the nearest staked grid corner as estimated from the Anomaly Dig Sheets. The location of at least one of the grid corners for each grid will be established using DGPS. The horizontal anomaly location accuracy will be within plus or minus one foot of the actual anomaly as required by DID OE-005-07.

4.2.2.11 **Identification of UXO** – A product of the intrusive investigation will be the determination of the identification and classification for buried UXO items. In addition, the appropriate UXO-qualified personnel using best professional judgment will establish the depth, fuzing, and weight of energetic material. No UXO will be moved without the written approval of the USAESCH Chief of the OE Safety Group.

4.3 REQUIRED DATA

4.3.1 GIS Data

4.3.1.1 The GIS database will include both topographic and aerial photographic digital coverage of the former Camp Hero. The GPS waypoints established during the Site Visit (Parsons, 2001a) have also been entered into the database. Other data will be obtained during the geophysical surveys and intrusive investigation. The GIS data effort for the project will be in accordance with DID OE-005-14 and is described in detail in Subsection 6.6.10

4.3.1.2 Parsons will perform all GIS activities. These activities will be performed in accordance with DID OE-005-14. The GIS database will be used to effectively graphically present and query the results of the OE site characterization effort at the Camp.

4.3.1.3 The GIS effort will involve preparation, analysis, processing, and interpretation of data acquired from local government sources, subcontractors, geophysical survey of transect and grid locations, and from intrusive anomaly investigations. GIS data layers will be constructed to depict OE contamination results for each AOI at the Camp. All files contributing to the GIS data sets will be backed up prior to editing or manipulation. The GIS Coordinator will be responsible for registering and processing all survey and intrusive data collected in the field into the project GIS and also for preparing maps depicting specific attributes for each AOI at the Camp.

4.3.2 Geophysical Data Collection

4.3.2.1 In order to ensure that the most appropriate geophysical equipment was selected for application at the Camp, an onsite geophysical prove-out was conducted to evaluate potential candidate instruments and location techniques (Parsons, 2001d). Based on results of the prove-out analysis, Parsons recommended the preferred instrument configurations and survey techniques to be used for the geophysical mapping, including the reacquisition of geophysical anomalies and positional control. A detailed description of the geophysical investigation approach for the Camp is provided in Subsection 6.6 of this WP.

4.3.2.2 A combination of geophysical survey techniques will be used at the Camp including the meandering path survey technique, grids, and "mag and flag" (on the bluff face). Application of multiple techniques will allow for flexibility and better data collection. Pedestrian-towed, single survey instruments, as selected in the geophysical prove-out, will be utilized in conjunction with GPS units to record metallic anomalies. The data will be recorded, processed, and incorporated into the project GIS.

4.3.2.3 The conventional grid survey technique requires establishment of a 100-foot by 100-foot (or other amenable dimension) grid with land survey of four grid corners. The enclosed grid and access route will be visually cleared of surface OE and significant vegetation removal may be required. The grid will subsequently be geophysically surveyed with the same equipment as used for the meandering path survey with the exception of the GPS locator. The grid will be "mapped" using a series of parallel passes from end to end. The subsurface anomaly locations will be recorded and referenced in terms of the grid corners and fiducial markers. The data will be recorded, processed, and incorporated into the project GIS.

4.3.3 Intrusive Data Collection

Following the geophysical survey of a meandering path or grid, the Parsons Geophysical Coordinator will prepare an Anomaly Dig Sheet depicting the selected anomalies for intrusive investigation. For meandering paths coordinates of the anomalies will be provided and for grids distances from the corner stakes will be referenced. The UXO Subcontractor (USA) will excavate the anomalies in accordance with approved WP procedures and with direct oversight from the Parsons QC Specialist. For "mag and flag' applications, anomalies will be excavated on a real-time basis and the geophysical data will not be recorded by the instrument. In all cases, the pertinent features of the recovered item will be documented, as per Subsection 6.4. Post excavation anomaly attributes will be added to the GIS database.

4.3.4 Other Data Sources

Archaeological and protected species information related to the former Camp will be used to identify the locations of culturally significant or environmentally sensitive sites that should be avoided during the EE/CA investigation. This information was collected during the ASR and may be augmented by additional data provided to Parsons by USAESCH. Prior to the availability of these surveys, Parsons has summarized the available data for inclusion in this WP, as detailed in Section 9. Following receipt of additional information, the project team will be advised. The field team will be provided awareness training to ensure that archaeological resources and protected species are not impacted as a result of the EE/CA investigation.

4.4 DATA REDUCTION AND EVALUATION

4.4.1 Data Reduction

Any raw data from field measurements (including geophysical and intrusive data collection activities) will be appropriately recorded in the field notebooks. If the data are to be used in the project reports, they will be reduced and summarized and the reduction method will be documented in the report. Data reduction and analysis methodology procedures will be in accordance with USAESCH standards.

4.4.2 Data Evaluation

Evaluation of geophysical data will be performed by the project Geophysical Coordinator who will identify anomalies for potential intrusive investigation. As the geophysical investigation progresses, the project Geophysical Coordinator will use feedback gathered from actual excavation geophysical anomalies to further refine the anomaly selection process. Additionally, a post-excavation data review and QC check will also be performed by reexamining 10 percent of the intrusively investigated anomalies per meandering path/grid and verifying the item recovered is reasonable for the magnitude of the signal recorded during the initial survey.

4.4.3 Quality Control of Geophysical Data

Prior to beginning work, each field team will sweep a controlled area (former prove-out test grid) of known magnetic anomalies. Readings will be taken at locations atop the seed items and will be recorded in a logbook. Prior to beginning each day's work, the geophysical survey teams will recheck their instruments in the test grid and compare the readings against the baseline reading. An instrument reading differing more than 25% from the baseline reading may suggest equipment failure or procedural error. The QC requirements for the geophysical data are described in detail in Subsection 11.3. The purpose of this QC effort is to evaluate the effectiveness of the geophysical survey instruments at the former Camp and to ensure data integrity for subsequent risk analysis.

4.5 DATA INCORPORATION INTO EE/CA REPORTS

The EE/CA Report will contain all data necessary to support the selection of an OE response alternative.

4.5.1 Data Reporting

4.5.1.1 For all anomaly analyses and review, at a minimum, the GIS data packages/maps will show traceability to the anomaly location and will contain the following information required for data validation:

- Case narrative describing any deviations from the normal anomaly evaluation procedures required and the anomalies affected;
- Anomaly location identifications;
- Geophysical data set identifications;
- Individual parameter results; and
- Summary of all GIS QC procedures.

4.5.1.2 As a part of the data evaluation process, the GIS operator will confirm that the documentation is complete, paginated, and legible; qualitative identifications are accurate; calculations are accurate; and the results are expressed in the appropriate units. A copy of the OE/UXO data as displayed on the GIS anomaly maps will be checked for completeness and compliance. In addition, the data will be validated and any results not in compliance with established QC criteria will be identified. The effect of any noncompliance on the usability of the data will be addressed with USAESCH.

4.5.1.3 Parsons will take the data packages generated by the GIS and check them for completeness. The evaluation process will include:

- The anomaly's location with respect to confirmed OE/UXO;
- The detection instrument readings (e.g., the electronic signature);
- Subsurface conditions and proximity to sources of interference that affect the sensitivity and reliability of the detection instrument; and
- Field observations and comments by the geophysical and intrusive investigation personnel.

4.5.2 Final Reports and Maps

4.5.2.1 All final mapping will be generated using CADD on a PC and provided to the USAESCH in ESRI Arc View digital design files on a PC CD-ROM. All characteristics such as file naming and relationships, level structures, colors, line styles, weights, etc. in accordance with the surveying and mapping requirements of the Tri-Service Spatial Data Standards (TSSDS) of the current release will be compiled in the design files. Site maps plotted from these design files will be provided on reproducible drawings. The size of these drawings will be based on the information that is to be displayed.

4.5.2.2 The location, identification, and coordinates of all the control points will be plotted on the reproducible maps. Each map will include grid north, a true north, and magnetic north arrow with the differences between them shown in minutes and seconds. Grid lines or tick marks in feet and at systematic intervals will be shown with their grid values on the edges of the map. Also, a legend showing the standard National Geodetic Survey (NGS) symbols used for the mapping, a map index showing the site in relationship to all other sites within the boundary lines of the project area, a border, and a standard USACE title block will be shown on each map.

4.6 OE EXPOSURE ANALYSIS

4.6.1 Parsons will perform a site risk evaluation (SRE) as part of the EE/CA process to evaluate the risk that each AOI represents to public safety and the human environment. The risk evaluated will be related OE/UXO and will not consider chronic health effects that could result from chemical constituents of OE/UXO. The SRE methodology to be used is USACE's Qualitative Impact Analysis (QIA) Risk Management Tool Impact Program. The model will be used for baseline public exposure and the predicted risk reduction for the selected risk reduction option for any AOI recommended for removal action as a result for EE/CA. Implementation of the model to this project may include, but is not be limited to, developing numerical scales, rather than just using qualitative terms. The QIA model will be adapted in order to address site-specific conditions at the former Camp Hero. The SRE will use the data collected during the EE/CA field effort to mathematically determine the expected number of exposures and the associated risk to the population from exposure to UXO at the Camp. Available historical documentation and OE sampling data and associated maps will be reviewed to assess final subdivision of AOIs based on terrain factors, ordnance density, and other QIA factors as needed.

4.6.2.2 The results of the QIA computer program will include:

- A description of each AOI evaluated;
- A list of all QIA defined activities that are anticipated to occur in each AOI;
- The probability of an individual being exposed to ordnance on any given trip into an AOI for each remedial alternative considered;
- The probability of an individual being exposed over a year of activity at an AOI for each remedial alternative given;
- The life cycle number of exposures anticipated in each AOI for each alternative; and
- The details of the calculations utilized to develop risk values.

4.6.3 An estimated OE density for each final risk AOI (or AOI subdivision) will be evaluated that takes into consideration the hazard factor for the type of OE found at the Camp. A review of the OE density estimates is planned as part of the QIA parameters/data collection and assessment. All data acquired will be used to develop risk estimates for the investigation areas and associated removal alternatives.

4.7 ALTERNATIVES IDENTIFICATION AND ANALYSIS

4.7.1 Introduction

4.7.1.1 Preliminary OE response action alternatives have been identified for the Camp that may potentially achieve the OE response action objectives discussed in Subsection 4.1. The alternatives and response actions were grouped into the following categories:

- No OE removal action;
- Institutional controls;
- OE surface clearance; and
- OE subsurface clearance

4.7.1.2 These four categories of OE response actions will be used as a basis for determining the OE response action alternatives to be considered in the EE/CA. The potential response alternatives derived for the AOIs within the Camp are developed in the following subsections.

4.7.1.3 Each of the four approaches listed above will be applied independently to each of the AOIs (or AOI subdivisions). This approach is taken to ensure that a tailored approach suitable for each AOI is developed. It may also be feasible and appropriate to combine some of the alternatives to optimize the safe transition of portions of the Camp to a planned future land use.

4.7.1.4 Based on the OE response action categories described above, preliminary OE response action alternatives were identified as candidates for potential implementation at the Camp. Four alternatives were identified for potential implementation within AOIs at the Camp:

- NDAI;
- Institutional Controls (IC);
- Surface Removal of OE items; and
- Clearance to Depth Removal of OE items

No OE response action, even using the best available technology, can completely remove all OE risk for an AOI within the Camp. Yet, all of the OE response actions considered (with the exception of NDAI) reduce the potential risks posed to the public by inadvertent ordnance detonation, resulting in a reduction of the OE risk.

4.7.1.5 Implementation of a recurring review program will not be evaluated as a separate alternative, but as an integral part of any alternative. The recurring review program will be used in conjunction with the NDAI alternative, the IC alternative, and the OE clearance alternatives. As part of this program, visual surveys will be performed on a proposed schedule. These visual surveys will consist of the inspection of areas within AOIs to determine the effectiveness of the OE response action alternative implemented. These visual surveys will be concentrated in areas most susceptible to erosion and other disturbances such as timber harvesting. Any incident reports will be reviewed and any IC in effect will be checked to ensure viability and proper maintenance. During the periodic inspections changes in the land-uses will be assessed. The first visual inspection would occur approximately one year after OE response action alternatives have been completed. After this initial inspection, the inspections will continue at a five-year frequency beginning at the end of the first five-year duration and continuing every five years up to 25 years from the completion of OE response actions. If the results of these inspections indicate that the conditions of the AOI have changed significantly, the recommendations of the EE/CA will be revisited and revised as warranted.

4.7.2 Alternative 1: No DoD Action Indicated

Alternative 1 is for the government to take no action in regards to locating, removing, and disposing of any potential OE present within a specific AOI at the Camp. In addition, no public awareness or education training would be initiated with regards to the risk of OE. The NDAI alternative assumes continued use of the AOI in its present state. If the potential exposure and hazards associated with the AOI are compatible with current and future development in the area as well as the OE response action objectives, then NDAI may be warranted. It is important to note that the government will respond to any future UXO discovery on the former Camp property regardless of whether the affected parcel was designated for NDAI. The NDAI alternative is a potential candidate alternative for each of the AOIs within the Camp.

4.7.3 Alternative 2: Institutional Controls

4.7.3.1 Description and Objective

4.7.3.1.1 The implementation of an IC alternative would provide a means for the DoD and their representatives to coordinate with the State Park and Montauk Historical Society in an effort to affect behavior modification of Park visitors, employees, and residents to reduce OE exposure risk. The IC alternative can be used in combination with other OE response actions or in cases where it may not be possible or practical to physically clear OE from the AOI. Successful implementation of IC is contingent on the cooperation and active participation of the existing powers and authorities of other government agencies to protect the public from OE risks. Instead of direct removal of the OE from the AOI, the IC response action relies on behavior modification and access control strategies to reduce or eliminate OE risk. For example, an educational program may be required to warn the visiting public (fishermen) of the potential presence of ordnance and the importance of not disturbing (yet reporting) suspect items observed within the Camp. The educational program would provide guidance on public safety and prudent actions should a person discover OE material.

4.7.3.1.2 Aside from conventional OE response actions, risks related to potential OE contamination may be managed through land use restrictions, access control, public awareness programs, or a combination of strategies. It is important to understand that the risk associated with ordnance contamination is associated with three causative factors that, if completely avoided, would prevent an OE-related accident. These three factors are: presence, access, and behavior. If there is no presence of ordnance within the AOI, then there is no possibility of an OE-related accident. If ordnance exists within the AOI, but people do not have access, then there will be no accident. Even if ordnance exists within the AOI and people have access to the ordnance, if their behavior is appropriate, then there will be no accident. An accident requires all three events or circumstances to be present. No accident will happen if any one causative factor is missing. Each factor provides the basis for a separate implementation strategy.

4.7.3.1.3 Behavior modification is an IC that relies on the personal responsibility of the property user. Even if the OE exists and there is open access to it, there is no risk if the behavior is appropriate. For behavior to be appropriate, one must understand the situation and voluntarily react in a responsible manner. The power of the federal government is limited in any situation where local enforcement is available. Therefore, the NY State Park Department and the Montauk Historical Society must be convinced that the risks are sufficient to warrant their participation.

4.7.3.2 Land Use Restrictions and Regulatory Control

Land Use Restrictions and Regulatory Controls provide the primary IC that can be exercised over areas where ordnance is present. Through these controls, NY State Parks Department can dictate the type of development that will occur within an AOI, and the methods in which that development occurs. The Camp is located within one county (Suffolk), which likely has a Comprehensive Plan for development that defines the kinds of uses that may occur on the property surrounding the Camp and in the foreseeable future. If existing regulations in the County do not provide information about the potential presence of ordnance, the Comprehensive Plan could be modified (or an appendix added) to include a discussion that discloses the potential of OE within the former Camp Hero and the need for special concern when visiting certain parcels. The primary intent would be to disclose to the public at large that OE may be present within certain areas and an increased level of awareness and caution should be taken in the use of the land.

4.7.3.3 Printed Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the public risk associated with ordnance contamination. One of the major avenues available to facilitate this awareness and understanding is through printed media, in the form of brochures, fact sheets, newspaper articles, and other information packages. The opportunity to disseminate information through the printed media is readily available and can be easily facilitated. Many of the local residents and property owners near the Camp are aware of the potential ordnance risk associated with the former use of the property. However, area residents should still be reminded of the potential presence of ordnance items on a regular basis. Also, providing information to new residents and Park visitors is of primary importance. The addition, reinforcement, and augmentation of current knowledge is desirable in order to keep the realization of ordnance contamination and the potential hazards in the minds of people at all times.

4.7.3.4 Brochures

Brochures can be very effective educational tools and could be prepared and distributed through the State Park, Montauk Historical Society, and even the County government or other local agencies. Brochures could describe the history of the former Camp Hero, how to identify ordnance, safety procedures associated with the proper handling/avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered.

4.7.3.5 Newspaper Articles/Interviews

Newspaper articles and interviews with local residents, the USACE, and other institutions can be printed to further educate the public concerning the ordnance contamination at the Camp. These articles can be very informative and can effectively reduce the risk of improper handling of ordnance.

4.7.3.6 Visual Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with ordnance contamination. Visual media in the form of videotape programs for use during presentations and for broadcast on local television stations is a major avenue available to facilitate this awareness and understanding. The opportunity to disseminate information through the visual media is readily available and can be easily facilitated. Two visual media programs, one as a 30-minute television special and one as a 5 to 7 minute professional videotape for classroom and other use, would be highly effective tools in educating the public about ordnance safety. These videos should describe the history of the Camp, how to identify ordnance, safety procedures associated with avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered. Videotapes can be shown in classrooms throughout the region. Copies could also be provided to local libraries, the State Park, and the Montauk Historical Society. These institutions could make the videotapes a part of permanent exhibits/displays.

4.7.3.7 Signage

Signs can be posted along the perimeter of specific areas to warn the public about the risk of exposure to ordnance items. Signage can also include information regarding site access restrictions, how to respond to discoveries of ordnance items, telephone numbers and addresses to contact with questions or concerns, and any other applicable site-specific information.

4.7.3.8 Fencing

Fencing would provide a physical barrier to prevent the public from entering specific areas and inadvertently coming in contact with ordnance. However, construction of fencing is generally considered only as a last resort IC strategy due to generally negative public acceptance.

4.7.3.9 Other Institutional Controls

Exhibits/displays could be prepared and placed in the local public library and other areas where the public will be exposed to educational information. In addition, the creation of a web page on the Internet and creation of an ad hoc committee could also be effective method of raising and preserving general awareness and educating the public about the former Camp Hero.

4.7.4 Alternative 3: Surface Removal of OE Items

4.7.4.1 The surface clearance of OE alternative may be a viable OE response alternative if the QIA indicates that there is a high number of anticipated exposures to OE by the public on the ground surface and a low risk of exposure to subsurface OE.

4.7.4.2 Surface OE clearance would be completed by experienced UXO-qualified personnel who visually search the ground surface for any OE. In addition, UXO-qualified personnel would use metal-detection devices to ensure that any OE items that may exist on the surface of the ground or protruding from the ground are located during the sweep. The UXO-qualified personnel would perform their sweep in lanes five feet wide, or some other comparable width depending on the sweep reach of the type of metal detection equipment used, to ensure complete surface coverage. All potential OE contacts on the ground surface or protruding from the ground surface would then be identified and removed. A land surveyor would establish control points for a grid system that would cover the areas where surface clearance was required. Where necessary, brush clearing crews would clear enough undergrowth so that the surface clearance crews could adequately perform their work. Brush clearing should be limited to only those areas where the vegetation prevents the effective use of the geophysical equipment. In areas where the geophysical equipment can be used effectively in the natural state, no brush clearance would be necessary. Since the future land use is anticipated to be a publicly-accessible State Park, brush clearing would only be used as necessary so that the surrounding ecosystem would not be disturbed.

4.7.5 Alternative 4: Clearance to Depth Removal of OE Items

4.7.5.1 The clearance to depth of OE alternative may be a viable OE response alternative if the QIA indicates that there is a high number of anticipated exposures to OE by the public below the ground surface.

4.7.5.2 The clearance would extend to depths consistent with the EE/CA findings within a given area. Land surveying and brush clearing operations would be necessary as described in Alternative 3. Under this alternative, one hundred percent of an area would be cleared of surface and subsurface OE items (to the specified depth). This alternative is the most ambitious of the three alternatives identified for consideration in the EE/CA. Experienced, UXO-qualified personnel would perform removal activities associated with this alternative. Institutional controls could be implemented in conjunction with this alternative to further decrease the estimated number of annual exposures in the area.

4.7.5.3 During the investigation phase, a geophysical instrument would be used to perform surveys over established grids. This geophysical survey would identify subsurface anomalies and any surface anomalies not identified during the brush-clearing activities. In this way, both the surface and subsurface surveys could be performed simultaneously saving time and money. The primary difference in performing this kind of survey over that described in Alternative 3 is that instead of relying primarily on visual identification and near surface detection, a marking/locating system is used to relocate the subsurface anomalies for subsequent intrusive investigate and removal. All surface anomalies uncovered during the performance of the survey would be immediately identified and removed/disposed from the AOI to ensure that only subsurface anomalies remain to be investigated.

4.7.5.4 The second phase to this approach includes the intrusive investigation of all subsurface metallic anomalies identified during the metal detection survey to determine their exact nature. During this intrusive investigation, phased engineering controls may have to be used to reduce the evacuation distance that would be required during the conduct of these investigations. Once the intrusive investigations begin, each anomaly will be excavated in 6-inch depth increments utilizing hand tools. If the item causing the magnetic reading has not been identified within the first foot below the ground surface, then the hand-dug excavation will continue in 12-inch depth increments until the item is identified. Following removal of the item identified, the excavation will be restored to as close to its original state as possible.

4.8 EE/CA REPORT

An EE/CA Report will be prepared to document the fieldwork and subsequent evaluations and recommendations. The EE/CA Report will be prepared in accordance with the SOW and applicable USAESCH guidance (DID OE-010). The report will include:

- **Executive Summary** that details project objectives and historical attributes, site characterization effort, results and conclusions and recommended remedial action and estimated cost.

- **Site Characterization**, including site description, background, and previous removal actions. The EE/CA investigation effort will be described in detail including sample transect/grid establishment, geophysical investigation, and intrusive investigation. The SRE utilizing the QIA model for evaluation of the risk to public safety and the human environment will be provided.

- **Identification of Removal Action Objectives** for the AOIs (or AOI subdivisions) based on the results of the QIA model and the SRE.

- **Identification and Analysis of Removal Action Alternatives** for each AOI, including NDAI and a general IC alternative, to reduce the risk to public safety and the human environment.

- **Comparative Analysis of Removal Action Alternatives** for each AOI. Alternative development and evaluation for each AOI will be based on effectiveness, implementabilty and cost.

- **Recommended Removal Action Alternative** selection. A preferred remedial alternative will be selected for each AOI based on a detailed evaluation of effectiveness, implementabilty, and cost.

4.9 EE/CA APPROVAL MEMORANDUM

The EE/CA will be provided to the public and regulatory agencies for their review and comments. Comments approved by the USAESCH and CENAN will be incorporated into the final EE/CA Report. An Action Memorandum will be prepared describing the selected risk reduction alternative in accordance with the most recent USAESCH guidance.

4.10 EE/CA COMPLETION AND CLOSE-OUT

Submittal and approval of the Action Memorandum will complete the Task Order (TO) for the former Camp Hero EE/CA. Unless a period of performance modification is granted by USAESCH, the job will be closed on or before December 31, 2001. If project modifications are applied to the TO, the project period of performance will be revised accordingly.

4.11 USE OF TIME CRITICAL REMOVAL ACTIONS DURING EE/CA PROCESS

The procedures outlined in this WP are for NTCRA. Should circumstances develop justifying the need for a time critical removal action (TCRA), procedures will be developed in accordance with applicable USAESCH guidance.

4.12 FOLLOW-ON ACTIVITIES

4.12.1 Follow on activities associated with the Camp (subsequent to any OE removal activities) will be conducted by the USACE in the form of recurring reviews. The recurring review process is consistent with Section 121(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and Section 300.430(f)(4)(ii) of the NCP. Recurring review as outlined by these statutes require that periodic (at least every five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure following the completion of all remedial actions.

4.12.2 Recurring reviews will be conducted at the Camp to:

- Determine if the OE response actions implemented at the Camp continue to reduce risk from unexploded ordnance.
- Determine if new information has become available to reconsider prior decisions at the Camp.
- Determine if there is an immediate threat to the public or environment that may require an Accelerated Response.
- Review prior decisions for Technical Impracticability to determine if new technology has been developed that will address explosives safety risk.

4.12.3 The recurring review team will gather data to determine if any changes at the Camp are relevant and may affect the prior recommendations of the EE/CA. Changes to be evaluated consists of:

- Physical conditions;
- Public accessibility and land use;
- New technology or techniques that have become available and may warrant reconsideration or the EE/CA recommendations; and
- Effectiveness of the response action to reduce risk.

4.12.4 Data gathered during the review process will be used to determine if further action needs to be taken to protect public safety and the human environment. If no changes have taken place, the AOIs within the Camp will continue to be monitored as the specified intervals. At the completion of the review, a Recurring Review Report will be prepared, a public notice will be placed in the local newspaper concerning the continued effectiveness of the response action, and a formal Decision Document referencing any actions taken will be prepared.

SECTION 5
SCOPE OF WORK BY TASK

5.1 INTRODUCTION

The Scope of Work for this delivery order requires the completion of thirteen specific tasks to implement the EE/CA for the former Camp Hero. These tasks are listed below and discussed in further detail in the following subsections.

Task 1. Project Planning, Site Visit and Records Review;

- Task 1A – Site Visit and Records Review; and
- Task 1B – Work Task Proposal.

Task 2. Geophysical Test Plot;

Task 3. Technical Project Planning;

Task 4. EE/CA Work Plan;

Task 5. Location Surveys and Mapping;

Task 6. Establishment and Management of GIS;

Task 7. Site Characterization;

- Task 7A – Surface Preparation, OE Identification and Removal;
- Task 7B – Geophysical Equipment Test; and
- Task 7C – Investigation.

Task 8 Intrusive Investigations (OE Sampling);

Task 9 Prepare Institutional Analysis, Impact Analysis and EE/CA Report;

- Task 9A – Institutional Analysis;
- Task 9B – Impact Analysis; and
- Task 9C – EE/CA Report.

Task 10 Prepare Action Memorandum;

Task 11 Community Relations Support;

Task 12 Meetings and Project Management; and

Task 13 Project Documentation.

A copy of the SOW is presented as Appendix A.

5.1.1 Task 1 – Project Planning, Site Visit and Records Review

5.1.1.1 Task 1A – Site Visit and Records Review

5.1.1.1.1 An initial Site Visit was conducted on December 18 and 19, 2000 under USAESCH SOW for Task Order No. 0002 (this order). The purpose of the former Camp Hero Site Visit was to survey the Camp for familiarity, visually inspect areas identified as confirmed or potentially contaminated with OE in the ASR, photograph the AOIs for potential EE/CA, and meet with the NY State Parks Department (the primary controlling property owner). In addition, the intention was to qualitatively evaluate applicability of various geophysical approaches for implementation during the EE/CA.

5.1.1.1.2 Prior to the Site Visit, a site safety and health plan (SSHP) was prepared and approved by USAESCH. In addition, the SOW was reviewed in detail to provide the team with a clear understanding of past activities conducted at the Camp. The ASR was not available for review prior to the Site Visit.

5.1.1.2 Task 1B - Work Task Proposal

A Work Task Proposal was prepared to describe and plan the accomplishment of the individual activities defined in the SOW (Parsons, 2001a). The work task proposal (WTP) included descriptions of work to be accomplished, recommendations on approach, coordination, organization, methods, personnel, schedule and estimated budget.

5.1.2 Task 2 - Geophysical Test Plot

Under this task, Parsons designed and constructed a test plot at the Camp to test various geophysical methods and equipment in order to determine the methods, equipment and procedures best suited for the EE/CA investigation. A site specific Geophysical Test Plot Work Plan was prepared and approved by USAESCH and the Prove-Out was conducted between March 5 and March 9, 2001 (Parsons, 2001b,d). This task was primarily for the mobilization, construction, removal and demobilization of the test plot. Task 7B addresses conducting the Prove-Out, interpretation of the data, and selection of equipment. A Prove-Out Report was prepared to document the selection process and was submitted to USAESCH for review and approval prior to the EE/CA field investigation.

5.1.3 Task 3 – Technical Project Planning

5.1.3.1 Parsons will prepare a Technical Project Planning (TPP) report for the Camp. This report will document the four phases of the TPP process, as outlined in Engineering Manual 200-1-2 (August 31, 1998): Phase I – Identify current project; Phase II – Determine data needs; Phase III – Develop data collection; and Phase IV – Finalize data collection program.

5.1.3.2 Phase I will determine from any historical information obtained:

- Decision makers (USACE, landowner(s), and regulatory agency representatives).
- Project objectives, to include the decision maker's perspective and the community's needs and interests as it pertains to this project.
- Site constraints and dependencies (access agreements, real estate easements, funding, and physical constraints).
- Legal and regulatory constraints.
- Conceptual Site Model (known impact areas, all types of potential UXOs at site, geological setting, and an estimate of maximum probable depth for sampling.).
- Site closeout statement for each land use category or sector as appropriate.

5.1.3.3 The site closeout statement will include current and future land use information, actions required to achieve site closeout, local initiatives, enlist community support, and encourage future monitoring of the Camp.

5.1.3.4 During Phase II, Parsons will identify the data needed, intended use of data, sampling and analysis methods, identify the quality objectives for each data type, evaluate the usability of existing data, and identify data gaps to be filled.

5.1.3.5 Phase I and II of the TPP were completed during a stakeholder's meeting conducted February 6, 2001 at the Montauk State Parks Complex. A public meeting was also held that evening (Parsons, 2001c). A follow-up meeting with the Montauk State Historical Society was conducted on March 8, 2001 to include the agency in the TPP process as the control the 0.03 acres associated with Area A.

5.1.3.6 Phase III will entail planning the sampling and analysis approaches to meet the data needs for Phase II. The data quality and intended use of the each data type will be defined along with sampling strategies, field screening and analysis technologies.

5.1.3.7 Phase IV involves the development of a detailed data collection program. This program will provide a schedule with budget affects for various collection options. Items such as constraints and uncertainties and regulatory factors must be addressed. The goal of this phase is to identify the preferred data collection plan based on data need requirements, data sampling and analysis methods, and the use of the data to satisfy the closeout statement in Phase I.

5.1.4 Task 4 - EE/CA Work Plan

5.1.4.1 This task requires Parsons to evaluate the findings presented in the ASR and subsequent site information collected after the Site Visit (Parsons, 2001a) and TPP to prepare and submit a Work Plan (this document) to conduct the EE/CA at the Camp. The WP will concisely describe the policies, organizations, objectives, functional activities, and quality control activities required to achieve the data quality objectives for the project. The WP will be prepared in accordance with the SOW and USAESCH guidance (DID OE-005-01).

5.1.4.2 The WP will include a detailed SSHP and Quality Control Plan (QCP). The QCP will describe both quality control and quality assurance, however, quality assurance activities will be conducted by USAESCH. The QCP will be prepared in accordance with the SOW and USAESCH guidance (DID OE-005-11).

5.1.4.3 The draft and draft-final WP will be submitted to USAESCH and CENAN for review. The maximum number of copies submitted will be per SOW (6 each to USAESCH, 6 each to CENAN) but may be reduced as a result of electronic posting to the project website to be established at www.projecthost.com as directed by the USAESCH PM. Comments will be incorporated into the final WP to be submitted to the Contracting Officer for acceptance prior to the start of fieldwork.

5.1.5 Task 5 – Location Surveys and Mapping

Parsons will perform location surveys as outlined in the approved WP and in accordance with DID OE-005-07. For anticipated sampling grids establishment at the Camp, grid corners will be surveyed and depicted on appropriate scale site maps. For geophysics conducted using the meandering path methodology, the complete traverses will be depicted. In addition, a minimum information base map will be provided that identifies roads and highways, trails, AOI boundaries, proposed meandering path/grid sampling locations, and any OE items that are found and their location.

5.1.6 Task 6 – Establishment and Management of GIS

This task includes the establishment of the GIS and entry into the GIS of aerial photography, topographic maps, existing site maps, and other appropriate data that will be used to develop the WP and EE/CA Report(s), support the field effort, and maintain the database. The GIS file will be set-up in accordance with the SOW, the approved WP, and current USAESCH DID guidance.

5.1.7 Task 7 – Site Characterization

5.1.7.1 Task 7A – Surface Preparation, OE Identification and Removal

5.1.7.1.1 This subtask includes all surface preparation in support of either establishment of grids or meandering paths. Qualified UXO personnel will conduct visual OE surface sweeps of all areas identified for geophysical survey to ensure the areas are free of surface OE hazards. In addition, access routes to survey locations will be delineated and will also be cleared of surface OE. Once visually cleared of OE, UXO-qualified escorts will not be required for subsequent non-intrusive site activities. Any OE/UXO discovered during the surface sweeps will be either removed or detonated per approved project WP procedures.

5.1.7.1.2 Parsons and its Subcontractors may perform moderate brush cutting to accommodate geophysical equipment and to aid in identifying OE and OE scrap. Certain plants and trees will not be cut. Vehicular traffic may also be restricted as necessary. The WP will outline in detail precautions that will be implemented to ensure impacts are minimized at the Camp.

5.1.7.2 Task 7B – Geophysical Equipment Test

Various pieces of geophysical equipment were tested during the Geophysical Prove-Out in order to identify the appropriate equipment to be used during the geophysical investigation. This subtask was performed coincident with Task 2 – Geophysical Test Plot. This subtask addresses conducting the Prove-Out, interpretation of the data, and selection of equipment. A Prove-Out Report was prepared to document the selection process and was submitted to USAESCH for review and approval prior to the EE/CA field investigation (Parsons, 2001d).

5.1.7.3 Task 7C - Investigation

5.1.7.3.1 Geophysical surveys will be performed at each established grid or meandering path location. An estimated 12.5 acres or less was initially proposed to be geophysically surveyed at the Camp. However, following review of the minimum statistical sampling requirements and the desired maximum residual UXO density and confidence levels, approximately 25 acres of geophysical mapping/survey are anticipated. The instrument(s) used to detect OE contamination at the Camp were recommended based on the results of the Geophysical Prove-Out and approved by USAESCH. Parsons will provide all of the necessary equipment and personnel to perform the geophysical investigation activities. If UXO is discovered during the investigation and identified as containing a military toxic chemical agent, all operations will cease immediately within 500 feet of the AOI. Parsons will notify the USAESCH PM immediately who will in-turn request military EOD support. If the grid or meandering path location is critical to the AOI, the Parsons PM will be consulted to identify, direct, recommend, and approve an alternate geophysical survey location.

5.1.7.3.2 Parsons will acquire United States Geological Survey (USGS) topographic maps for the Camp. This information will be used in conjunction with other historical information obtained to develop the investigation map for the Camp. The total area to be investigated is approximately 25 acres to be distributed over 52.91 acres. For grids, a nominal size of 100' by 100' will be typically used. Due to the nature of the meandering path geophysical methodology, exact transect locations will not be selected and depicted on WP maps. Approximate waypoints will be designated on WP maps to provide representative site coverage and will be adjusted in the field. Geophysical equipment will simultaneously collect GPS survey data, as detailed in the WP. Following the fieldwork, the meandering path locations will be accurately plotted on site maps based on the GPS survey data.

5.1.7.3.3 Anomaly locations (coordinates) will be recorded on a "per grid" or "per meandering path" basis using the GPS unit. Anomaly locations to be intrusively investigated will be reacquired for excavation by the UXO Subcontractor (USA).

5.1.7.3.4 The UXO Subcontractor and Parsons personnel will check the geophysical equipment on the former geophysical prove-out test grid (or similar) periodically and readings documented. A standard response will be established for each unit. If test results indicate the unit is out of compliance, the unit will be replaced or repaired as necessary.

5.1.7.3.5 The areas selected to be geophysically investigated at the Camp are:

Sector A – Fire Control/37mm AAA Station (0.03 acres);

Sector H – Ordnance Destruction Range (8 acres); and

Sector K – Near Shore Ordnance Area (44.88 acres).

5.1.8 Task 8 – Intrusive Investigations (OE Sampling)

5.1.8.1 Prior to mobilization for the field effort, sampling grid and/or meandering path locations within the investigation areas will be tentatively selected and transcribed onto site maps. Adjustments to these locations will subsequently be made to avoid ravines, buildings, thick vegetation, or other obstacles.

5.1.8.2 Intrusive investigations of selected identified anomalies (suspected OE/UXO) will be conducted in each sampling grid and/or meandering path. The Parsons Geophysical Coordinator, with concurrence of the USAESCH PM, will select the anomalies to be excavated. Not all identified anomalies will necessarily be excavated. Following the interpretation of the geophysical survey data, Parsons will propose a methodology to USAESCH for approval for selection of anomalies for intrusive investigation. As site specific "intelligence" is gathered, the selection process may be modified with USAESCH approval.

5.1.8.3 The intrusive investigation effort will be conducted coincident with the geophysical survey activities after onsite data interpretation by the Geophysical Coordinator. Qualified USA personnel will perform the intrusive investigation. USA will document pertinent features of all excavated anomalies including a description of the object, an estimate of size and weight, orientation, and the depth at which the item was found. Reacquisition of each selected anomaly identified during the geophysical investigation and presented on the Anomaly Dig Sheets will be performed using the same model geophysical equipment utilized on the individual grid or meandering path.

5.1.8.4 Due to the relative isolated nature of the Camp, minimal public inconvenience is anticipated as a result of intrusive activities. Montauk Highway is the only open paved road that may be within the Minimum Separation Distances (MSDs) that will be established around excavations (See Appendix E) at the Camp. Anomalies where the USAESCH-calculated MSD overlaps the highway may require either temporary short-term closure of the road during excavation periods or excavation only when there is no vehicular traffic. No evacuations of residents will be required at the Camp since no residential, commercial, or industrial buildings are located within the maximum estimated MSDs. However, during the intrusive investigation, portions of the beach may need to be closed. Every effort will be made to minimize impacts to the public.

5.1.8.5 Since the State of New York Parks Department owns all the property within the areas of concern (with the exception of the 0.03 acres associated with Area A), no coordination of ROEs will be required.

5.1.8.6 Destruction of UXO encountered during the site investigation and characterization will be closely monitored by the UXOSO and the SUXOS. Fuzed items will be blown-in-place (BIP). Records of all UXO destruction activities will be kept in the safety logbook to document all related efforts. UXO destruction activities involving the use of explosives will be completed in accordance with the demolition/disposal procedures set forth in the approved WP.

5.1.8.7 USA will notify the Parsons SM and on-site USAESCH representative (if designated) if UXO is encountered and determined to be unsafe to move and the situation precludes BIP. Two UXO specialists will secure the item until such time that a consensus is reached concerning what actions to take regarding the UXO. USA will then proceed as directed by Parsons. In general, positively identified, unfuzed ordnance may be moved if deemed safe by the UXOSO. However, common practice will be BIP where practical. If identified as safe to move, the item will be transported to a designated demolition area for disposal. No demolition activities will be performed that may jeopardize any historical or archaeological sites.

5.1.8.8 Ordnance scrap and recovered metal debris may be temporarily stored on site at a designated location approved by USAESCH and will be easily accessible by vehicle. Inert ordnance items will be vented prior to final staging as refuse for turn-in as described in the SOW.

5.1.8.9 On-site explosive storage magazines will not be required for this project. USA will make arrangements with an on-call explosives supplier to be available during the intrusive investigation phase.

5.1.8.10 UXO items rendered safe on-site and all scrap recovered will be disposed off-site through a local scrap dealer. Form DD-1348-1A will be completed as described in the SOW. Turn in documentation receipts shall be submitted as a component of the EE/CA Report.

5.1.9 Task 9 – Prepare Institutional Analysis, Impact Analysis, and EE/CA Report

5.1.9.1 Task 9A – Institutional Analysis

Under this subtask, an Institutional Analysis report will be prepared to present site conditions in relation to ownership, zoning, future development plans and Local and State participation in planning activities. Much of the data collected during the TPP process will be incorporated. A draft report will be submitted to USAESCH and CENAN for review and the final report will be included as an Appendix to EE/CA Report.

5.1.9.2 Task 9B – Impact Analysis

5.1.9.2.1 Under this subtask, a QIA model will be furnished by USAESCH and will be refined by Parsons. This model will determine the baseline public exposure and the predicted risk reduction for proposed remediation areas. The refinements will be provided to CENAN and USAESCH for approval before implementation.

5.1.9.2.2 A site UXO Statistical Report will also be prepared documenting the determination of the UXO density estimates. This report will be included as part of the risk report and included in the EE/CA Report Submittal.

5.1.9.3 Task 9C – EE/CA Report

5.1.9.3.1 Under this subtask, an EE/CA Report will be prepared to document the fieldwork and subsequent evaluations and recommendations. The EE/CA Report will be prepared in accordance with the SOW and DID OE-010. The report will include:

- **Executive Summary** that details project objectives and historical attributes, site characterization effort, results and conclusions and recommended remedial action and estimated cost.

- **Site Characterization**, including site description, background, and previous removal actions. The EE/CA investigation effort will be described in detail including sample meandering path establishment, geophysical investigation, and intrusive investigation.

- **Identification of Removal Action Objectives** for the Camp based on the results of the QIA model.

- **Identification and Analysis of Removal Action Alternatives** for the Camp, including a "no DoD action indicated" and a general institutional controls alternative, to reduce the risk to public safety and the human environment.

- **Comparative Analysis of Removal Action Alternatives** for the Camp. Alternative development and evaluation for the Camp will be based on effectiveness, implementability and cost.

- **Recommended Removal Action Alternative** selection. A preferred remedial alternative will be selected for the Camp based on a detailed evaluation of effectiveness, implementability, and cost.

5.1.9.3.2 An estimated OE density for each risk AOI will be evaluated that takes into consideration the hazard factor for the type of OE found at the Camp. All data acquired will be used to develop risk estimates for the Camp investigation areas and associated removal alternatives. Alternatives to be considered will include but not be limited to some or a combination of the following:

- No DoD Action Indicated;

- Direct intervention institutional controls (access control, land use restrictions, regulatory control, and other passive measures);

- Behavior modification institutional controls (notification of real estate defect, notices, training clinics, pamphlets, etc.);

- Surface removal;

- Subsurface removal action to a depth of interest;

- Combination of the above.

5.1.9.3.3 The estimate of cost associated with the implementation of the recommended response action(s) will include the direct and indirect cost for implementation of the response action(s). An important factor in the cost estimation effort is the time frame for completion of the response action. The basis for the cost estimate will include:

- Construction cost data bases;

- Cost from recent projects;

- Cost from contractors and suppliers; and

- Allowances for contingencies and professional services (surveying, geotechnical evaluations, geophysical surveys, engineering, legal and administrative costs, etc.)

5.1.9.3.4 The draft and draft-final EE/CA Report will be submitted to USAESCH and CENAN for review. The maximum number of copies submitted will be per SOW (6 each to USAESCH, 6 each to CENAN) but may be reduced as a result of electronic posting to the project website to be established at www.projecthost.com as directed by the USAESCH PM. Comments will be incorporated into the final EE/CA Report to be submitted to the Contracting Officer.

5.1.10 Task 10 - Prepare Action Memorandum

Upon approval of the Final EE/CA Report, an Action Memorandum will be prepared and submitted to USAESCH for review. Comments will be addressed and the final Action Memorandum will be prepared in accordance with USAESCH procedures.

5.1.11 Task 11 - Community Relations Support

Parsons will provide community relations support in the form of attendance to public meetings conducted by USAESCH concerning the Camp. Parsons will prepare briefings, graphics, and presentations at the request of the USAESCH PM. Approximately three (3) public meetings will be attended by the project PM and one other Parsons's representative thoroughly familiar with the project. Minutes for all meetings will be prepared by Parsons and submitted to USAESCH. To date one public meeting was conducted on February 6, 2001 (Parsons, 2001c) and an onsite "Media Day" was conducted on March 8, 2001.

5.1.12 Task 12 - Meeting and Project Management

5.1.12.1 Meetings between DoD, regulatory and civilian agencies will be conducted as needed to coordinate site activities and discuss/assess results. In addition to the meetings under Task 11, four (4) meetings will be attended at CENAN and two (2) status meetings in Huntsville. Internal project meetings will also be held by the Parsons's project team to coordinate project activities.

5.1.12.2 A variety of activities are required, during the life of the task order to manage the task order in accordance with the SOW. All project management associated with this task order, with the exception of direct technical oversight of work described in the preceding tasks, will be accounted for in this task. This task will be conducted continuously throughout the life of this project.

5.1.13 Task 13 - Project Documentation

Parsons will scan all project documentation onto CDs and submit to USAESCH on a quarterly basis. The documentation will include, but is not limited to all project correspondences (formal and email), contracts, modifications, and deliverables.

SECTION 6
SITE CHARACTERIZATION PLANNING AND OPERATIONS

6.1 SITE CHARACTERIZATION GOALS

As defined in Subsection 3.1, the objective of this EE/CA project is to identify and evaluate appropriate OE response alternatives that reduce the public safety risk for AOIs within the Camp. To achieve this objective, each of the AOIs require sufficient characterization with regards to the presence of residual UXO/OE remaining in the subsurface. This residual contamination, or UXO density, will be estimated based on the geophysical and intrusive data collected during the field investigation. The characterization goals include accurately locating and recording geophysical anomalies, interpreting the data, and properly documenting the intrusive findings. If supported by the characterization data, footprint reduction of UXO-contaminated areas within AOIs will be exercised to more appropriately define areas for potential remedial action.

6.2 SITE CHARACTERIZATION PROCEDURAL OVERVIEW

6.2.1 Introduction

6.2.1.1 Based primarily on current land use and past ordnance activities, the property within the Camp was subdivided into 13 AOIs as part of the development of the ASR (USACE, 2000b). As outlined in Subsection 2.5.4, only three (Area A, H, and K) of these AOIs have been identified for further investigation as part of this EE/CA. The three AOIs were reviewed as part of the development of this WP and retained as preliminary AOIs for the EE/CA investigation. Refinement of the AOIs is likely following the field investigation and evaluation of the data for justified footprint reduction of contaminated areas. This AOI refinement will provide for better flexibility during application of the QIA and evaluation of potential OE response alternatives.

6.2.1.2 Geophysical survey acreage will be distributed within each of the three AOIs via a combination of meandering paths, grids, and some limited "mag and flag" survey. The bases for the distribution was to meet statistical requirements, provide representative coverage, and to refine potential OE contamination limits. A total of approximately 25 acres will be geophysically surveyed throughout the three AOIs within the Camp.

6.2.1.3 Geophysical survey locations were pre-selected and depicted on WP maps prior to mobilization to the field to ensure appropriate distribution. Survey meandering paths and grid locations were subsequently revised to remove overlap with wetlands, cliffs, and adverse terrain features. The coordinates of the defining points were tabulated from the GIS maps for entry into the GPS field equipment for navigational purposes.

6.2.1.4 Following the geophysical survey, the Project Geophysical Coordinator will select anomaly locations for intrusive investigation. Anomaly Dig Sheets will be prepared depicting the anomaly locations within the meandering path or grid. The anomaly locations will be reacquired and intrusively investigated. The UXO Subcontractor (USA) will document the findings on the Anomaly Dig Sheet and return them to the Parsons SM. Demolition of UXO will be in accordance with the approved WP and USAESCH guidance.

6.2.1.5 Based on site reconnaissance, neither meandering path or grid geophysical survey techniques will be appropriate along the steep massively eroded cliff face within Area K. However, data on the potential presence of OE within the cliff face is needed to adequately characterize the area. As such, Parsons proposes use of non-recording hand-held geophysical instruments (Schonstedts) to survey the accessible portion of the cliff face using a "mag and flag" technique. This technique utilizes a near real-time approach where anomalies (identified by audible signal) are marked with pin flags and excavated shortly thereafter. Any UXO or large OE item encountered will be documented in detail and the exact location recorded using GPS. In this manner, a large volume of data can be collected to accurately assess the density of OE within the eroding bluff face.

6.2.1.6 The following subsections present an overview of the site characterization effort proposed for each of the three AOIs within the Camp. This overview includes a brief description, training history, and previous OE findings.

6.2.2 Area A – Fire Control/37mm AAA Station

6.2.2.1 The Fire Control/37mm AAA Station was originally classified as no ordnance presence and was recommended for NDAI in the ASR (USACE, 2000a,b). The parcel was added to the EE/CA project scope based on subsequent review by USAESCH. The presence of a 37mm (later 40mm) gun emplacement on the roof of the fire control tower was identified in historical documents. The fire tower is located adjacent to (and immediately east of) the Montauk lighthouse.

6.2.2.2 No UXO or OE-related items were discovered during the ASR reconnaissance and no historical data, interview information, or physical evidence could be found to indicate actual ordnance firing from this location or a remaining ordnance presence at this location. However, during a recent TPP meeting on March 8, 2001 with the representatives of the Montauk Historical Society, several OE discovery incidents were reported. The executive director (Mr. Thomas Ambrosio) stated he personally observed a recent finding of a large OE-type item discovered on the beach adjacent to the lighthouse that a souvenir hunter had excavated. The lighthouse property has undergone (and continues to undergo) extensive construction associated with erosion control. Much of the immediate beachfront has been covered with an embankment of large rocks. Therefore, any remaining OE is these areas has basically been permanently capped.

6.2.2.3 Based on the small size of the parcel, all 0.03 acres will be geophysically mapped to characterize Area A (Figure 6.1). This acreage exceeds the minimum statistical sampling requirement for the selected density and confidence levels (Table 4.1).

6.2.3 Area H – Ordnance Destruction Range

6.2.3.1 The Ordnance Destruction Range (Area H) encompasses an approximately 8-acre square area in the southeastern portion of the Camp along the southern bluff overlooking the Atlantic Ocean and adjacent to Area K (Figure 2.2). Area H was designated as an ammunition demolition area during the ASR based on area reconnaissance (USACE, 2000a,b). During the EE/CA Site Visit, the Parsons field team observed several large pieces of OE fragments on the ground surface within Area H (Parsons, 2001a). The parcel is not significantly impacted by erosion concerns that plague other nearby areas since it is heavily vegetated and slightly inland from the edge of the bluff. Prior to the Public Meeting held on February 6, 2001 at the Montauk State Parks Complex, a representative of the HTW contractor, Cashin Associates, informed the Parsons project team that the northwestern boundary of Area H may need to be extended further based on field observations made during the course of the Cashin projects (Parsons, 2001c). He stated the area is also a strong candidate location for a military burial site.

6.2.3.2 Based on Parsons review of the ASR maps and site reconnaissance, the boundaries of both Area H and K were refined. The ASR depicts portions of Area K within the water that are not available for geophysical investigation even during periods of low tide. The extent of Area K was revised to include the beach (as previous) and a comparable ribbon of land along the top of the continuously eroding bluff. As a result, portions of the revised Area K overlapped Area H. This overlap was used to refine the extent of Area H to the northwest into the area identified by Cashin Associates as a potential burial area. No portion of the ASR identified AOCs were deleted from the project scope.

6.2.3.3 Area H is completely owned by the State of New York Parks Department. At this time it is indirectly open to the public only on a very limited basis (by permit) for fishing beginning Memorial Day. The fishermen are basically within adjacent Area K but Area H is readily accessible from that location. The area is characterized by a bluff, a small wetland, and is heavily overgrown with scrub oak vegetation. An old sewage pipe emerges from the bluff to the beach approximately two to three hundred yards east of the center of the southern edge of this area.

6.2.3.4 The ASR recommended EE/CA investigation of Area H based on the confirmed ordnance presence of UXO. A hazard material feasibility study of this area conducted in 1998, cites the discovery of projectile fragments (Cashin, 1998). Several ordnance discoveries, including projectiles, a 3.5-inch rocket, and an expended .50 caliber cartridge casing, are believed to have occurred in this area or near this area (USACE, 2000a,b). An inspection of the southern portion of this area during the ASR reconnaissance revealed that OE items may be weathering from the bluff to the adjacent Near Shore Ordnance Area (Area K).

6.2.3.5 Based on the ASR recommendation and the evidence gathered during preparation of the WP, characterization of Area H is warranted. The minimum statistical sampling requirement (based on the selected level of confidence and residual UXO density) is 7.5 of the 8 acres (Table 4.1). It has been proposed to the NY State Parks Department to allow complete mechanized brush removal from all of Area H (with the exception of the small wetland). If approved, Area H will be geophysically mapped in its entirety (Figure 6.1).

6.2.4 Area K – Near Shore Ordnance Area

6.2.4.1 The Near Shore Ordnance Area (Area K) encompasses the southern shore of the Camp lands northward to within approximately 500 feet of the lighthouse (Figure 2.2). OE items including a 90mm projectile, cannon balls, modern artillery projectiles, projectile fuzes, practice rockets, an intact hand grenade, 70 rounds of assorted ammunition, and a live 3.5-inch rocket have been found at Area K (USACE, 2000a,b). Some of the OE may be associated with weathering of the bluffs from the adjoining Area H. Much of the approximately 44.88-acre parcel is within a rocky beach. Site reconnaissance has confirmed that safety precautions associated with the rocks are needed, some of the rocks contain metallic veins that may negatively affect the geophysical effort, and the bluff face is too steep for conventional geophysical techniques.

6.2.4.2 Based on the ASR recommendation for EE/CA and the evidence gathered during preparation of the WP, characterization of Area K is warranted. The minimum statistical sampling requirement (based on the selected level of confidence and residual UXO density) is 18 of the 44.88 acres (Table 4.1). A combination of meandering paths and grids are planned for characterization of Area K as depicted on Figure 6.1. However, the geophysical survey will be augmented by "mag and flag" surveys, to the extent practical, along the heavily eroded bluff face. For "mag and flag' applications, anomalies will be excavated on a real-time basis and the geophysical data will not be recorded by the instrument. In all cases, the pertinent features of the recovered item will be documented, as per Subsection 6.4. Post excavation anomaly attributes will be added to the GIS database.

6.3 OE SAMPLING LOCATIONS

Parsons acquired digital USGS topographic maps and recent aerial photographic coverage of the Camp for use, in conjunction with the ASR and other historical information, to develop the investigation map(s) for this WP. The total area identified for investigation is approximately 25 acres spread out across Area A, H, and K. For grids, a nominal size of 100' by 100' will be typically used. For a meandering path survey, areas will be investigated by traversing transects within the investigation area. However, navigation will occur between predetermined start and end points (Appendix J). Due to the nature of the meandering path geophysical methodology, precise transect paths cannot be pre-selected and depicted on site maps prior to fieldwork. The proposed locations of the meandering paths and grids were initially distributed to ensure representative coverage of the specific AOI. Distribution of meandering paths and grids was influenced by previous OE findings (Area K and H) and professional judgment (Figure 6.1). The AOIs, sizes, survey acreage, and other pertinent data are summarized in Table 4.2. For meandering paths, the geophysical instruments will simultaneously be equipped to collect GPS survey data. For grids, only the corner stakes will be surveyed and the grid subsequently mapped. For "mag and flag" only the GPS locations of anomalies confirmed as UXO or significant OE will be documented.

6.4 OE SAMPLING PROCEDURES

6.4.1 Prior to mobilization for the field effort, sampling grid and/or meandering path locations within Area K were tentatively selected and transcribed onto site maps. Aerial photographs and topographic maps were utilized to the extent practical to avoid placement of the survey in proximity of potentially interfering features. However, field teams may slightly adjust survey locations for reasons approved by the SM or PM.

6.4.2 Intrusive investigations of selected identified anomalies (suspected OE/UXO) will be conducted in sampling grids and/or meandering paths, as warranted. The Parsons Geophysical Coordinator will interpret the survey data and select the anomalies to be excavated, with approval of USAESCH. Not all identified anomalies will necessarily be excavated. As site specific "intelligence" is gathered, the selection process may be modified with USAESCH approval. If the number of anomalies identified is prohibitive, the Parsons Geophysical Coordinator may select specific anomalies for investigation and review the findings to refine the selection process. Additionally, if multiple UXO items are discovered within an AOI or portion of an AOI, Parsons may recommend to, and request approval from, USAESCH to discontinue sampling of the affected area. Implementation of an OE removal action will be assumed for these areas. All "mag and flag" anomalies identified in the Area K bluff will be excavated.

6.4.3 The intrusive investigation effort will be conducted partially coincident with the geophysical survey activities with data interpretation by the Geophysical Coordinator. As described previously, UXO-qualified USA personnel will perform the intrusive investigation. USA will document pertinent features of all excavated anomalies including a description of the object, an estimate of size and weight, orientation, and the depth at which the item was found. Reacquisition of each selected anomaly identified during the geophysical investigation and presented on the Anomaly Dig Sheets (with the exception of "mag and flag") will be performed using the same model geophysical equipment utilized on the individual grid or meandering path.

6.4.4 Appropriate MSDs will be established within each AOI, as prescribed in Appendix E (Figure 6.2). Anomalies where the USAESCH-calculated MSD overlaps roadways may require either temporary short-term closure of the road during excavation periods or excavation only when there is no vehicular traffic. Evacuation of residents is not expected since no residential, commercial, or industrial buildings are located within the MSDs. Any evacuations will be coordinated with USAESCH and CENAN. Overlays are provided for use with Figure 6.2 to highlight parcels within the MSDs for a specific grid or meandering path.

6.5 SURVEYING AND SITE LAYOUT AND CONTROL

6.5.1 Introduction

This subsection outlines the location survey activities to be conducted during the field activities. Also included in this subsection are brief explanations of the unexploded ordnance safety provisions during all fieldwork and all intrusive activities, establishment of control points, and digital data presentation.

6.5.2 Aerial Photographs/Topographic Maps

Complete aerial photographic coverage of the Camp was obtained in digital format. The aerial photographs, raster topographic maps, and USGS quad sheets provided the base maps for the GIS system. All data has been set up in an Oracle database and conforms to the TSSDS format as per DID OE-005-14. The digital aerial photography and GIS database information will be submitted to USAESCH with Final EE/CA Report.

6.5.3 Control Points

Establishment of survey control points will be required only for the geophysical sampling grids. Grid corners will be surveyed using GPS and staked. The meandering paths will be geophysically surveyed and do not require control points. The exact location of the meandering paths will not be pre-established and stakes will not be driven at the individual location. Instead the geophysical equipment will simultaneously collect GPS survey data, as described in Subsection 6.6. Existing permanent USGS (or equivalent) control points will be used as necessary to establish horizontal control. Anomaly reacquisition for intrusive investigation will be conducted using the same model GPS unit that was used to collect the survey data. Therefore, no concrete monuments will be established during the field effort. Horizontal control shall be referenced to the North American Datum of 1983 (NAD83) and the State Plane Coordinate Grid System. All control points used for control will be established, marked, and plotted at the appropriate coordinate point on a topographic map per DID OE-005-07.

6.5.4 Unexploded Ordnance Safety Provision

In all areas suspected of having possible UXO contamination, the UXO-qualified person will inspect the areas where personnel may transit. A Schonstedt magnetometer check of all points where location stakes or posts are to be driven into the soil, or where permanent control points are to be established, will be accomplished prior to placement of stakes. If the magnetometer indicates a positive or negative reading (via audio/visual signal), no monuments, stakes, or posts will be driven into the ground at that specific location. As described in Subsection 6.5.3, advancement of stakes or establishment of monuments is expected to be minimal for the geophysical survey methodology selected for this project.

6.6 GEOPHYSICAL INVESTIGATIONS

6.6.1 Objective

The objective of geophysical investigations at the Camp is to investigate/characterize AOIs within the former facility suspected of having UXO/OE at the subsurface. This objective will be achieved by accurately locating and recording the location of geophysical anomalies using the electromagnetic (EM) method and the GPS. This subsection describes standard practices and procedures for collecting, processing, and controlling the data associated with geophysical surveys at each of the AOIs as defined in DID OE-005-05.

6.6.2 Investigation Areas

Geophysical surveys of up to 25 acres in total coverage will be performed in three areas encompassing approximately 52.91 acres of the Camp (Table 4.2). A series of geophysical meandering paths and grids will be surveyed within the AOIs. The proposed locations of the meandering paths and grids were selected based on historical information, sensitive resources, and professional judgment and are depicted in Figure 6.1. Survey of the Area K bluff will be conducted using a "mag and flag" survey technique (as described above) that is not depicted in detail on site maps.

6.6.3 Geophysical Survey Equipment

6.6.3.1 Various geophysical equipment was tested during the Geophysical Prove-Out (Parsons, 2001d) in order to identify the appropriate equipment to be used during the geophysical investigation. The Geophysical Prove-Out was conducted from March 5 through March 9, 2001 following the procedures of the USAESCH-approved Geophysical Prove-Out Work Plan (Parsons, 2001b).

6.6.3.2 Two geophysical methods, time domain electromagnetics and magnetics, were tested for applicability at the Camp. The results of the site-specific Geophysical Prove-Out indicated the Geonics® EM-61 time domain metal detector (TDMD) was the superior instrument for use at the Camp. The Geometrics G-858G and the Schonstedt

GA-52CX flux-gate metal detector were also found to be effective and may be applicable more for the beach (Area K) and bluff face. Recommendation and selection of the techniques and instruments for the Camp was based on Parsons' experience, site-specific conditions and results, and literature supporting their use for similar projects. The equipment tested during the prove-out is described in the following subsections.

6.6.3.3 **Geonics® EM-61 TDMD and Geonics EM-61 Hand Held TDMD** - The EM-61 device is a high-sensitivity high-resolution TDMD which is used to detect both ferrous and non-ferrous metallic objects (Geonics, 1995). The device generates a pulsed primary magnetic field, which triggers eddy currents in nearby metallic objects. The eddy current decay produces a secondary magnetic field that is monitored by a receiving coil and recorded by the attached data logger. The EM-61 data logger collects data at automatic time intervals determined by the user or at a pre-programmed distance interval measured by an attached set of wheels with all-terrain tires. Data can be collected at up to four readings per second.

6.6.3.4 **Geometrics G-858G** - The Geometrics G-858G device is a self-oscillating split beam cesium vapor (non-radioactive) magnetometer sensor that produces a signal proportional to the intensity of the ambient magnetic field. The sensitivity of the instrument is 0.0051 nT (nanotesla) and it can read as fast as ten times per second. The device will be operated as a gradiometer with two sensors collecting magnetic field intensity data separated by a vertical distance of approximately two feet. The difference between the two sensor readings divided by the separation distance will be recorded as the magnetic gradient at the measurement location.

6.6.3.5 **Schonstedt Magnetic Locator** - Schonstedt Heliflux® Magnetic Locators detect subsurface ferrous metal items. The technology is based upon fluxgate sensors organized in a gradiometer format. The Schonstedt locator is a hand-held unit that employs two (2) fluxgate magnetometers that are aligned and mounted a fixed distance apart to detect changes in the earth's ambient magnetic field caused by ferrous metal (the sensors are fixed and aligned to eliminate a response to the earth's ambient field). The Magnetic Locators respond with an audio output and a meter deflection when either of the two sensors is exposed to a disturbance of the earth's ambient field associated with a ferrous target and/or the presence of a permanent field associated with a ferrous target (in most cases, it will be a combination of both circumstances). The Schonstedt Magnetic Locators are highly portable magnetometers that will be used to quickly screen surface and near-surface areas for ferrous content. It is the most common metal detector used by UXO personnel during intrusive operations. This instrument will be used for "mag and flag" geophysical survey along the bluff face of Area K.

6.6.3.6 The Schonstedt Model GA-72CV is a reconfigured GA-52CX. A noteworthy design upgrade is the added meter that reads "+" and "-" ranges during operation and aids in determining the orientation or horizontal and near-horizontal subsurface objects. All other principles of operation and capabilities are identical.

6.6.3.7 The Schonstedt may be used in the following applications:

- Prior to advancement of any stakes, pin flags, or similar subsurface markers
- Location confirmation of selected anomalies reacquired and marked by Parsons. If the anomaly location marked by the Parsons reacquisition team is not confirmed using this instrument, a hand-held EM-61 will be used by USA to confirm the location prior to intrusive investigation. Any deviations from the Parsons marked location will be recorded by USA on the Anomaly Dig Sheets.
- "Mag and flag" operations on the Area K bluff face.

6.6.3.8 **Trimble®4700 RTK DGPS -** The Trimble 4700 RTK DGPS system is an integrated parallel channel GPS receiver with a built-in radio-modem communication system. A dedicated base station broadcasts real-time differential corrections to the rover units being used by the field crew.

6.6.3.9 **Trimble® ProXRS** - The Trimble® ProXRS™ is an integrated parallel channel GPS/Beacon receiver and antenna system that can be used for reception of DGPS correction signals from U. S. Coast Guard land-based beacon transmitters or from private satellite services. The accuracy of GPS systems is limited because the United States Government introduces a selective ability (S/A) error to intentionally degrade accuracy calculations of the systems. GPS accuracy is ± 50 cm in open areas and to one meter under a tree canopy.

6.6.4 Geophysical Investigation Procedures

This subsection describes standard operating procedures (SOPs) for collecting, processing, and controlling the data associated with geophysical surveys at each of the AOIs. The objective of the geophysical investigation is to accurately locate and record the locations of geophysical anomalies (potential OE/UXO). The geophysical investigation transects/grids and identified anomalies will be mapped for subsequent evaluation (including intrusive investigations).

6.6.4.1 Geophysical Survey Procedures

6.6.4.1.1 Geophysical survey activities at the Camp will be performed using a combination of meandering path and grid survey techniques. The meandering path geophysical survey will be conducted by traversing (between pre-selected start and end points) areas within Area K using geophysical instruments in conjunction with the appropriate DGPS unit. The geophysical and DGPS instruments will be set up and checked following the procedures in the manufacturer's instruction manuals. The geophysical instrument will be manually operated by one of two individuals comprising the geophysical survey team. Each team will include a UXO-qualified individual to provide visual surface OE clearance of the meandering path and brush cut as necessary. The proposed approximate meandering path and grid locations are shown in Figures 6.1 The lengths and locations of the meandering paths and grids may be refined to accommodate field condition. The area covered by a meandering path will be calculated as the distance traveled multiplied by the width of the geophysical instrument footprint (approximately 3 feet). For sampling grids, grid corners will be location surveyed and depicted on appropriate scale maps.

6.6.4.1.2 The Pathfinder™ software (provided by Trimble®) will be used to determine times of the day during which the correct number and position of satellites cannot be obtained. The daily work schedule of download and survey times will be appropriately adjusted to account for these times.

6.6.4.1.3 During the meandering path surveys, the geophysical instrument will collect data while the GPS records the location of the data collection points (with the exception of the "mag and flag" survey). The geophysical data will be time-stamped and combined with the GPS positioning data. If GPS lock is lost during the geophysical survey, an audible signal notifies the geophysicist of the condition. The geophysicist may continue walking a straight line segment at constant pace upon indication of loss of GPS lock so the equipment position can be reconstructed by a time average across the distance lost until GPS lock is again obtained. If the signal is not reacquired within a few seconds the survey is temporarily halted until the signal is again locked. As a worst case, very small data segments in the transect may be lost. This very small data loss is inconsequential as the meandering paths are typically longer than the straight-line path used to depict them on WP maps. Sufficient geophysical survey will be conducted to ensure the minimum survey acreage requirement for the AOI is met. If the lost signal is not reacquired within a few minutes, the geophysicist may move a distance away from the last survey location and recommence survey at a new location, thus breaking the transect into smaller transects. The use of survey stakes to periodically mark the meandering path is not anticipated.

6.6.4.1.4 During grid surveys overlapping geophysical lanes will be used to ensure complete mapping of the established grid. The lanes will be parallel to each other for any given grid. The project Geophysical Coordinator will process the data and prepare a composite map.

6.6.4.1.5 Production rates for the geophysical field effort will vary from AOI to AOI due to terrain, vegetation, and a variety of other factors. For this project, the average daily geophysical production rate estimated for both the meandering path and grid methodology was 1.25 acres per team per day (18,150 linear feet for transects or 5.5 100-foot square grids). This production rate includes mobilization/demobilization, daily equipment testing, and intrasite travel. However, for Area H mapping the time required to brush cut the entire 8 acres is not included. These production estimates are based on Parsons experience and every effort will be made in the field to maximize production rates.

6.6.5 Downloading and Post-Processing

6.6.5.1 All data collected in the field will be stored electronically on field laptop computers or on personal computers (PCs). Data from the geophysical and DGPS surveys will be downloaded from the data loggers at regular intervals to assure that work to be performed will not be interrupted by a lack of storage capacity in the data loggers. The data logger download cables and software are standard equipment and are provided by the instrument manufacturers. All raw field data will be backed-up onto floppy diskettes and kept in a location separate from that of the day-to-day operations.

6.6.5.2 At the end of the day, or the morning of the following workday, the data from the surveys will be post-processed by combining the geophysical survey date and DGPS data into a single database. Matching time-stamped positioning data to time-stamped geophysical data does this. This step will be performed in the Dat-61™ software package. At this point, the geophysical data will be reviewed to ensure usability.

6.6.6 Data Interface and GIS Analysis

After processing the positioning data and reviewing the geophysical data, all data from the geophysical surveys (with the exception of "mag and flag" surveys) will be exported from the Dat-61™ software package into a format compatible with software packages (i.e. Geosoft™, Arcview™, Surfer™, and Microsoft Excel™) used to process and create raster images. Once the data are imported into the processing software, leveling (adjusting to a common baseline), layback, contouring (if possible) and target analysis and selection will be performed. A raster image will be used to produce an anomaly map that identifies the locations of potential anomalies. Figure 6.3 shows an example of the type of final map to be produced for a meandering path survey. Both electronic and hardcopy versions will be delivered to USAESCH.

6.6.7 Anomaly Dig Sheets

6.6.7.1 Anomaly Dig Sheets will be developed based upon the interpretations of the Geophysical Coordinator or based upon the interpretations of the Project Geophysicist under the supervision of the Geophysical Coordinator. Each anomaly identified during the EE/CA project will be assigned a unique anomaly identification (ID) and will reflect the AOI ID, the meandering path or grid ID, and the sequential anomaly ID for that meandering path or grid.

6.6.7.2 All selected anomalies for a meandering path or grid will be tabulated on an Anomaly Dig Sheet, and will include the State Plane coordinate system of the anomaly as well as the amplitude of the peak signal associated with the anomaly. An example of the Anomaly Dig Sheet is provided in Figure 6.4.

6.6.7.3 Geophysical data collected in the field will be reviewed at several stages. The first quality check will be during data collection. The field crews will be able to check the data logger to ensure that data is being collected and examine the data during data logger "dumps" when the information is downloaded to the hard drive of a portable computer.

6.6.7.4 A second quality check will be performed when the data is evaluated. If the coordinates of the data do not fall within those of the property investigated, Parsons ES will become aware of this when loading the data. A final quality check will occur when USA excavates a limited number of anomalies. These intrusive investigations will validate the interpretation of the geophysical data.

6.6.8 Reacquisition

6.6.8.1 After the Anomaly Dig Sheets have been created, the anomaly locations will be overlain on aerial photographs or USGS topographic maps and reviewed and approved by USAESCH prior to reacquisition. Reacquisition along the surveyed meandering paths will be performed by Parsons using a DGPS to reacquire the selected anomaly locations and the geophysical instrument to verify the maximum signal amplitude. Labeled plastic survey flags will be placed in the ground at the anomaly locations. For grids, Parsons will provide anomaly distances from established corner stakes for reacquisition by the UXO Subcontractor (USA).

6.6.8.2 The average daily reacquisition rate is estimated at approximately 75 anomalies per team per day within both the meandering paths and grids. It is estimated that each intrusive team will excavate 75 anomalies per day or clear 2.5 acres per day per team. It is also estimated that on average 30 anomalies will be selected for investigation per geophysical-acre.

6.6.9 Quality Control

6.6.9.1 Quality Control of Geophysical Instruments

6.6.9.1.1 Each day prior to using any geophysical instruments for geophysical surveys at the site, an instrument drift (DC offset) check will be performed on the instrument. The instrument will first be turned on and allowed to warm up for approximately five minutes. It will then be placed in a single location and allowed to collect data for approximately five minutes. The data will be reviewed and checked for instrument drift. If the data exhibit unacceptable drift, as determined by the Geophysical Coordinator, the cause will be ascertained, the problem fixed, and the instrument drift test rerun.

6.6.9.1.2 Prior to beginning each survey, the geophysical survey teams will check their instruments over a small metal item (i.e. a tent stake) pushed vertically into the ground. The metal item will not be disturbed until the survey is complete. At the conclusion of the survey, the teams will return to the initial location and the instrument will again be checked over the item to compare the instrument response to the pre-survey response. An instrument response equaling 75 percent or less than the initial response may suggest equipment failure or procedural error. The on-site project geophysicist will evaluate the data and will decide whether the data can be used or if the transect requires re-survey.

6.6.9.1.3 During the course of data collection, the geophysical equipment operator will monitor equipment signal tone for any inconsistent or unexpected volume or frequency changes (i.e. changes that do not appear to be due to subsurface anomalies or cultural interference). If the equipment operator suspects instrument malfunction based upon changes or fluctuations in the signal tone, the on-site project geophysicist will immediately be notified and a determination will be made concerning the operability of the instrument. If the instrument is found to be malfunctioning, it will be removed from service and replaced or repaired.

6.6.9.1.4 Geophysical techniques are affected by various environmental conditions, such as near surface groundwater or electrical storms. These conditions will be taken into consideration when function testing the geophysical equipment as well as during data collection.

6.6.9.2 Quality Control of GPS

The DGPS will be checked twice daily to ensure that the positioning consistency is being maintained. An established point will be checked to ensure that the coordinates read by the DGPS are consistent across the day and between days.

6.6.9.3 Quality Control of Data Acquisition and Data Interpretation

During the processing of field data, the data processing personnel will review the individual data profiles for at least 15 percent of each surveyed meandering path or grid. This review will focus on identifying abnormal spikes in the measured data or larger than usual fluctuations in the background noise levels. Data that is identified at this stage of review to have possible QC problems will be reviewed by the Geophysical Coordinator, who will make a determination as to whether the data can be interpreted or whether the transect should be resurveyed. The Geophysical Coordinator will also identify the source of the problem and make recommendations to minimize further such occurrences. If the source of QC problems is found to be a malfunctioning instrument, that instrument will be removed from service and repaired or replaced.

6.6.10 GIS and Mapping Procedures

6.6.10.1 Establishment of the GIS and entry into the GIS of aerial photography, topographic maps, existing site maps, and other appropriate data were used to develop maps for this WP. The project GIS team will support the field effort with appropriate maps and information and will maintain the database

6.6.10.2 Parsons will perform all GIS activities. These activities will be performed in accordance with USAESCH guidance and DID OE-005-14. This system will be used to effectively map the results of the OE site characterization effort at the Camp.

6.6.10.3 There are two primary data types used that must be reviewed. The first is graphic data contained within the GIS data set. The second data type is tabular data contained within a relational database.

6.6.10.4 As a general rule, the GIS effort will involve preparation, analysis, processing, and interpretation of data acquired from the geophysical survey of transect locations and intrusive investigations. GIS data layers will be constructed to evaluate OE contamination of each AOI at the Camp. All files contributing to the GIS data sets will be backed up prior to editing or manipulation. The GIS operator will be responsible for registering and processing all survey and intrusive data collected in the field into the project GIS and also for preparing maps depicting specific attributes for each AOI at the Camp.

6.6.10.5 The GIS data set has been created using the design files provided by USAESCH. The coordinate system has been established by USAESCH. However, it is possible to acquire a design file that does not meet the conditions prescribed. This can lead to problems in trying to use that file. It is important that the precise definitions for all aspects related to coordinate systems be determined. Without a usable coordinate system, the GIS cannot function properly. The coordinate system of design files will be checked by opening the design file within ArcView.

6.6.10.6 Setup of the mapping working units for design files will be checked, and files will be correctly positioned if they do not match the project standard. An experienced ArcView user will conduct this type of edit. The GIS operator will note any deviations between design files in a GIS Operations Log.

6.6.10.7 The registered computer aided drafting and design (CADD) files will be imported into the GIS as the graphics element. The GIS coverage developed from these CADD files will be the basis for any and all analyses of the site. The GIS operator will locate the origin points for the survey area from the basis of the established control points and use the GIS to map the prospective survey area. On completion of this task, the GIS operator will visually inspect the survey area to make sure that there are no unexpected problems. If a problem should arise, its spatial position will be determined by triangulation and then its location noted within the GIS.

6.6.10.8 On completion of a given excavation, the UXO Subcontractor (USA) will provide the exact location, identification, and attributes of the excavated UXO object to the Parsons SM. The data will be compiled on a daily basis and sent to the project office for processing. The results will be entered into the GIS and will be provided to all concerned parties showing the location and type of the excavated objects.

6.6.11 Data Management

6.6.11.1 As described in Subsection 6.6.5, all data collected in the field will be stored electronically on field laptop computers or on PCs and all raw field data will be backed-up onto floppy diskettes and kept in a location separate from that of the day to day operations. Data for each transect and grid will be stored in ASCII data files whose names will reflect the AOI ID, the grid or meandering path ID, and the sequential data file ID for that grid or transect. The file extension will be '.XYZ.'

6.6.11.2 The raw field data will also be transmitted via e-mail to the USAESCH Geotechnical Branch within a reasonable time after it has been acquired. Typically, the data will be transmitted to USAESCH within 36 hours of collection. The format of the raw field data from the geophysical survey will be X, Y, Z, where X will be the State Plane coordinate system easting coordinate, Y will be the coordinate system northing coordinate, and Z will be the measured response from the geophysical instrument. No comment or survey line identification will be provided in the data files transmitted to USAESCH. The files transmitted to USAESCH will be in an X, Y, Z space delimited format or other format requested by USAESCH. If more than one channel of data was recorded by the geophysical instrument(s), a separate file will be transmitted for each channel. The file names will reflect the Area ID, meandering path or grid ID, and data channel for the data being transmitted. A "*readme*" text file will be transmitted with the raw field data explaining all processing that was performed on the data, and detailing any peculiarities identified by the geophysical field personnel.

6.6.12 Final Reports and Maps

6.6.12.1 All final mapping will be created by CADD on PC and provided to the USAESCH in ESRI ArcView digital design files on PC CD-ROM in accordance with DID OE-005-14. All characteristics such as file naming and relationships, level structures, colors, line styles, weights, etc. in accordance with the surveying and mapping requirements of the TSSDS of the current release will be compiled in the design files. Site maps plotted from these design files will be provided on reproducible drawings. The size of these drawings will be based on the information that is to be displayed.

6.6.12.2 The location, identification, and coordinates of all the control points will be plotted on the reproducible maps (the surveyors control points will be provided to USAESCH in digital format). Each map will include grid north, a true north, and magnetic north arrow with the differences between them shown in minutes and seconds.

Grid lines or tick marks in feet and at systematic intervals will be shown with their grid values on the edges of the map. Also, a legend showing the standard NGS symbols used for the mapping, a map index showing the site in relationship to all other sites within the boundary lines of the project area, a border, and a standard USACE title block will be shown on each map.

6.6.13 Geophysical Investigation Performance Goals

6.6.13.1 OE Detection (Performance Goal Modification)

6.6.13.1.1 Parsons has significant experience with EM tools for conducting geophysical surveys and with the assessment tools for the data (such as Geosoft™). Parsons will achieve industry standards for detection of ordnance using these tools, but believes the 99 percent detection standard listed in DID OE-005-05 may be too strict for certain targets that are in near horizontal orientations. Our experience has shown that small items that are not in near horizontal orientations are easily identified, even at depths greater than those defined by the detection function in the DID. Based upon past experience, we expect that items greater than 40mm in diameter will be detected within the metric defined by Function 2 in the DID.

6.6.13.1.2 The accuracy goal for locating geophysical anomalies within the survey transects is that after reacquisition, 95 percent of all anomalies lie horizontally within a 10cm radius and 98 percent lie within a 20-cm radius (see DID OE-005-05).

6.6.13.2 False Positives

6.6.13.2.1 "False Positives" result when an anomaly is detected at a given location, posted to an Anomaly Dig Sheet, and no basis for the anomaly is found upon excavation. False positives can be a result of low threshold selection of anomalies (i.e. extremely conservative anomaly picking), spikes in the data not successfully removed during processing, instrument jolts resulting from terrain, and inhomogeneities in the subsurface.

6.6.13.2.2 The performance goal with respect to false positives is to minimize their occurrences. Parsons does not, however, expect that false positives will be totally avoided. This expectation is based on the fact that the Project Geophysical Coordinator will use professional judgment to minimize the potential that dangerous items are left in the subsurface. In this regard, he or she will tend to err on the conservative side by selecting anomalies having amplitudes close to the range of background "noise" but which have potential to be associated with OE present within the AOI. As feedback from groundtruthing (i.e. intrusive investigation) is provided to the Geophysical Coordinator regarding findings, or lack there of, he or she will adjust the anomaly selection process accordingly for the given AOI.

6.6.13.2.3 Similar to the OE detection performance goal, the false positive rate will also be a function of target size and orientation. Parsons's experience has shown that items larger than 40mm in diameter have false positive rates well below the 15 percent defined in DID OE-005-05, and typically less than 5 percent. For items smaller than 40 mm in diameter, and buried in orientations that are not near horizontal, the false positive rate is expected to be less than that defined in the DID. Items that are smaller than 40mm in diameter and buried in orientations that are near horizontal do not induce large responses, and are sometimes "hidden" in background noise recorded by the geophysical instruments. Identifying such items in the geophysical data would likely result in an increase in the number of false positives among those anomalies that are identified from low amplitude responses. For such low amplitude anomalies, the false positive rate may exceed 15 percent.

6.6.13.3 False Negatives

6.6.13.3.1 A false negative is defined for this project as a location where a buried metallic item is found which was within the detection capability of the geophysical survey instrument but whose location was not selected for intrusive investigation. False negatives can be the result of instrument failure, operator error, or data processing error. The performance goal with respect to false negatives is to have zero occurrences over the course of the project.

6.6.13.3.2 False negatives are often difficult to identify. Typically, a false negative will be found during the reacquisition phase, where a reacquisition team notices an anomalous response from their equipment at a location that was not previously identified. Another means of finding false negatives include returning to a grid or transect to conduct QC survey (see Subsection 4.4.2) and finding a metallic object significant enough for "failure." In such cases, the portion of the grid or transect will be resurveyed.

6.7 RISK CHARACTERIZATION AND ANALYSIS

6.7.1 Parsons will perform a risk characterization using the QIA model developed by USAESCH for the Jefferson Proving Ground EE/CA, as described in the SOW. This QIA model will be refined and applied to the AOIs within the Camp to determine the baseline public exposure and the predicted risk reduction for the risk reduction option for any AOIs recommended for removal action. The refinements will be provided to CENAN and USAESCH for approval before implementation. The risk characterization and analysis is explained in greater detail in Subsection 4.6.

6.7.2 A Site UXO Statistical Report will also be prepared documenting the determination of the UXO density estimates and will be included as part of the risk report submitted as part of the EE/CA Report.

6.8 INSTITUTIONAL ANALYSIS

An Institutional Analysis (IA) Report will be prepared to provide recommendations for IC that can be implemented to protect the public at-large from possible explosives hazards. Institutional controls are actions taken primarily by federal, state and/or local governmental agencies that exercise jurisdiction over lands with ordnance contamination. Rather than trying to eliminate risk by removal of ordnance, IC are designed to reduce risk by modifying behavior through information and education. The IA process is explained in greater detail in Subsection 4.7.3.

6.9 GEOGRAPHICAL INFORMATION SYSTEM

6.9.1 Purpose and Scope

This section outlines the structure and procedures of the GIS for this EE/CA project. GIS technology provides a common repository for data needed for analysis and output. The GIS database, developed through the mutual efforts of many project participants, represents various disciplines. Maintaining strict controls over data input, data management, data access, and data output is paramount in order to ensure integrity of the project database.

6.9.2 Responsibilities

6.9.2.1 The responsibility for management and control of the project GIS will reside with the Parsons designated GIS Manager. The GIS Manager will:

- Direct GIS operations occurring locally and remotely, and
- Be responsible for control of data included in and used as part of the Camp GIS system.

6.9.2.2 The GIS database will be maintained on a computer system that provides for control over data access. A System Administrator will be appointed and made responsible for direct day-to-day control over the system. The System Administrator will be responsible for data integrity and database management and security. The System Administrator will follow the direction of the GIS Manager for granting access to and privileges on the database to specified individuals.

6.9.2.3 Primary GIS Staff will accomplish the day-to-day operations of the GIS. Primary GIS Staff have direct write access to the GIS database. They are responsible for performing GIS functions and analysis on the database in accordance with direction given by the former Camp Hero Project GIS Manager. Primary GIS Staff have full access to the database for editing purposes and are individually responsible to maintain the integrity of the GIS database. No work shall be performed on the GIS database without authorization of the GIS Manager.

6.9.2.4 Secondary GIS Staff have direct read access, but do not have authorization to update, add new data to, or otherwise alter the database. Secondary GIS Staff facilitate GIS user activity and are responsible to assist in data acquisition. The Secondary GIS Staff has write access to a home work space which can be utilized to store output, awaiting evaluation by the GIS Manager, from manipulation and analysis activities. ArcView 3.0 will be the principal tool used by the Secondary GIS Staff to perform work. Secondary GIS Staff must coordinate with a Primary GIS Staff member in order to ensure orderly function of the GIS, timely inclusion of new data sets into the GIS database, and appropriate data output from the GIS.

6.9.2.5 Personnel requesting output from the GIS are defined as Users. Users have indirect access to the GIS database by coordinating with a GIS Staff member. Users assist with data acquisition and analysis particularly for data pertaining to their assigned project activities. Users coordinate with the GIS Manager, Primary GIS Staff, and Secondary GIS Staff when questions concerning use, need for additional analysis support or need for output are demonstrated.

6.9.3 Procedures

Parsons will conduct all of the GIS work for this EE/CA project. Parsons is the principal consultant and maintains the GIS database in Atlanta. The following is an outline of the relationship between the project office and consultants and the procedures governing work accomplished relating to GIS activities.

6.9.4 GIS System

Parsons will incorporate the archival data into the GIS created from the USAESCH OE-GIS Standard. The project will be conducted using contractor workstations. All base data will be received in ArcInfo format and later be converted for use in the Intergraph modular GIS environment (MGE, version 6.0.3) format. All GIS information submitted to USAESCH by Parsons will be in a format that is recognized by MGE, version 7.3.2. This format includes ArcView (with file designation .dgn), and TIFF and GIF image files. ArcInfo or ArcView coverage files and shape files will not be included in any GIS data submitted to USAESCH by Parsons. All tabular or attribute data will be maintained using the Oracle relational database (version 7.3.2).

6.9.5 Data Management

GIS data management requires a daily effort from all GIS personnel. The GIS Manager, GIS Coordinators, System Administrators, and Primary GIS Staff must support data management activities coincident with accomplishing their work. Management of field data will be the joint responsibility of the SM and the Project Geophysical Coordinator, and is described in Subsection 6.6.11.

6.9.5.1 Data Reconciliation

6.9.5.1.1 The GIS database will be maintained on the Parsons GIS system in Atlanta. As data are added, updated, changed, altered, or manipulated in any way, reconciliation of the database is critical. The procedural details of this reconciliation are outlined in Subsection 6.9.6. A direct communications link is the most effective manner to regularly accomplish the data reconciliation. A new or manipulated data set shall be sent over the wide area network (WAN) or the Internet to the Atlanta office on the same day that the data is created. Upon receiving the data, it shall be immediately loaded on the project GIS system, updating the database, in order to ensure continuity between the databases.

6.9.5.1.2 All such transmissions of data shall be accompanied by a "*readme*" text file or written documentation regarding the contents of the database. The file should include the names of data sets, the path location of where they should be inserted in the database, who made the updates, what the updates are, and why the updates were made. Documentation on the contents of the databases will save many labor hours for those who might otherwise have to ascertain for themselves the contents.

6.9.5.2 Data Maintenance

6.9.5.2.1 As discussed above, the project GIS database is maintained in Atlanta. The GIS Manager manages the database. This database is used to store final or published versions of project GIS data. It is the official project repository of GIS data, including unprocessed feature and attribute data sources that may be used outside the GIS. The Atlanta based database is the main location for processing data sources into draft and final GIS products as well as production work.

6.9.5.2.2 A data entry application will be developed for the insertion of digital and analog data into the GIS. This application will provide a common user interface for all operators required to enter and reconcile new data into the GIS database. This will provide the project with a consistent and well-managed database. For data that is already in electronic format, an import function will be available within the application.

6.9.5.2.3 This application will be developed in Visual Basic and all data will be stored in the Oracle database. The front end of the application will be provided to workers in the field who will enter the collected data on a daily basis and transmit it back to Atlanta via the Internet.

6.9.5.3 Database Structure

6.9.5.3.1 The GIS Manager is the decision point for determining how data will be stored in the GIS. The GIS Manager is responsible for designing or approving the database relationships and physical storage format of data to be included in the GIS. These data include feature, attribute, graphic, and non-graphic sources. Until this determination is made, no processing of newly acquired data may occur. GIS Coordinators, System Administrators, and Primary GIS Staff may process data already in draft form, or pre-process data sets so that they may conform to already-approved database designs or physical formats.

6.9.5.3.2 **Data Source Evaluation.** The GIS Manager is responsible for evaluating the appropriateness of data to be included in the GIS. All acquired data, regardless of media format, is to be sent to the GIS Manager for review and evaluation prior to processing. When acquisition of new data sets requires purchase from a vendor, Users, GIS Staff and others involved in the acquisition shall make every effort to obtain Metadata or sample data sets prior to acquisition. This sample set or Metadata will be evaluated by the GIS Manager to determine its suitability to meet the project needs.

6.9.5.3.3 **Inventory.** Data is to be logged in as it is received for processing by filling out a Metadata sheet. Metadata sheets are to be controlled by the GIS Manager, GIS Coordinators, and System Administrators at the various GIS work sites. In addition to the aforementioned, Primary GIS Staff, Secondary GIS Staff, and Users are responsible for making entries in the Metadata, based upon work activity at each work site. Metadata sheets are to be forwarded to the GIS Manager for review, record keeping purposes and insertion into the database.

6.9.5.3.4 **Physical Data Storage.** The GIS Manager is responsible for assigning storage locations of data received for inclusion in the GIS. Data are to be stored in pre-approved directory paths on the Atlanta GIS file server.

6.9.5.3.5 **System Administration.** The former Camp Hero GIS database is to be backed up locally by the System Administrators. Digital tapes and CD-ROMs containing newly acquired or processed data are maintained as part of the archive database. They will be maintained along with a historical set of archive tapes in the Atlanta office. Additionally the Parsons Atlanta office maintains an on-line archive of historical and source data sets. Source documents of manually submitted data sets shall be maintained in the Atlanta office.

6.9.5.3.6 **Data Transfer Standards.** The GIS Manager, GIS Coordinators, and System Administrators are responsible for establishing data transfer standards. As described in the SOW, the project GIS database requires adherence to transfer standards, USAESCH GIS standards, and the Tri-services CADD standard. Data prepared at other Parsons work sites will conform to these data transfer standards. The GIS Manager will approve all naming conventions for data produced with GIS software products. Oversight of naming conventions is required in order to ensure that project file path/location pointers can be used when accessing data on the GIS system.

6.9.5.3.7 The preferred media for data transfer is the WAN. Floppy disks in DOS format are acceptable media for smaller files.

6.9.5.4 Metadata

Metadata will be created that will describe each GIS data source maintained in the GIS database. The Metadata will contain information about the data source, its location, where it originated, how it is structured, key attributes, and other miscellaneous items of interest to the Project team. Those responsible for providing this Metadata include the GIS Manager and the GIS Coordinators. Electronic copies of template pages are to be maintained at each GIS work site. The GIS Coordinators are responsible for providing to the GIS Manager required information as shown on the Metadata template. The manner and method for providing this information is the responsibility of the GIS Manager.

6.9.6 Database Reconciliation

6.9.6.1 A single common GIS database will be maintained in the Atlanta office. All other offices required to work on the GIS will obtain access to this database via the WAN. Oracle data will always be stored in the Oracle database located in Atlanta. All GIS workstations within the Parsons Corporation have access to the Oracle server located within Atlanta. This will alleviate the transfer of data from one office to another and provide a central repository for the former Camp Hero Oracle database.

6.9.6.2 Any new GIS data that is created by an employee not working within the Atlanta office will be required to provide complete Metadata for each coverage developed. All data provided by another office must adhere to the TRI-Service CADD/GIS standard and be approved by the GIS Manager. After the Metadata has been approved, it will be considered valid and added to the GIS database.

6.10 OTHERS

Section not used.

1955'

500'

Camp Hero
MSD - Area K
500' Transect - 1955 feet

Camp Hero
MSD - Area K
1000' Transect - 1955 feet

1955'

100'
100'

Camp Hero
MSD - Area K
Grid - 1955 feet

Figure 6.1

Proposed Survey Locations

Former Camp Hero
Montauk, New York

Legend

- Area A - .03 Acres Surveyed
- Area H - 8.0 Acres Surveyed
- Area K - 18 Acres Surveyed
- Transects
- Grids
- Camp Hero Boundary

N

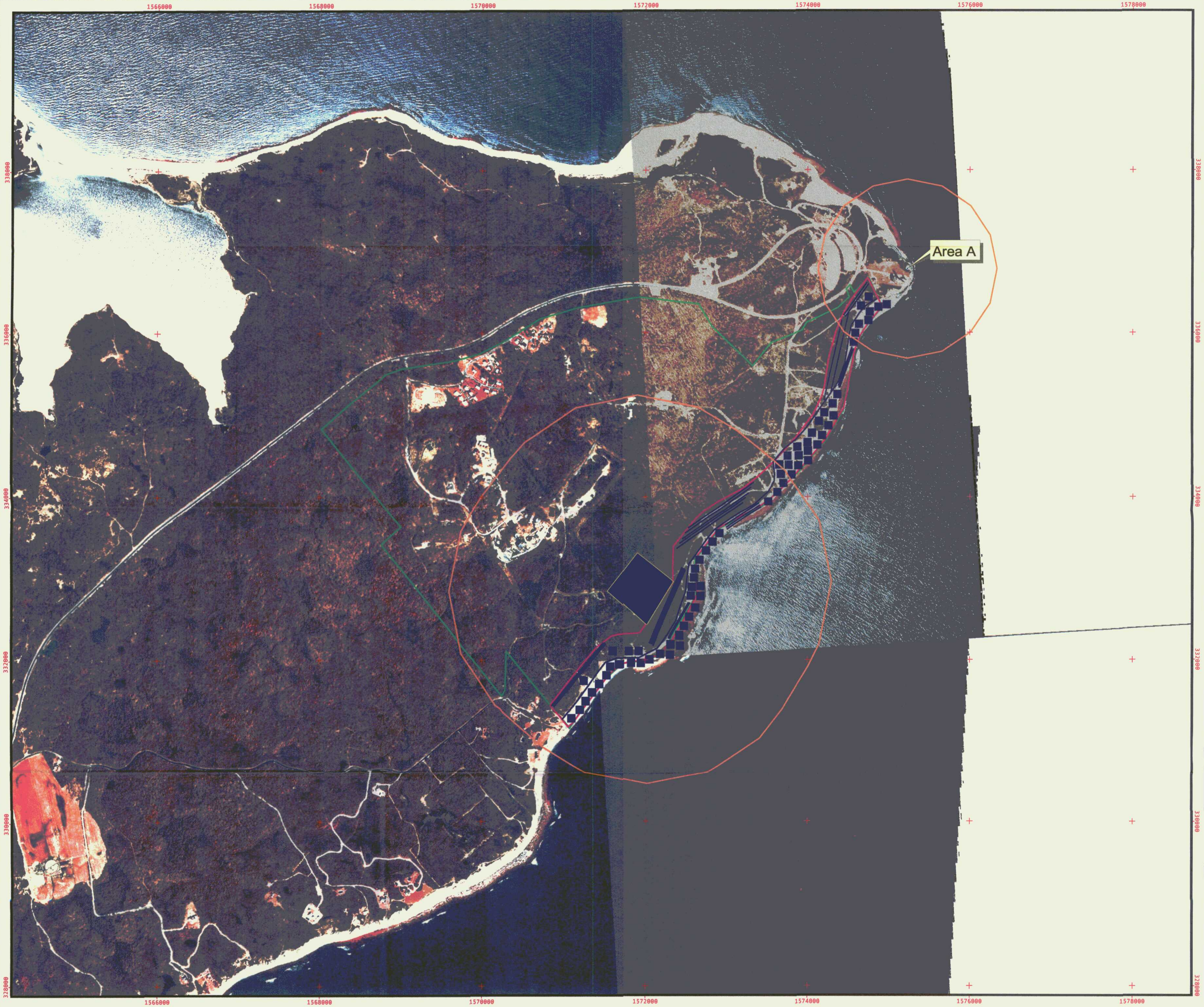
500 0 500 1000 Feet

PARSONS ENGINEERING SCIENCE, INC.	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER
DESIGNED BY: Parsons ES	Former Camp Hero Montauk, New York Suffolk County
DRAWN BY: Parsons ES	
CHECKED BY: Parsons ES	SCALE: 1:4800 — PROJECT NUMBER: 738306
SUBMITTED BY: Parsons ES	DATE: March, 2001 — PAGE NUMBER: 6-23
	FILE: j:\gis\738306\av\transect.apr

Figure 6.2

Minimum Seperation Distances

Former Camp Hero
Montauk, New York



Legend

- Area A - .03 Acres Surveyed
- Area H - 8.0 Acres Surveyed
- Area K - 18 Acres Surveyed
- Transects
- Grids
- Minimum Seperation Distance
  Area A = 1095 ft
  Area H = 1955 ft
- Camp Hero Boundary

*Note - See MSD Overlays for Area K

N

500 0 500 1000 1500 Feet

PARSONS ENGINEERING SCIENCE, INC.	U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: Parsons ES	Former Camp Hero Montauk, New York Suffolk County		
DRAWN BY: Parsons ES			
CHECKED BY: Parsons ES	SCALE: 1:7200	PROJECT NUMBER: 738306	
SUBMITTED BY: Parsons ES	DATE: March, 2001	PAGE NUMBER: 6-24	
	FILE: j:\gis\738306\av\transect.apr		

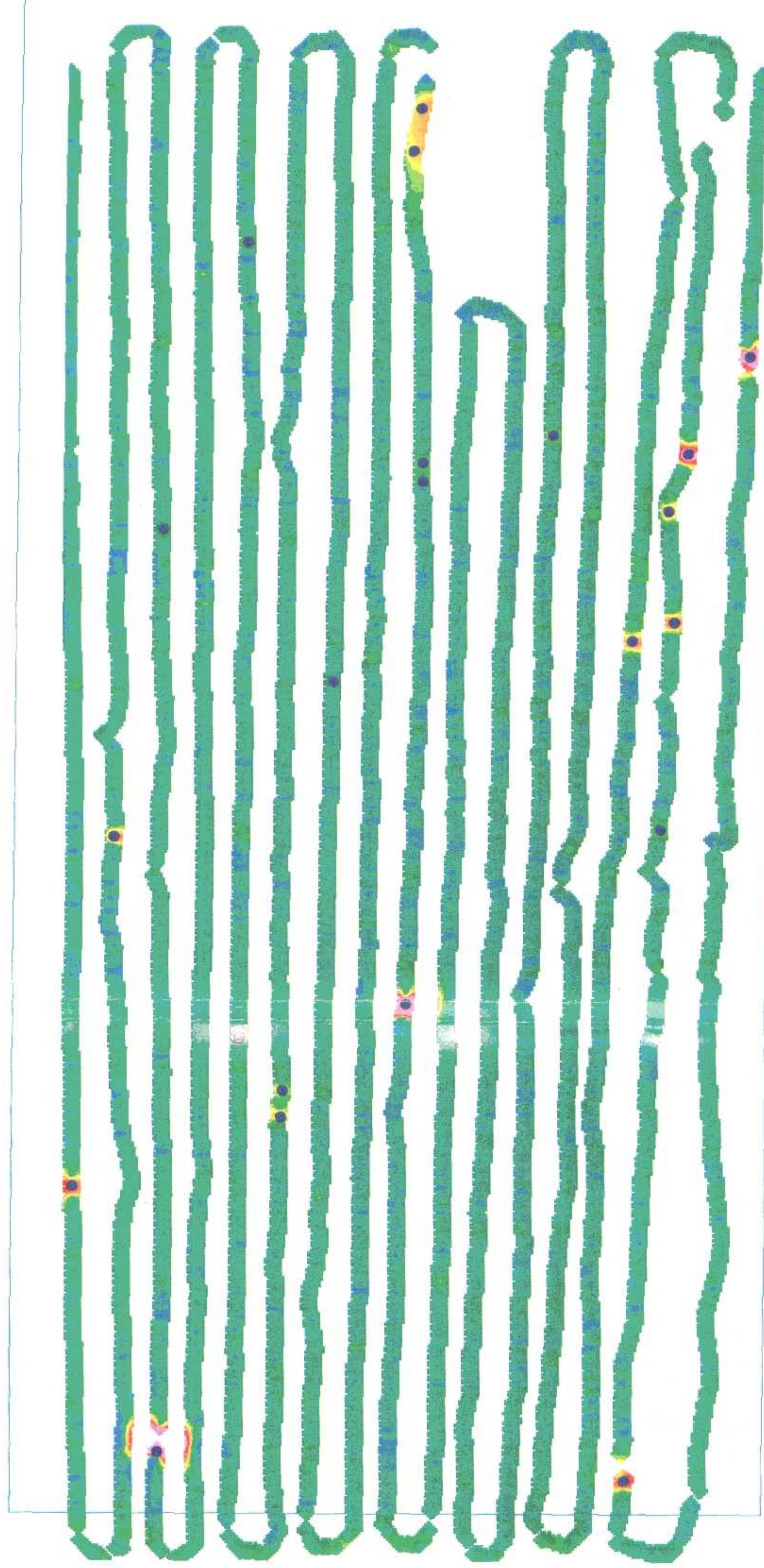


Figure 6.3

EXAMPLE GEOPHYSICAL SURVEY RESULTS

LEGEND

- Survey Track
- *Profile of EM61 Response*
- Anomaly Location and Identifier
- Survey Boundaries with Project ID Numbers
- Property Boundaries

N

50 0 50 Feet

PARSONS ENGINEERING SCIENCE, INC.		U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER	
Designed by: DD	FORMER BROOKSVILLE *TURRET GUNNARY RANGE* BROOKSVILLE, FLORIDA		
Drawn by: DD			
Checked by: DS	Scale: 1:700	Page Number: 6-25	Project #: 738001
Submitted by: Parsons ES	Date: October 2000 x:\gis\geophysics_sample\geo_sample.apr		

FIGURE 6.4
EXAMPLE ANOMALY DIG SHEET

Site/Project: ______________________

Sector: ______________________ Job Number: ______________________

Date Produced: ______________________

Produced By: ______________________

Date Investigated: ______________________

UXO Team: ______________________

NOTE: For anomaly type, use U for UXO, F for frag, OS for ordnace related scrap, S for scrap, O for other.

	Anomaly ID	Easting	Northing	Max Value	Anom. Type	Anom. Description	Number of Contacts	Anom. Depth	Anom Wgt	Action
1	339-N123	502227.25	1542001.01	45.7						
2	340-N123	502244.21	1541985.24	13.4						
3	341-N123	502247.8	1541996.42	4.1						
4	342-J125	501797.03	1542187.58	7.0						
5	343-N125	502219.67	1542192.17	70.2						
6	344-N125	502247.6	1542267.4	26.3						
7	345-I126	501728.79	1542321.47	16.9						
8	346-I126	501746.15	1542358.79	16.5						
9	347-N126	502247.4	1542348.01	8.4						
10	348-N127	502220.26	1542401.09	6.4						
11	349-N128	502235.43	1542560.13	4.8						
12	350-N80	502159.2	1537678.28	7.0						
13	351-N80	502162.86	1537763.46	40.1						
14	352-N80	502166.03	1537732.63	15.9						
15	353-N80	502168.95	1537717.52	5.0						
16	354-N80	502182.72	1537677.43	4.5						
17	355-N80	502184.43	1537708.13	4.4						
18	356-N80	502186.98	1537701.19	4.6						
19	357-N80	502197.34	1537703.38	4.8						
20	358-N80	502197.59	1537708.99	3.9						
21	359-N80	502199.41	1537678.04	3.4						
22	360-N80	502209.28	1537671.7	5.1						
23	361-N80	502215.26	1537676.94	11.7						

SECTION 7
OE PLANNING AND OPERATIONS

7.1 INTRODUCTION

This subsection details the approach, methods, equipment, qualifications, and operational procedures that UXO personnel of USA will use for UXO operations during the EE/CA at the former Camp Hero. Individual team members may be utilized on multiple teams except for when tasks are conducted simultaneously.

7.2 OPERATIONS IN OE AREAS

7.2.1 The procedures for dealing with OE items, including the detection and identification of UXO, will be accomplished in accordance with USAESCH guidance document *Basic Safety Concepts and Considerations for Ordnance and Explosives Operations* and applicable DIDs (Appendices G and H). Only UXO-qualified personnel will perform OE procedures. A minimum of two UXO-qualified personnel will be present during all UXO operations so that one UXO person may act as a safety observer.

7.2.2 Geophysical mapping will be conducted using a combination of sampling grids, meandering paths, and some "mag and flag" along the Area K bluff. The locations of the geophysical transects will be distributed throughout Area K to provide site characterization data for the EE/CA. Complete mapping is planned for both Area A and Area H. The number of anomalies (contacts) to be investigated/excavated in each grid or meandering path will be determined by the Parsons Geophysical Coordinator, as described in Section 6. This information will be relayed to the UXO Subcontractor (USA) through the SM via Anomaly Dig Sheets.

7.2.3 The CENAN will coordinate the ROE process that involves only two property owners: the NY State Parks Department and the Montauk Historical Society. Therefore, the ROE process will not be a concern for this project.

7.2.4 Potential exposure to CWM materials on this site is not anticipated, although the ASR identified a reference described in Subsection 2.5.4. If suspected CWM is encountered during operations, work will immediately halt, UXO personnel will withdraw upwind from the area, secure the site with two UXO personnel, and immediately notify the Parsons SM. Additionally, if any UXO is encountered that cannot be positively identified as a conventional UXO, all field personnel will withdraw upwind from the site, secure the site with two UXO personnel, and a Parsons representative will request assistance from the nearest Technical Escort Unit (TEU) through the onsite USAESCH Safety Specialist (if present) or through phone contact with the USAESCH

Chief of Safety. Emergency non-invasive actions will be initiated by the UXO subcontractor, such as covering the item with plastic sheeting and securing the area, until TEU can establish the appropriate exclusion and safety zones.

7.2.5 The minimum separation distance (MSD) for each individual AOI to be investigated has been established and is presented in Appendix E. Parsons submitted a request to the USAESCH PM requesting calculated fragmentation distances, which ***will be*** signed by Dr. Michelle Crull for all anticipated UXO items. The UXO with the greatest fragmentation distance/overpressure for each AOI will be used as the MSD. If an item is discovered that has a greater calculated MSD, the MSD for the AOI will be revised for subsequent intrusive investigations. As a result of on-site sampling data, the approved MSD may be reduced by USAESCH to a distance based on one hazardous fragment per 600 square feet by USAESCH. A reduction of the MSD may also be requested for implementation of engineering controls. In both cases, a written concurrence letter is required from USAESCH and will be kept in the project file.

7.2.6 The purpose of the MSD is to protect personnel from potential blast and fragmentation hazards. The MSDs may be marked by signs, caution tape, road barriers, or similar materials, and will be enforced at all times when intrusive activities are in progress. The protection of personnel and property are critical elements of any intrusive action performed on this site. During the course of UXO/OE removal activities, the specific area being worked in will be closed to all non-UXO personnel.

7.2.7 Moderate to extensive vegetation removal is anticipated in portions of Areas H and K at the former Camp due to the planned mapping and establishment of grids. Since mechanized brush clearing will likely be required, UXO-qualified personnel will accomplish this task or provide the necessary OE visual surface clearance for the individuals performing the operation.

7.2.8 During OE investigation activities, soil may be displaced in small areas (typically 2-feet by 2-feet or less; maximum is 4-feet by 4-feet). All displaced soil will be restored to its natural condition by filling in holes, tamping the soil, raking the area, and revegetating as necessary.

7.3 OE ACCOUNTABILITY AND RECORDS MANAGEMENT

A detailed accounting of all UXO items encountered during the removal activities will be accomplished. This accounting will include the exact location of the item indicated on the Anomaly Dig Sheet that becomes a part of the official project record. USA will document specific detail regarding the material found to include (but not limited to), as available specific nomenclature, type fuzing, condition, external markings, etc. The X, Y, and Z coordinates within the transect and the ultimate disposition of the item shall also be recorded. Mapping of discovery location, description of condition with photographs, date, and method and location of disposition. The SUXOS will provide a copy to the Parsons SM at the end of each workday.

7.4 OE IDENTIFICATION

7.4.1 Subsurface OE investigations will be performed on selected anomalies within meandering paths and grids as well as in "mag and flag" areas along the Area K bluff. UXO teams consisting of a minimum of two UXO-qualified individuals equipped with electronic detection equipment will conduct excavations.

7.4.2 The NY State Parks Department and the Montauk Historical Society will be contacted prior to excavation to determine the existence of any underground cables and/or pipelines in the area.

7.4.3 For each meandering path or grid, Parsons will provide USA with an Anomaly Dig Sheet annotated with target anomalies. Parsons will employ the Anomaly Dig Sheets to relocate and flag the anomalies specified for excavation within meandering paths and will provide distance from established corner stakes for grids. USA will use a Schonstedt (or equivalent) Magnetic Locator to confirm that the anomaly is located at the Parsons-flagged position (or distance provided for grids). If the anomaly is not confirmed, the same type of unit originally used during the geophysical survey will be used to confirm the anomaly location. Any deviation will be documented and reported to Parsons.

7.4.4 The UXO team personnel excavating an anomaly (as selected by the Parsons Geophysical Coordinator) will initially remove no more than a 6-inch layer of soil at the confirmed location of the anomaly. A visual and electronic search of the excavation will then be made. This process shall be repeated until the audible signal from the geophysical instrument indicates the object is less than 6 inches below the surface. Once this determination has been made, soil will be removed in 2-inch increments, by hand, until the anomaly is uncovered. Excavations greater than four feet in depth will not be made without prior approval of a USAESCH Safety Representative.

7.4.5 Any suspected or known OE encountered during excavation will be clearly marked and its position annotated on the Anomaly Dig Sheet and other appropriate site maps. The UXO-qualified personnel will evaluate any UXO item found and immediately report the condition of the item to the SUXOS. The location of the UXO will be marked with crossed red and yellow pin flags. The SUXOS will indicate on the Anomaly Dig Sheet the disposition of the OE/UXO.

7.5 OE REMOVAL

7.5.1 If the excavated material is considered to be OE/UXO it shall be uncovered sufficiently to obtain a positive identification of the item. Only safe-to-move OE items (i.e., unfuzed or unfired) will be moved for consolidation within a grid, in accordance with *Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites* (USACE, 1998, Terminology Update March 2000).

7.5.2 The SUXOS will make a determination in each case on how best to dispose of the UXO. If the UXO cannot be safely disposed of under the existing conditions, the Parsons and USA Project Managers as well as the USAESCH Safety

Representative (if assigned) will be notified. If the USAESCH OE Safety Specialist is unavailable, the USAESCH PM will be notified or the USAESCH Chief of E Safety will be contacted (256-895-1598). In no case shall the SUXOS authorize or undertake destruction of UXO when there is sufficient reason to believe that the disposal action will result in personnel casualties or property damage.

7.6 OE TRANSPORTATION

7.6.1 Transportation of explosives will comply with all federal, state, and local regulations. Permits are not required under CERCLA for transportation of conventional OE on-site or on federal installations.

7.6.2 The SUXOS or qualified representative will escort all movement of safe-to-move OE items. When transporting explosives off road, vehicles will not exceed 25 mph and travel only on designated routes. In many areas a prudent speed may be less than 25 mph, in which case the driver may not exceed a safe and reasonable speed. OE will not be transported in conjunction with demolition materials.

7.6.3 For transportation of explosives on site, USA will comply with the following:

- The load shall be well braced and, except when in closed vans, covered with a fire-resistant tarpaulin or in an appropriate shipping container;
- All loads will be visually inspected by the SUXOS or qualified representative to ensure they are properly secured and safe to move;
- Vehicles transporting explosives or OE will be inspected daily using DD Form 626 or equivalent, Motor Vehicle Inspection, and will be properly placarded;
- Vehicles transporting OE or explosives will be placarded with a Department of Transportation "Explosives Class 1.1" placard or placarded as directed by local regulations i.e. 1.2, 1.3, or 1.4. Class 1.1 consists of explosives that have a mass explosion hazard;
- Explosives will be transported in closed vehicles whenever possible. When using an open vehicle explosives will be covered with a flame resistant tarpaulin or in an appropriate shipping container (except when loading/unloading);
- Vehicle engine will not be running when loading/unloading explosives;
- Beds of vehicles will have either a wooden bed liner, dunnage, or sand bags to protect the explosives from contact with the metal bed and fittings;
- Vehicles transporting explosives will have a first aid kit, two 10 BC-rated fire extinguisher, and communications capability;
- Compatibility requirements will be observed;
- Only UXO Technicians III and above may be issued and transport explosive materials;

- Operators transporting explosives will have a valid drivers license;
- Drivers will comply with posted speed limits but will not exceed a safe and reasonable speed for conditions. Vehicles transporting explosives off-road will not exceed 25 MPH;
- Personnel will not ride in the cargo compartment with OE or explosives;
- Maps indicating route to be traveled shall be kept with the vehicle.

7.6.4 Vehicle operators will be USA employees, licensed, trained, and informed of the explosive hazards involved with the cargo.

7.6.5 Prior to movement, the driver will visually inspect the explosive laden vehicle to ensure the load is properly secured and safe-to-move. A qualified Demolition Supervisor will be assigned to provide oversight during loading. The cargo will be checked to ensure containers are loaded, blocked, braced, tied down, or otherwise secured to the vehicle body to prevent movement. If using a vehicle with an open body, a closed container to contain the explosives will be secured to the bed of the vehicle.

7.6.6 The Demolition Supervisor will ensure that the following general safety precautions are observed during transport operations:

- Explosives will not be transported in the passenger compartment of a vehicle
- Explosive laden vehicles will not be left unattended
- No person is permitted to ride on, or in, the cargo compartment
- Smoking in and around vehicles transporting explosives is prohibited
- Refueling of vehicles will be accomplished without the explosive cargo

7.7 OE STORAGE

7.7.1 USA will purchase explosives from a local commercial source, Austin Powder Company with local offices in Sterling, CT and Catskill, NY, and the main office in Austin, Texas on an as-needed/on-call basis to dispose of OE. Austin Powder can make the delivery within approximately three hours of the order. Only the amount of explosives required for the disposal shot will be ordered and all delivered explosives will be expended on the shot. Therefore, on-site explosive storage magazines are not anticipated to be necessary for this project. If an OE item is located towards the end of the business day, USA will provide an employee to stand guard over it until Austin Powder can deliver the necessary explosive.

7.7.2 Ordnance scrap and recovered metal debris may be temporarily stored on site at a location approved by USAESCH and will be easily accessible by vehicle. Dedicated, lockable storage containers will be used to ensure that commingling of items certified as non-hazardous with OE items (non-UXO) waiting further inspection or venting. Inert ordnance items will be vented (if required) prior to final staging as refuse for turn-in as described in the SOW.

7.7.3 If UXO is encountered, the item will either be secured and guarded at its current location until detonation can be conducted or will be moved (if safe) to a secure location and guarded until detonation activities can be conducted. At no time will UXO items be left unattended.

7.7.4 Although not anticipated for this project, it may become necessary to establish on-site storage to reduce the number of explosive material deliveries. In the event that on-site storage of explosives becomes necessary, demolition materials will be stored in two Bureau of Alcohol, Tobacco and Firearms (BATF) Type II portable magazines. The SUXOS will verify the condition of the magazines prior to their use for the storage of explosives. A revision to this work plan in the form of an explosive siting and explosive management plans will be submitted and the location of these magazines will be defined and mapped for approval by USAESCH.

7.7.5 Although storage magazines are not anticipated at this site, when establishing one on-site for OE disposal operations, USA will:

- Use portable approved BATF Type II structures. A type II magazine is a box, trailer, semi-trailer, or other mobile facility;
- Locate, install, and maintain the magazine to comply with the magazine criteria and quantity distance requirements established in DoD 6055.9-STD, Department of Defense Ammunition and Explosives Safety Standards;
- Install two or three magazines to comply with explosive compatibility requirements, (i.e., bulk explosives, initiating explosives, and OE demilitarization); and
- Establish security (if required), such as fencing and/or guards, to prevent unauthorized access and/or theft.

7.7.6 Outdoor magazines will be bullet-resistant, fire-resistant, weather-resistant, theft-resistant, and ventilated. They will be supported to prevent direct contact with the ground and, if less than one cubic yard in size, will be securely fastened to a fixed object. The ground around outdoor magazines must slope away for drainage or other adequate drainage provided. When unattended, vehicular magazines must have wheels removed or otherwise effectively immobilized by kingpin locking devices or other methods.

7.7.7 The exterior and doors are to be of not less than ¼-inch steel and lined with at least two inches of hardwood. Magazines with top openings will have lids with water-resistant seals or which overlap the sides by at least one inch when in a closed position. Hinges and hasps will be attached to doors by welding, riveting, or bolting (nuts on inside of door). Hinges and hasps will be installed so they cannot be removed when the doors are closed and locked. Each door will be equipped with two padlocks fastened in separate hasps and staples. Padlocks must have at least five tumblers and a casehardened shackle of at least 3/8-inch diameter. Padlocks will be protected with not less than ¼-inch steel hoods constructed so as to prevent sawing or lever action on the locks, hasps, and staples.

7.8 OE DISPOSAL PROCEDURES

7.8.1 General Procedures

7.8.1.1 During disposal of UXO and related material, safety is the primary concern. The most obvious requirements are to protect personnel, the general public, and the environment from fire, blast, noise, fragmentation, and toxic releases. Planned detonation of explosives requires more stringent safety distance requirements than those for ordnance in storage, and will be conducted in accordance with the requirements outlined in DoD 6055-9-STD.

7.8.1.2 USA intends to utilize electric demolition disposal procedures for the disposal of conventional ordnance. Although use of electrical disposal procedures are anticipated, non-electrical procedures are included to provide procedural guidance should circumstance arise where non-electrical firing procedures are the most prudent means of initiating a demolition shot.

7.8.1.3 All personnel directly or indirectly engaged in unexploded ordnance operations are thoroughly trained and capable of recognizing hazardous explosive exposures. All personnel are required to read, become familiar with, and adhere to the requirements contained in this Section to assure that all general safety regulations and safe work practices are observed at all times.

7.8.1.4 These procedures will be utilized by all USA personnel engaged in demolition activities. However, situations may warrant additional safety measures, such as fire trucks, medical personnel, and protective clothing. The SUXOS has the overall responsibility to comply with the minimum requirements listed below and the authority to upgrade as the situation dictates.

7.8.1.5 Qualified UXO personnel will evaluate the condition of all recovered UXO during this ordnance and explosive sampling. Those conventional ordnance items whose condition has been determined to be unsafe to move (i.e. fuzed UXO) will be Blown-in-Place (BIP). BIP will be used for all UXO as well as OE items not safe to move. The demolition locations will be confined to the boundaries of each sub-area. Demolition sites will exist where UXOs are found and detonated. The location of UXO, which must be detonated in place, cannot be predicted, and they could occur at any point on the site. All UXO that are detonated in place will be well documented and the position indicated on the site map. Appendix E, which deals with intentional and unintentional detonations, identifies the MSDs for munitions and/or explosives expected to be encountered during UXO operations. If an OE not listed in Appendix E is encountered, its MSD shall be requested from USAESCH. Until the approved MSD is received, the distances from Table C5.T1 of DoD 6055.9-STD will be used.

7.8.1.6 If conditions permit, consideration will be given to consolidating sub-caliber rounds and similar OE and unfuzed items. In such events, one location within that day's survey area will be selected for demolition activities to reduce the number of demolition shots and fragmentation contamination.

7.8.1.7 In-Grid Consolidation Shots are areas within the search grids or along transects where non-UXO OE items safe to move are collected and destroyed through explosive detonation. The size of the MSD and the set-up of the shot will be accomplished in accordance with *Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites* (USACE, 1998, Terminology Update, March 2000). During the consolidated demolition shot, sandbags will be used to mitigate the fragments in accordance with CEHNC-ED-CS-S-98-7, approved by the Department of Defense Explosive Safety Board (DDESB) February 23, 1999. No UXO will be left unattended at any time.

7.8.1.8 In areas where the MSD cannot be achieved, other methods of mitigation (if approved by USAESCH), such as berms, tamping, or sandbag barricades (in accordance with HNC-ED-CS-S-98-7), will be employed to reduce the fragmentation hazard.

7.8.2 Demolition Operations

7.8.2.1 Demolition safety and operations will be conducted according to the standard practices and procedures outlined in TM 60A 1-1-31 and the appropriate specific 60 Series EOD Publications. OE/UXO will only be detonated after positive identification. Electrical initiation procedures will be employed as the method of choice for all detonations. Additionally all demolition shots will be tamped by surrounding the items to be disposed of with sandbags filled with clean sand to reduce the possibility of fire.

7.8.2.2 Demolition operations, if required, will take place at the end of each workday. The SUXOS is responsible for determining whether minimum safe conditions to conduct demolitions operations are met. If it is predicted that unfavorable weather conditions may exist during planned demolition operations the demolition operations may be rescheduled earlier in the day or the following day (with 24-hour security). USA personnel will provide perimeter security during demolition operations.

7.8.3 Detonating UXO in Place

7.8.3.1 All detonations will be conducted according to USAESCH Guidance and DIDs. Detonations will take place only after all nonessential personnel have left the area and perimeter security has been posted.

7.8.3.2 The composition of the Demolition Team will be determined by the SUXOS and will be in accordance with USAESCH guidance and USA's Demolition Standard Operating Procedures (SOP) (see Appendix B, Attachment B6). The team will only be composed of qualified UXO personnel under the direct supervision of a designated UXO Technician III. The remaining USA UXO personnel will act as perimeter security, if required.

7.8.3.3 Notification of detonations will be made to all affected parties including local airports and fire and law enforcement agencies.

7.8.3.4 All detonations will be tamped with the appropriate number of sandbags to reduce the possibility of a vegetation fire. The local fire department will be contacted and may be standing by to saturate the area with water prior to performing any disposal procedures. The minimum sandbag requirements are presented in Appendix E.

7.8.3.5 During detonations, a designated project vehicle will remain in the safe area to provide emergency egress for the Demolition Team. Prior to initiation of demolition operations all non-essential personnel are evacuated from the MSD. Prior to priming the demolition charges all avenues of ingress will be physically blocked by guard personnel. Radio communications are maintained between parties at all times. Avenues of ingress are not to be opened without the express permission of the SUXOS. A constant state of vigilance will be maintained by all personnel to detect any intrusion into the fragmentation zone or over flights of aircraft.

7.8.3.6 All demolition materials will be accounted for and reported to the SUXOS.

7.8.3.7 The area where demolition operations are being conducted will remain secured until the SUXOS or UXOSO gives the "all clear" signal.

7.8.3.8 After each detonation, the detonation points will be inspected by the demolition team leader to ensure that a misfire, low order, or a kick out has not occurred. A visual inspection will be performed at the disposal site(s). A second person will standby at a safe distance and be prepared to render assistance in the event of an emergency. Upon completion of this inspection and providing that there are no residual hazards, the SUXOS will authorize the resumption of site operations.

7.8.3.9 All charges will be dual primed and initiated electrically. Detonating cord trunk and branch lines will be used to link multiple shots. Shape changes (Jet perforators) will be used for the disposal of all OE/UXO and for the purpose of venting OE/UXO if needed. Commercial explosive boosters may also be used but will require revisions to the MSD calculation based on the net explosive weight and advance approval by USAESCH.

7.8.4 Demolition Procedures

The following paragraphs outline the electrical firing of demolition charges. Additional information, including non-electric procedures, is in USA's Demolition SOP (Attachment B6 of Appendix B).

7.8.4.1 Preparation Sequence

The process outlined below will be used to assemble an electric initiation system.

- Test and maintain control of the blasting machine.
- Test the blasting circuit tester.
- Test the firing wire on the reel, shunted and un-shunted.
- Lay out the firing wire completely off the reel.
- Re-test the firing wire, shunted and un-shunted.
- Test the electric blasting caps.
- Connect the circuit
- Connect the firing wire.
- Prime the charges/return to the firing point.
- Test the entire firing circuit

7.8.4.1.1 Testing and Maintaining Control of Blasting Machine

- The blast machine will be tested each day of demolition operations as specified in the manufacturer's instructions.
- The demolition team leader is responsible to maintain control of the blasting machine at all times.

7.8.4.1.2 Testing the Blasting Circuit Tester

- The blasting circuit tester will be tested each day as recommended in the manufacturer's instructions.
- Both the open-and short-circuit tests will be performed.

7.8.4.1.3 Testing the Firing Wire on the Reel

- The firing wire leads will be separated at both ends and the leads at one end connected to the post of the blasting circuit tester. When using the needle type blasting circuit tester, no deflection should be noted. When using the digital type blasting circuit tester, the number on the digital readout should remain constant.
- The wires will be shunted at one end and the leads of the other end connected to the blasting circuit tester. When using the needle type circuit tester, the needle should travel at least 50% of the scale. When using the digital type blasting circuit tester, the number should increase to indicate continuity.
- Both ends of the firing wire will be shunted after testing.

7.8.4.1.4 Laying Out the Firing Wire

- After locating a safe firing position, the wire will be laid out between the firing point and the charge.
- Vehicles will not drive over and personnel will not step on the firing wire.
- The wire will be as short as possible. Loops in the wire will be avoided and it will be laid as flat as possible.

7.8.4.1.5 Re-testing Firing Wire

- The open- and short-circuit tests will be performed again. The process of unreeling the wire may separate broken wires not found in previous tests.
- Control of the firing position will be maintained from this point on. This control will ensure that no one tampers with the wires or fires the charge prematurely.
- Both ends of the firing wire will be shunted after the tests are complete.

7.8.4.1.6 Testing Electric Blasting Caps

The following procedures will be used to assemble, test, and function electric firing trains in accordance with TM 60 A-1-1-31:

- Prior to going down range, gather all equipment and explosives;
- Lay out (from the site to the safe area) and test firing wire;
- Ground yourself prior to breaking out caps. Keep explosive end of cap pointed away from the body and other personnel;
- Grip the cap lead wires 3 inches to 6 inches behind the base of the cap, pull an initial arm's length of wire off the wire coil;
- Barricade the cap, at least 50 feet downwind from other explosives;
- Un-shunt and test blasting cap(s);
- Splice the cap leads to the firing wire in a parallel circuit and insulate connections;
- Prime the shot;
- Return to the safe area and test the circuit for continuity;
- Hook up the firing machine, sound the warning, and fire the shot.

7.8.4.1.7 Connecting the Circuit

When two or more blasting caps are required for a dual primed demolition operation, a common parallel circuit will be used. The following procedures will be used:

- All blasting caps will be tested separately before being connected in a circuit.
- The blasting cap wires will be joined together to form a parallel circuit. All joints will be protected in the circuit with electrical tape.

- The entire circuit will be tested. After testing the circuit, the two free ends of the cap wires will be shunted and kept shunted until they are to be connected to the firing wire.

7.8.4.1.8 Connecting the Firing Wire

- The free ends of the blasting caps will be connected to the firing wire before priming the charges or taping a cap to detonating cord.
- The connections will be insulated with tape.

7.8.4.1.9 Priming the Shot / Returning to the Firing Point

- If UXO/OE items are being consolidated for disposal they will be placed in the disposal pit. Donor charges will be positioned on the UXO/OE, connected with detonating cord and the shot tamped.
- When the SUXOS is notified that the shot is ready to be primed, he will check to insure that the area is clear and if so grant permission to prime.
- Upon receiving permission to prime, the blasting cap(s) will be connected to a detonating cord trunk line or ring main system. Blasting caps will not be buried.
- All personnel will return to the firing point

7.8.4.2 Initiating the Circuit

7.8.4.2.1 When all personnel have been accounted for the firing procedure will proceed.

- The SUXOS will check that the area is clear and that all access is blocked;
- The blasting machine will be exercised to insure it is working properly;
- A final check of the complete firing circuit will be made;
- When directed by the SUXOS, the firing wire will be attached to the firing machine;
- When directed by the SUXOS, the demo team leader will give three long blasts on the truck horn, broadcast three times "Fire in the Hole" over the radio and then fire the shot.

7.8.4.2.2 After the shot has fired the SUXOS and UXOSO will observe the disposal area to check for fires and secondary explosions. If the area is cleared the SUXOS will direct the demolition team leader and one other UXO Technician to check the shot.

7.8.4.2.3 The demolition team leader will drive to the disposal area and, while the UXO Technician waits in the truck at a safe distance, check the disposal pit for fires. If the pit is clear he will radio the SUXOS who will in turn notify all personnel that the site is clear and that access may be reopened.

7.8.4.2.4 The disposal pit will be checked both visually and with magnetometers and all OE scrap collected. The disposal pit and the surrounding area will be checked for kick-outs and UXO/OE which have not detonated or been vented completely.

7.8.5 Misfire Procedures

According to 29 CFR 1910-109 (e), (4), vi; EM 385-1-1 §29; and 60 A 1-1-31, if a misfire occurs, the following general procedures will be strictly followed:

- The SUXOS will be notified of the time of the suspected misfire.
- The SUXOS will notify the UXOSO and the USACE Safety Specialist (if assigned). All other personnel will be notified of the event via radio and instructed to hold their positions until the "all clear" is given. The circumstances surrounding the misfire will be included in the site's Daily Journal.

7.8.5.1 Electric Misfires

- Another attempt will be made to fire the shot. If a secondary firing system is available for use it may be employed
- The blasting machine or power source terminals will be checked. The blasting machine or power source will be disconnected and the blasting circuit tested. The continuity of the firing wire will be checked with a circuit tester.
- Another blasting machine or power source will be used to attempt to fire the circuit again. Blasters will be changed and the procedures repeated.
- Thirty minutes will lapse after the last attempt to fire prior to the inspection of an electrical misfire. The entire circuit will be checked for wire breaks or short circuits. If it is suspected that the electric blasting cap is the problem, cut the detonating cord between blasting cap and charge and move the blasting caps to safe distance. Secure the blasting cap by covering it with a sandbag. Disconnect and short the blasting cap wires from the firing circuit. Repeat the blasting cap check out procedures addressed earlier in this chapter and connect the wires of the new blasting cap to the firing circuit and re-prime the charge. Reconnect the firing wire ends to the blasting machine and fire the charge(s).

7.8.5.2 Detonating Cord Misfires

- A new blasting cap(s) will be attached to the remaining detonating cord, with care taken to fasten it properly, and the original charge will be detonated.
- Branch lines will be treated in the same manner as noted above.
- If the detonating cord leading to the charge detonates but fails to function the charge, the following actions will be taken:

- Investigation will not occur until the required 30-minute (60-minute for non-electric) wait time has been observed after the charges have quit burning.
- The charge will be re-primed and another attempt will be made to detonate the charge.
- Scattered charges that do not contain blasting caps may be collected and detonated.

7.8.6 Quantity-Distance

7.8.6.1 For all geophysical and intrusive operations, team separation distance shall be determined by the greater of 200 feet or K50 (0.9 PSI overpressure) distance. The MSD for all unrelated personnel for an unintentional detonation shall be determined by the greater of 200 feet, the K50 distance, or the maximum fragment throw distance (Appendix E). The MSD for all personnel (related or unrelated) for intentional detonations shall be determined by the maximum fragment throw distance (Appendix E).

7.8.6.2 When approved by USAESCH, the MSD for the MPM for each AOI will be presented in Appendix E.

7.8.6.3 The MSD (Appendix E) will be modified if UXO items larger than the MPM are identified in the AOI. A MSD will also be established during demolition activities. This boundary will not be physically marked, but rather will be identified by using key terrain features at or beyond the calculated arc distance. Only UXO personnel and the USAESCH Safety Specialist (if on-site) will be authorized access to the MSD. The UXOSO shall brief personnel on entering/exiting procedures and will establish and maintain the integrity of the MSD.

7.8.6.4 Since the meandering path method will be used, the MSD will be applied to each anomaly selected for investigation rather than applying it to the entire sector. After the dig list has been generated, the UXO team will submit a map showing the anomaly location(s) and associated MSD to USAESCH for approval prior to commencement of intrusive activities. As stated previously, the approved MSD may be reduced by USAESCH to a distance based on one hazardous fragment per 600 square feet by USAESCH. A reduction of the MSD may also be requested for implementation of engineering controls. In both cases, a *written concurrence letter* is required from USAESCH and will be kept in the project file.

7.8.7 Inert Ordnance

7.8.7.1 Inert ordnance will be disposed of by explosively opening (if required) the munitions case (venting), physically inspecting the filler, stockpiling the inert scrap/residue, and turning in the residue (greater than 4 square inches in size) to a local scrap dealer. This method ensures that the filler of each piece of "potentially" inert ordnance is physically exposed and inspected, and precludes the possibility of transferring an explosively laden piece of ordnance to the local scrap dealer.

7.8.7.2 Inert ordnance will not be disposed of or sold for scrap until the internal fillers have been exposed and unconfined. Heat generated during a reclamation operation can cause the inert filler, moisture, or air to expand and burst the sealed casings. Venting or exposure may be accomplished in any way necessary to preclude rupture due to confined pressure.

7.8.8 Ordnance-Related Scrap

Adjacent to each search transect, a temporary collection point will be established for ordnance-related scrap metals (i.e., tail fins and projectile fragments). Throughout operations in the search area, recovered ordnance-related scrap will be placed at the collection point. Following completion of operations in each search area, each item will be physically inspected in accordance with DID OE-005-13 and other USAESCH guidance.

7.8.9 Non-Ordnance-Related Scrap

Non-ordnance-related scrap (i.e., pipe, banding, and wheels) that is large or awkward to completely unearth will not be collected. Small non-ordnance-related scrap may be combined with non-hazardous ordnance-related scrap for disposal. Inert OE related scrap and non OE-related scrap may be stored in the same general area after certification by the UXOSO and SUXOS that the OE materials are inert and contain no dangerous materials. Lockable roll-on/roll-off (or equivalent) storage containers will be dedicated for storage of OE items (non-UXO) that have been certified by USA as safe.

7.8.10 Trash/Debris

General non-hazardous trash/debris generated or collected during the investigation will be collected in trash bags or transferred to the local refuse collection system.

7.9 OE DISPOSAL RANGE

Section not used.

7.10 OE PERSONNEL AND QUALIFICATIONS

7.10.1 UXO teams will consist of qualified personnel approved by USAESCH per DID OE-025. Non-UXO-qualified personnel will not perform any excavation nor handle UXO/OE. As required by the specific task, all USA personnel on this project will have completed the OSHA 40-hour training course for hazardous waste site workers. Additional site specific training, in accordance with 29 CFR 1910.120, EM 385-1-1 (USACE Safety and Health Requirements Manual), and ER 385-1-92 (Safety and Occupational Health Document Requirements for hazardous toxic and radioactive waste (HTRW) and Ordnance and Explosive Waste OE activities) will be provided to all personnel upon their initial mobilization. A Medical Surveillance Program will be in place with the latest exam within the last 12 months.

7.10.2 All personnel must meet the requirements set forth in "Personnel/Work Standards" (DID OE-025), March 3, 2000. UXO personnel will be U.S. citizens and graduates of the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland; or the U.S. Naval EOD School, Indian Head, Maryland. Credit for the EOC experience while assigned to the National Guard or Reserve will be based on the actual documented time spent on active duty, not on the total time of service. The following subsections detail individual UXO personnel qualifications.

7.10.1 UXO Subcontractor Project Manager

The UXO Subcontractor PM is responsible for communication with and execution of all instructions received from the Parsons PM, managing all OE subcontract requirements of the project, overseeing the performance of all individuals on the OE project team, coordinating contract work, and overseeing OE-specific task identification and resolutions. The UXO Subcontractor PM is also responsible for achieving the subcontract cost and schedule requirements. The UXO Subcontractor PM will coordinate the preparation of detailed work order specifications and schedules as required by the Parsons PM. The UXO Subcontractor PM will also schedule field efforts, identify the UXO technical and site personnel to accomplish the specific tasks as defined in the WP, implement project quality and safety procedures, and direct UXO personnel to achieve successful and timely completion of the WP tasks. The UXO Subcontractor PM will promptly implement approved and authorized changes to ongoing work orders, as necessary.

7.10.2 Senior UXO Supervisor

The SUXOS is USA's most senior OE-qualified on-site representative. The SUXOS will monitor all aspects of the field project, including subcontractor site activities, to ensure efficient performance of the approved WP and SSHP. The SUXOS has the authority to temporarily stop work to correct safety deficiencies. The SUXOS makes Daily Progress Reports to the USA PM and Parsons SM and is also responsible for monitoring on-site project expenditures, finances, and equipment use and maintenance. The SUXOS meets the USACE requirements as a graduate of one of the following schools: the U.S. Naval Explosive Ordnance Disposal School (Indian Head, MD) or U.S. Army Bomb Disposal School (Aberdeen Proving Ground, MD). Additional requirements include 40-hour and 8-hour Hazardous Waste Site Worker; Supervisor courses in accordance with 29 CFR 1910.120; and has at least 15 years of UXO experience, which may be a combination of active duty military EOD and contractor UXO experience, and shall include 10 years of supervisory positions. The SUXOS is directly responsible for:

- Project site work;
- Planning, coordinating, and supervising all subcontractor activities/work on-site;
- Compliance with all safety and work related standard operating procedures (SOPs), including the SSHP;
- Meeting schedule time lines and subcontractor budgetary control amounts;
- Compliance with all federal and state regulations;
- Transporting and storing UXO and explosive material;

- Coordination with the Parsons UXOSO to ensure all site safety considerations are enforced; and
- Equipment and on-site vehicles.

7.10.3 UXO Safety Officer

The Parsons UXOSO reports to the Parsons PM. The UXOSO meets the same requirements as the UXO Technician III and is responsible for the following:

- Coordinating and observing site operations;
- Enforcing the project SSHP (a copy will be provided in the office trailer);
- Explosive safety;
- Fire prevention;
- Industrial safety;
- Conducting daily safety audits and assuring equipment calibrations are accomplished in accordance with factory specifications;
- Environmental safety;
- Chemical material surety and safety;
- Daily safety briefings;
- Visitor access and entry control to the project site;
- Coordinating with local emergency response agencies;
- Complying with CFR, OSHA, and USACE safety protocols;
- Complying with specific state and local ordinances, as required;
- Daily inspection of emergency equipment;
- Maintaining the site emergency vehicle and supplies; and
- Monitoring activities, reports, and document deviations from established procedures.

7.10.4 UXO Technician III

The UXO Technician III takes daily direction from and reports directly to the SUXOS. The UXO Technician III directs the action of an OE team in accordance with the approved WP and the daily verbal direction of the SUXOS. The UXO Technician III maintains continuous communication with the SUXOS during the performance of OE operations and has the authority to temporarily stop the performance of work to resolve and correct any unsafe condition. The UXO Technician III is a graduate of one of the following schools: the U.S. Naval Explosive Ordnance Disposal School (Indian Head, MD) or U.S. Army Bomb Disposal School (Aberdeen Proving Ground, MD). Additional requirements include 40-hour and 8-hour Hazardous Waste Site Worker; Supervisor courses in accordance with 29 CFR 1910.120; and has at least 10 years of experience, which may be a combination of active duty military EOD and contractor UXO experience. Duties/responsibilities include:

- Supervision of the direct OE field operations for assigned tasks;
- Task/team compliance with all safety and work related SOPs, including SSHP;
- Meeting schedules on task/team time lines and budgetary control amounts;
- Coordination with the Parsons UXOSO to ensure that all site safety considerations are enforced;
- Task/team assigned equipment and vehicles; and
- Supervision of assigned personnel.

7.10.5 UXO Quality Control Specialist

The Quality Control Specialist (UXOQCS) monitors the project's performance in accordance with safety protocols and technical compliance. The UXOQCS is responsible for the oversight and implementation of the QC Program. The UXOQCS coordinates with the Parsons PM and assists him during the development of work/safety plans, site remediation, and reporting. The UXOQCS provides guidance, as required, and performs scheduled reviews of documentation (QC reports, field progress reports, and technical findings). The UXOQCS ultimately reports directly to the Parsons PM. The UXOQCS shall have the same minimum prerequisite experience requirements as the UXO Technician III.

7.10.6 UXO Technician II

Under the direct supervision of the UXO Technician III, the UXO Technician II is responsible for the safe and efficient performance of OE field operations, including the location, identification, removal and disposal of OE in accordance with the approved WP and SSHP. The UXO Technician II is authorized to temporarily stop the performance of work to immediately alert the UXO Technician III of an unsafe condition. Internally, the UXO Technician II reports to the UXO Technician III. The UXO Technician II is a graduate of one of the following schools: the U.S. Naval Explosive Ordnance Disposal School (Indian Head, MD) or U.S. Army Bomb Disposal School (Aberdeen Proving Ground, MD). Additional requirements include 40-hour and 8-hour Hazardous Waste Site Worker and at least 3 years of experience, which may be a combination of active duty military EOD and contractor UXO experience. A UXO Technician I may become a UXO Technician II after completing at least 5 years combined military EOD and contractor UXO experience and upon the completion of EOD Assistants Course (Redstone Arsenal, AL or Elgin Air Force Base, FL) or a DoD certified equivalent course.

7.10.7 UXO Technician I

The UXO Technician I will be a graduate of the EOD Assistant Course at Redstone Arsenal, Alabama, or Eglin Air Force Base, Florida, or a DoD certified equivalent course.

The UXO Technician I cannot fill a position above the UXO Technician II level and cannot perform a UXO task without supervision from the UXO Technician II or higher.

7.10.8 Geophysicist

This individual need not be UXO-qualified, but shall have a degree in geology, geological engineering, or a closely related field, and shall have a minimum of five years directly related geophysical experience.

7.10.9 Magnetometer/Heavy Equipment Operator/Technician

This individual need not be a UXO-qualified individual, but shall have the documented training and experience to properly operate the assigned equipment.

7.11 DISPOSAL ALTERNATIVES

This section was not used. OE destruction will take place on site by detonation.

7.12 MANAGEMENT AND STORAGE OF DEMOLITION EXPLOSIVES

7.12.1 Introduction

This subsection details the procedures to manage the explosives for this project in accordance with the following policies and federal, state, and local laws and regulations:

- USAESCH Safety Considerations for UXOs;
- OSHA, 29 CFR 1910, Occupational Safety and Health Standards;
- OSHA, 29 CFR 1926, Construction Standards;
- Applicable sections of EPA, 40 CFR Parts 260 to 299, Protection of Environment;
- Applicable sections of DOT, 49 CFR Parts 100 to 199, Transportation;
- Bureau of Alcohol, Tobacco, and Firearms Publication (ATFP) 5400.7 (ATF - Explosives Law and Regulations)
- USACE EM 385-1-1, Safety and Health Requirements Manual;
- USACE ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous Waste Remedial Actions;
- Department of Defense (DoD) 6055.9-STD (DoD Ammunition and Explosives Safety Standards)
- DoD 4160.21-M, Defense Reutilization and Marketing Manual;
- Department of Transportation (DOT) Regulations
- DA PAM 385-64, Ammunition and Explosives Safety Standards;
- Army Regulation (AR) 190-11 (Physical Security of Arms, Ammunition, and Explosives)

- AR 385-64, Ammunition and Explosives Safety Standards;
- AR 200-1, Environmental Protection and Enhancement;
- AR 385-10, The Army Safety Program;
- AR 385-16, System Safety Engineering and Management;
- AR 385-40 w/USACE supplement, Accident Reporting and Records;
- TM 9-1300-200, Ammunition General;
- TM 9-1300-214, Military Explosives; and
- TM 60 Series publications

7.12.1.1 Licenses/Permits

USA will maintain a copy of the following documents on-site. Both documents will be made available, upon request, to any authorized federal, state, or local authority.

- Bureau of Alcohol, Tobacco, and Firearms (BATF) User of High Explosives license;
- A letter signed by an official of USA designating the SUXOS as authorized to purchase, receive, access, and use explosives.

7.12.1.2 Acquisition of Explosives

7.12.1.2.1 No storage facilities will be established on-site. USA will purchase explosives on an as-needed/on-call basis to dispose of OE. Only the amount of explosives required for the disposal shot will be ordered and all delivered explosives will be expended on the shot. The types of explosives that will be used at the site are presented in Table 7.1.

Table 7.1
Explosives Requirements

Item
Blasting Caps, Electric
Detonating Cord, 80 grain
Perforators, 32 gram shape charge
Austin orange 1 lb. cast booster

7.12.1.2.2 All explosives will be purchased from a local commercial source, Austin Powder Company; with local offices in Sterling, CT and Catskill, NY; and the main office in Austin, Texas. Austin Powder will deliver explosives on an as-needed basis, and can be delivered within approximately three hours of the order.

7.12.1.3 Initial Receipt of Explosive

7.12.1.3.1 Receipt - The SUXOS will inventory, initiate, and maintain all documentation concerning the demolition material upon receipt. The Demolition Supervisor, by signing the receipt documents, will assume accountability for the material. Since no explosives will be stored on-site, tracking of explosives inventory via a Magazine Data Card will not be necessary.

7.12.1.3.2 Reconciling Discrepancies - The SUXOS will conduct a 100% inventory of the incoming explosives. The quantities annotated on the receipt documentation should match the quantities reflected in the inventory. If these quantities do not match, the SUXOS will contact the originator of the receipt documentation. USA personnel will only sign for the actual quantity of material received, as reflected by the inventory. Receipt documentation will be changed to reflect the proper quantities. Actual quantities must be properly annotated on the shipping documentation prior to USA accepting delivery. These procedures will be conducted for each receipt of explosive materials.

7.12.1.3.3 All original receipts, shipping documents or invoices will be retained on-site as part of the site's records. Copies of the documentation will be sent to USA's home office within three working days upon receipt of the explosive materials. At the completion of the project, the original documents will be sent to USA's office, where they will be maintained for five (5) years. Copies of the documentation will be included in the final report.

7.12.2 Storage

7.12.2.1 Since on-site storage of explosives is not planned for this project, all explosives brought to the site will be on an as-needed basis and will be expended.

7.12.2.2 USA, as the end user of the site explosives, will provide a letter to the Parsons PM at the end of the project certifying that the explosives were used for their intended purpose. This document will also be made a part of the final report.

7.12.3 Reporting Lost or Stolen Explosives

7.12.3.1 Loss or theft of explosives will be reported as required in 27 CFR Part 55, Subpart C paragraph 55.30. ATF Form 5400.5 will be completed, within 24 hours and forwarded to the ATF, with a copy to the parsons PM.

7.12.3.2 The following persons will be notified immediately upon discovery of theft of explosive:

- Contracting Officer via telephone within 1 hour of discovery – (256) 895-1349
- Local Police – 911
- ATF – Atlanta Area Office – (404) 331-6146

- Appropriate local law enforcement authorities in writing within 24 hours
- USA's Tampa offices at (301) 705-5044.

SECTION 8
SITE SAFETY AND HEALTH PLAN

8.1 PURPOSE

8.1.1 The nature of fieldwork has made health and safety a principal concern both during project planning and in the field. Office and field personnel must develop a health and safety consciousness, avoiding unnecessary or "calculated" risks. At the same time, unnecessary precautions that create additional safety hazards and/or inhibit work performance need to be avoided.

8.1.2 The purpose of an SSHP is to establish personnel protection standards and mandatory safety practices and procedures for all work conducted for this project. The plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are conducted at the site.

8.1.3 The SSHP (Appendix B) provides general guidance for the decision points in health and safety planning. Sections cover field personnel responsibilities and work procedures, physical and chemical risks, emergency procedures, and levels of personal protection. Site-specific information such as a project description and site history, a contingency plan, a list of emergency contacts, and necessary health and safety equipment are also discussed. All Parsons, USA, and other subcontractor personnel will adhere to the Project SSHP.

8.2 APPLICABILITY

8.2.1 Parsons has the overall safety authority onsite. The Project SSHP provisions are mandatory for all on-site activities undertaken at the former Camp Hero by **all personnel**. All project activities comply with the provisions of all applicable standards in 29 CFR 1910 and 1926, USAESCH guidance, *U.S. Army Corps of Engineers, Safety and Health Requirements Manual, EM 385-1-3* (September 1996), and the SOW (DID OE-005-06).

8.2.2 As site activities change, i.e., change in work locations, facilities (storage, operation's trailers, etc.), and storage areas, this plan may need to be modified. Such modifications will be submitted as SSHP addenda and will be numbered sequentially. All SSHP addenda will be reviewed and approved in compliance with Parsons standard procedures.

8.2.3 All project personnel working on this EE/CA project on site must read the SSHP and submit a signed Plan Acceptance Form to the UXOSO prior to starting field work. The Parsons Plan Acceptance Form is shown as Attachment B-1 in Appendix B.

8.3 GENERAL SITE UXO AND SAFETY PROCEDURES

8.3.1 UXO operations will not be conducted during the hours from sunset to sunrise or during electrical storms or other severe weather conditions.

8.3.2 A minimum of two UXO-qualified personnel will be present during all UXO operations, so that one may always act as a safety observer.

8.3.3 All UXO encountered will be reported to the SUXOS and appropriate measures will be chosen to safeguard the area.

8.3.4 During all OE/UXO confirmation operations, only the minimum number of personnel (two) required to safely perform the task will be allowed onsite. All others will evacuate beyond the established MSD for the AOI.

8.3.5 If CWM is encountered, all site personnel will immediately withdraw upwind of the work area and USAESCH will be notified.

SECTION 9
ENVIRONMENTAL PROTECTION PLAN

9.1 INTRODUCTION

9.1.1 This Environmental Protection Plan (EPP) has been prepared for the EE/CA investigation at the former Camp Hero in Montauk, New York. The purpose of the EPP is to ensure compliance with the National Environmental Policy Act (NEPA) and AR 200-2 by avoiding or minimizing potential adverse environmental impacts. This EPP includes:

- A summary of the types of OE assessment activities that could adversely impact sensitive biological resources within the Camp; and
- A detailed approach for evaluating and mitigating potential adverse impacts of on water resources, biological resources, and cultural resources.

9.1.2 This EPP identifies sensitive resources within the AOIs and the means by which impacts on these resources will be avoided, minimized, or reduced (mitigated).

9.1.3 Figure 9.1 summarizes the approach for minimizing environmental impacts at the site. Parsons specifically designed the following methods for this project, based on the application of the meandering path/grids geophysical survey method.

9.2 FIELD ACTIVITIES AND POTENTIAL ENVIRONMENTAL IMPACTS

9.2.1 The EE/CA site characterization activities will include geophysical surveys along meandering paths, within grids, and on steep bluffs. In addition, intrusive excavations, sampling, disposal and data collection activities will be conducted in areas where OE is identified. This approach will involve: (1) surveying for OE along meandering paths and within grids with footprints of approximately 3-feet by 3,300 feet and greater; (2) surveying within grids of nominal size, 100 feet by 100 feet; and (3) disturbance of soils associated with the intrusive sampling and disposal.

9.2.2 The precise meandering paths will be surveyed at the discretion of the geophysical field team but will be defined by known starting and end points. Grid locations will be based on pre-specified corner points. The meandering paths and grid locations may be further modified in the field to minimize impacts to any undocumented sensitive resources (wetlands, protected species, natural areas and preserves, and cultural resources).

9.2.3 The meandering path geophysical survey method and the placement of grids will not involve any brush clearance along the beach or bluff face (Area K) as these areas are currently void of vegetation. The upper bluff of Area K will require moderate clearing of brush for grids and meandering paths. The entire 8 acres of heavily vegetated Area H is planned to be completely cleared of scrub oak and other vegetation (if approved by the NY State Parks Department) with the exception of a small wetland area. Potential biological impacts may be created by this action although every effort will be made to mitigate adverse effects.

9.2.4 If an anomaly along a meandering path or within a grid is selected for intrusive investigation, excavations will be conducted to confirm the presence or absence of OE materials. If intrusive investigation proceeds and the presence of UXO is confirmed, on-site demolition (BIP) may be required for safety reasons. During this demolition phase, reasonable efforts to minimize impacts on known protected species and/or archaeological resources will be implemented but at no time will a confirmed UXO item be left on-site. For "mag and flag" geophysics conducted along the Area K bluff face, excavation areas will be immediately restored to their original condition to avoid further exacerbating the erosion problem plaguing the area.

9.2.5 If potential cultural artifacts are encountered during intrusive investigation, excavation will cease and USAESCH will be notified.

9.3 APPROACH FOR ENVIRONMENTAL RESOURCE IDENTIFICATION

Environmental resources that may be present and possibly impacted by the project activities at the Camp include wetlands, protected species, aquatic habitats, other known sensitive habitats (natural areas, preserves). Parsons has requested this information from the New York State Parks, Recreation, and Historic Preservation Field Services (Parks Dept.) and the New York State Department of Environmental Conservation (NYS DEC). Means of mitigating potentially adverse impacts on these resources will include: (1) literature review/GIS mapping of sensitive resources; (2) establishment of meandering path/grids to avoid sensitive resources; and (3) intrusive-phase assessments.

9.3.1 Literature Review/GIS Mapping of Sensitive Resources

9.3.1.1 Parsons is reviewing all available information regarding the following resources within the project site, as required by the SOW:

- Endangered and threatened species;
- Wetlands;
- Cultural resources;
- Vegetation that could potentially be removed; and
- Compliance with ARARs.

9.3.1.2 Information sources included:

- NY State Parks Dept.;
- NYS DEC;
- Environmental Protection Agency (EPA);
- ASR for the former Camp Hero;
- USGS 7.5 minute topographic maps;
- Cashin Reports;
- Available aerial photographs; and
- Other sources, including previous OE/UXO investigation reports.

9.3.1.3 In order to comply with the ARARs for this project, data requests were sent to NY State Parks Dept. and NYS DEC. Some of the historical structures at the former Camp [World War II (WWII)-era batteries, former recreation hall and fire control station resembling cottage] are on the National Register of Eligible Structures. General information on protected species at the former Camp Hero was obtained from the EPA. This information includes all the species listed in the New York EPA database for former Camp Hero lands. The databases for each do not differentiate between the selected AOI's and the entire Camp. The EPA identified the following endangered/threatened/rare species for the Camp land: American burying beetle, golden dock, swamp pink, rose coreopsis, sandplain gerardia, black crowberry, grassleaf ladies' tresses, salt-marsh spikerush, meadow horsetail, black-edge sedge, meadow horsetail, Nantucket juneberry, and crested fringed orchis. .

9.3.1.4 The ASR identified the early historic sequence for the Montauk area of New York. Revolutionary War and War of 1812 American and British warships reportedly used the "Montauk Bluffs" for firing practice with cannons. Teddy Roosevelt and his Rough Riders camped in the Fort Pond Bay area of Montauk. Two reconnaissance blimps were stationed at a hangar adjacent to the current Montauk Tower at a Navy observation post. From 1921 to 1923, thousands of soldiers from Regular Army, National Guard, and Citizen Military Training corps Field Artillery units camped and trained in the Montauk area. Commencing in 1936 and continuing through the 1970s, Army Air Corps planes conducted bombing target practice on an island off of Montauk Point known as Gardiners Point. In 1942, the Department of the Navy built a facility on Fort Pond Bay to develop and test torpedo propulsion systems.

9.3.1.5 No known jurisdictional wetlands exist at former Camp Hero. However, a wetland was identified in the field in Area H based on field indicators (i.e., vegetation, signs of wetland hydrology). This area will be avoided.

9.3.2 Establishment of Meandering Paths/Grids to Avoid Sensitive Resources

9.3.2.1 Every effort will be made to avoid protected species or other sensitive resources during brush clearing along the meandering paths and within grids.

9.3.2.2 Geophysical surveys and/or intrusive excavations and sampling activities will not be performed in the identified wetland.

9.3.2.3 Archaeological surveys of meandering paths/grids will not be conducted. If an archaeological resource is discovered, meandering paths/grids will be relocated in order to avoid impacting these resources.

9.3.3 Intrusive-Phase Assessments

9.3.3.1 Areas in lands which intrusive activities are proposed could impact protected species. Since meandering paths will not be located in wetlands, no impacts on these habitats will occur during the intrusive phase.

9.3.3.2 Results of intrusive site investigations will be recorded in field notebooks, and photographs will be taken as necessary to document observations of species or suitable habitats. If protected species are identified, Parsons will evaluate the surrounding area to recommend relocation of investigation activities, if possible. All proposed mitigation measures will be coordinated with appropriate State and/or Federal agencies.

9.3.3.3 Archaeological investigations will not be conducted for the intrusive phase of the investigations for purposes of safety. Archaeological investigations during this phase would require excavation of materials and disturbance of soils, which cannot be conducted within areas where known OE/UXO exists for purposes other than removal and disposal of these materials.

9.4 IMPACT MITIGATION MEASURES

Various measures will be used to mitigate cultural and sensitive environment impacts. This Subsection defines these measures according to the requirements specified in the SOW.

9.4.1 First Level Mitigation – Placement of Meandering Paths and Grids

The first level of mitigation will be to avoid placement of meandering paths and grids in sensitive areas. This goal will be achieved by mapping sensitive aquatic, biological and archaeological resources using a GIS, and placing preliminary meandering paths and grids in non-sensitive areas. Meandering paths and grids will be placed in upland areas that do not impact these resources.

9.4.2 Second Level Mitigation Measures – Activities within Transects and Grids

The following measures will be taken within meandering paths and grids designated for geophysical survey:

- The amount of brush cutting in meandering paths and grids will be kept to the minimum amount necessary to conduct the geophysical surveys. However, complete clearance of Area H is currently proposed. No brush clearance of Area A will be necessary and only limited brush clearance of Area K (upper bluff) is planned. Areas that receive brush clearing treatment will be allowed to revegetate naturally after field survey activities are completed. Ordnance excavation activities will not disturb local drainage patterns.
- Biological surveys of each meandering path and grid will not be conducted. However, a survey of selected intrusive investigation sites may be conducted in order to mitigate potentially adverse impacts on protected species. Prior to intrusive investigations, a qualified biologist may conduct a visual inspection of a specific area if known sensitive resources are nearby. For Federal species, this will require formal consultation since Federal law requires this for situations involving a "taking" of a Federally listed species. For State-listed species, a decision will be made in the field that will minimize impacts on that species. For example, some plants can be moved. Specific recommendations will be made at time of the surveys. However, it is very unlikely that this situation will arise since the intrusive plots to be investigated are a small fraction of the total land area being investigated, and sensitive habitats will have been avoided early on in the meandering path/grid selection process.
- Field archaeological assessments will not be conducted for any phase of the project. The placement of grids and the meandering path geophysical survey method will not impact any known resources. The GIS will be used in the field to avoid these resources in selection of the location of the meandering path/grids. Further archaeological investigations cannot be performed on OE/UXO sites during the intrusive phase for safety reasons.
- If significant mitigation of any other type is required, it will be accomplished by USAESCH and CENAN.
- Damage to trees, shrubs, and the native wildlife habitat will be minimized to the greatest extent possible. Where practical, area restoration will be conducted. However, the areas receiving brush clearance cannot be restored to their original condition. The natural native vegetation will be allowed to complete the restoration over a period of time.
- All soil removal will be placed in the vicinity and once actions are complete, the soil will be returned to the area from which it came. If needed, fabric silt fencing will be installed to adequately control erosion problems. If necessary, diversion dikes and ditches will be installed to control sediment migration. The area of soil exposed at any given time during soil disturbance will be kept to a minimum. Spoils piles will be covered with plastic/tarp to minimize any soil run-off.

- During ordnance removal activities, soil may be displaced by intrusive excavation of small areas (typically 2 ft. by 2 ft. or less). All excavations will be restored by backfilling with the displaced soil. Each site will be regraded to its former condition so that local drainage is not modified. Backfilling and regrading will be accomplished manually with shovels and rakes.
- Any solid waste material (drinking water bottles, food containers, or other material) generated during the geophysical surveys and/or intrusive phases will be stored in plastic bags and disposed of at the motel where the team is staying.
- Excavations in the intrusive phase will typically be less than 2 ft. by 2 ft. areas and brush clearing will not produce bare areas of soil. Therefore, dust control will not be required for this project.
- All materials used for the geophysical and intrusive surveys will be stored either in a locked vehicle or the motel rooms where the team is staying during the field investigations.

9.5 NEPA DOCUMENTATION

All work will be performed in accordance with federal NEPA requirements.

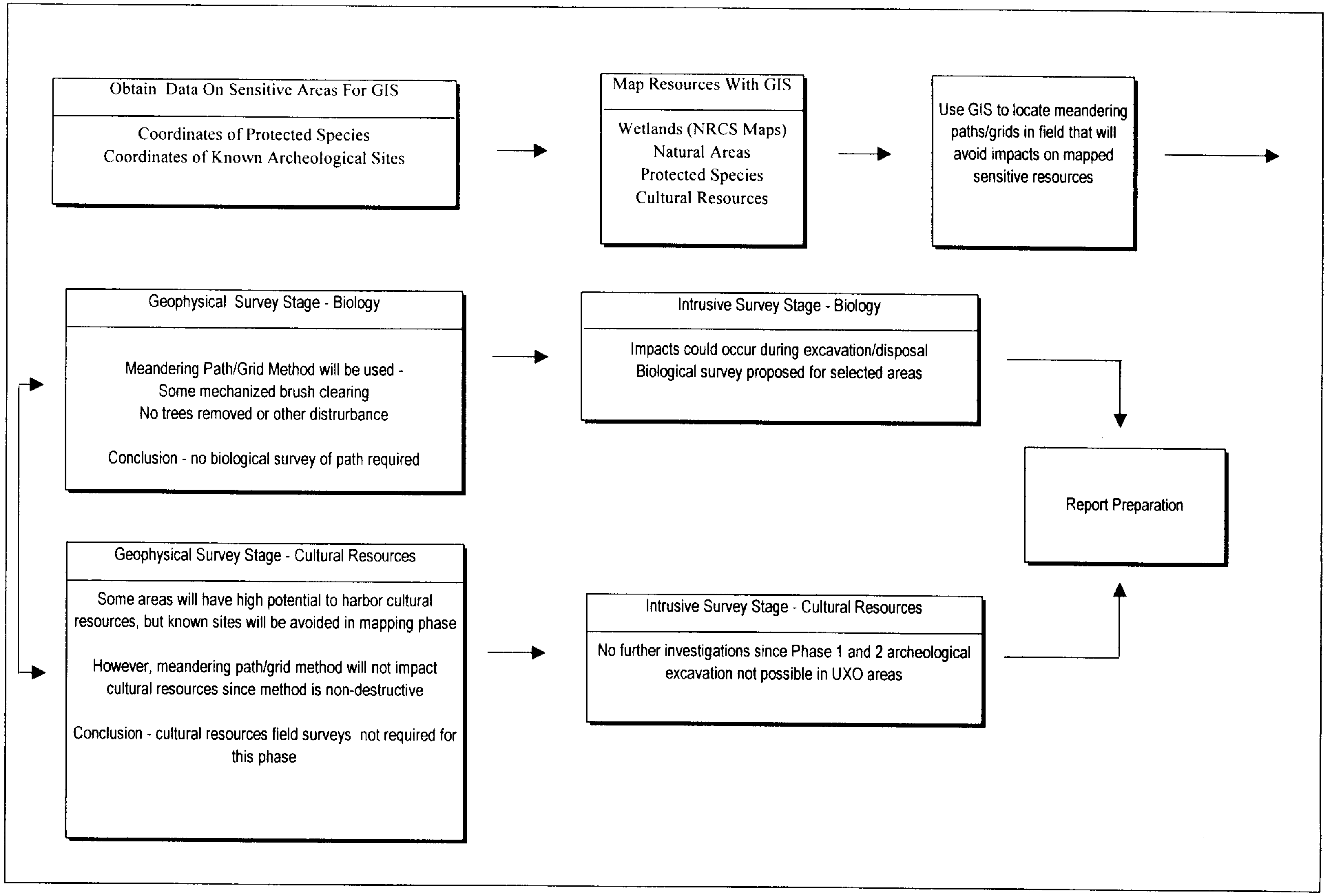


Figure 9.1 Flow Process For Minimization of Environmental Impacts at the Former Camp Hero

SECTION 10
DATA MANAGEMENT PLAN

10.1 INTRODUCTION

This Data Management Plan describes how the project work will be managed and accomplished. This effort will be executed through a series of thirteen tasks as presented in the SOW (Appendix A) and will be performed in accordance with applicable USAESCH DIDs (Appendix G). Each task is outlined in Section 5, Scope of Work by Task.

10.2 ORGANIZATION AND RESPONSIBILITIES

Successful completion of this project requires the cooperation and coordination of a wide variety of government entities as well as civilian contractors. Table 3.1 identifies the key project team members for the former Camp Hero EE/CA project. Table 10.1 provides a summary of responsibilities for each of the entities involved in this project.

10.3 COMMUNICATIONS

10.3.1 Communications for this project will generally flow along the lines established by the organization depicted previously in Figure 3.1. All communications between Parsons and the USAESCH and/or CENAN will primarily be directed through the respective PMs or the Contracting Officer at USAESCH. Communication directly between Parsons and other government entities associated with this project will only occur when directed by USAESCH.

10.3.2 All primary correspondence will be sequentially numbered. Monthly reports of progress will be prepared and provided to the USAESCH PM, with copies of the cover letter provided to the Contracting Officer.

10.3.3 Parsons will utilize a dedicated Internet Web page to disseminate information to the project team. This Web page will be updated periodically with new information about the project and will be used to post copies of monthly reports, documents, and other correspondence as desired by USAESCH. Some of the access will be password protected as determined necessary by USAESCH. Access to the Web page will be gained through the Internet at http://www.projecthost.com.

10.4 RECORDS MANAGEMENT

10.4.1 Hard copies of primary records for this EE/CA will be retained in the project files located in the Document Control Center in the Parsons Atlanta, Georgia office located at 5390 Triangle Parkway, Norcross, GA 30092. Such records will include the DO and any modifications, correspondence including meeting minutes and monthly reports, draft submittals, responses to comments and final submittals, and correspondence received from USAESCH or other agencies. Electronic versions of working products will be retained within the Parsons Atlanta network server. Access to all servers are password controlled. Historic records and documents, including ASRs, previous study reports, and related items will be retained in working files located in the Parsons ES PM's office. Master GIS information will be retained on the Atlanta GIS server during the course of the project. Access is limited by password to only those individuals manipulating the data. Copies of these data will be provided on CD-ROM as required by the SOW.

Table 10.1 Project Responsibilities

Organization	Responsibility
U.S. Army Corps of Engineers, New York District	Serves as the USACE life-cycle PM for conduct of the EE/CA and funding agency. Reviews and approves plans and reports prepared for the EE/CA as well as coordinates and secures ROE from NY State Parks Department and Montauk Lighthouse Commission.
U.S. Army Corps of Engineers, Huntsville Center	Serves as the lead technical agency for conduct of the EE/CA. Reviews and approves plans and reports prepared for the EE/CA. Coordinates government support to Parsons. The USAESCH may also provide on-site safety specialists during the site investigations.
Parsons, Inc.	Prepares plans and implements field investigation activities for the EE/CA. Prepares the EE/CA Report and the Action Memorandum. Provides support at public meetings and provides administrative support and reporting as required by USAESCH. Parsons will provide for implementation of the geophysical surveys, sampling and other field tasks as specified in this WP.
USA Environmental, Inc.	OE subcontractor to Parsons. Provides manpower and equipment to conduct intrusive investigations into suspect areas. Provides on-site UXO support as needed, including the handling and destruction/disposition of any OE items found.

10.4.2 During field efforts, records will be maintained in the project field office with copies delivered weekly to the project files in Atlanta. Following completion of the fieldwork, all files will be delivered to the project files in Atlanta. Such records will include geophysical logs, geophysical data, daily summary sheets, and related field and daily logs.

10.5 FORMAT AND CONTENT OF ENGINEERING REPORTS

Engineering reports presenting all data, analyses, and recommendations will be prepared and submitted in accordance with the SOW and USAESCH DIDs. All plans and reports will be submitted to the distribution list provided in the SOW and reprinted in Subsection 3.5.1.

10.6 MONTHLY STATUS REPORT

Parsons will prepare and submit a monthly status report describing the work performed since the previous report, work currently underway and work anticipated (DID OE-080). The report will state whether current work is on schedule. If the work is not on schedule, Parsons will state what actions are anticipated in order to get back on-schedule. The report will be sent by regular mail by the l0th day of the following month. Subsection 3.4.1 of this WP outlines the project variables and tracking associated with the monthly report.

10.7 SCHEDULE

The anticipated schedule for this project is provided as Appendix D.

SECTION 11
QUALITY CONTROL

11.1 GENERAL REQUIREMENTS

This QC Plan outlines the methods and procedures that will be used during this EE/CA project, addressing equipment testing and calibration, QC inspection and audits, and data reduction and reporting. The QC Plan has been written to encourage positive communication throughout the Parsons project team and has been prepared in accordance with DID OE-005-11. It is also intended to foster clear communication between Parsons and the USAESCH.

11.2 INSTRUMENT AND EQUIPMENT TESTING

11.2.1 Testing Procedures and Frequency. Instruments and equipment used to gather and generate environmental data will be tested with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications.

11.2.2 At least twice daily, all geophysical instruments will be function checked by one of two methods. One method is performed by measuring the instrument response over a daily test grid (typically the former Prove-Out test grid) and comparing that response to its standard response recorded prior to being placed in service. Standardization data will be reviewed immediately following the standardization checks by the field geophysical team as well as later by the Geophysical Coordinator. A QC problem will be indicated by a degradation of 25 percent or more of the signal to noise ratio when operated over the standard. This ratio is the maximum signal amplitude measured over the standard to the established background "noise" signal amplitude. Use of equipment that does not meet the QC standard response will be discontinued and the equipment will be repaired or replaced. The second function check is performed by placing a small metallic test object on the ground in a standard orientation and centered beneath the equipment sensors. The instrument's response is recorded and compared to its initial response measured over the same object prior to being placed in service. For this project, metal tent stakes will be used as the test objects. If the response in the field is greater or less than 25 percent of the initial response, the instrument will be repaired or removed from service.

11.2.3 Testing, repair, or replacement records will be filed and maintained by the Geophysical Coordinator and USA SUXOS and may be subject to audit by the QC Manager. Testing records of the field instrumentation will be filed with the Parsons PM in Atlanta after the fieldwork is completed.

11.2.4 Field Instruments. All geophysical survey instruments will be function checked twice daily as described above. The operational and test procedures will conform to manufacturer's standard instructions. This field test will ensure that the equipment is functioning within the allowable tolerances established by this project.

11.3 GEOGRAPHIC INFORMATION SYSTEM QUALITY CONTROL PROCEDURES

11.3.1 The accuracy of the geographic analysis is only as good as the underlying data being analyzed. Certain guidelines are necessary to ensure data quality after it has been entered into the system. The QA guidelines presented in this section pertain only to GIS data that has been loaded into the system.

11.3.2 Potential data problems include source data errors, data entry errors that can be corrected, data editing errors that can be corrected, data corruption errors that can be prevented, and user errors that can be anticipated.

11.3.3 Quality control measures will be implemented to ensure that the data is within acceptable spatial accuracy parameters. The spatial accuracy of the intrusive investigative data (OE contamination locations) will be determined by surveys of the site conducted in accordance with the NAD83 referenced to the New York State Plane Grid System.

11.3.4 Geometric Accuracy. After all coordinate information for meandering paths (or grids) and OE contamination locations are verified, the geometric accuracy of the geographic features will be checked. This process will eliminate free end points, unclosed polygons, and dangles. After this is complete, corners and endpoints will be examined for coordinate accuracy. Certain geographic features may be incorrectly located. When this is detected, the source data will be examined and the correct location and place points will be determined in the GIS data set to represent identifiable elements of the feature such as corners or intersections. To prevent errors from occurring during the editing process, as previously stated, original files will be backed up prior to making edits.

11.3.5 Geographic Accuracy. One of the strengths of GIS is the accuracy with which geographic phenomena can be mapped. However, this strength can become a weakness if the overall spatial accuracy of the data is not clearly indicated. Whereas Microstation can measure to within a fraction of an inch, if the accuracy of the data is limited to ±5 feet (as an example) then ESRI Arc View will be used. Standard situations to be examined in all GIS coverage include evaluating the graphical accuracy of the geographic features. The GIS coverage should be evaluated to determine if the geographic features are graphically correct. If they are not in accordance with the data dictionary, they should be corrected. After such corrections, it is generally a good idea to rebuild topology for the coverage(s) affected by the operation. All such corrections will be noted in a GIS Operations Log by the contractor.

11.3.6 Data Loss and File Corruption. There are several programs that manipulate the various files used by the GIS and relational database. Due to hard disk limitations, Random Access Memory (RAM) limitations, or human error these programs occasionally crash, and the files being manipulated by these programs are corrupted among other problems. To prevent data loss, these files shall be backed up.

11.3.7 Schema Quality Control. The database values are the other part of the data structure that require quality control. The database is generally treated as a single file with unique properties. Quality control procedures will be developed by the GIS operator to ensure that the data contained therein is accurate and usable. Before editing any database tables, the tables will be unloaded for backing up the schema. Another safeguard is to use a reference file of how data entry is performed.

11.3.8 The GIS operator will develop and use a checklist of standard quality control steps. For example, another approach to fixing errors is to run a program that edits the ASCII data export file.

11.4 DATA REDUCTION, VALIDATION, QUALITY CONTROL AND REPORTING

11.4.1 Data Reduction

Any raw data from field measurements (including geophysical and intrusive data collection activities) will be appropriately recorded and notated in the field notebooks. If the data are to be used in the project reports, they will be reduced and summarized, and the reduction method will be documented in the report. Data reduction and analysis methodologies will be dependent upon those geophysical methods selected. Data reduction requirements will be conducted in accordance with USAESCH guidance and applicable DIDs. Unprocessed geophysical data will be provided to USAESCH for a review in a reasonable time after collection, generally within 36 hours.

11.4.2 Data Validation and QC

Validation of geophysical data will be performed by actually excavating geophysical anomalies. Post-excavation data review will be performed by reexamining 10 percent of the investigated anomalies per transect and rechecking the excavated location. Data review will be performed on both the geophysical surveys and the intrusive investigations.

11.4.3 Quality Control of Geophysical Data

11.4.3.1 Prior to beginning work, teams will sweep a controlled area (typically the former Geophysical Prove-Out Grid) of known magnetic anomalies. The results of the field test procedure will be recorded in the logbook. During construction of the test grid, a 100 percent electronic sweep of the grid was conducted to determine existing anomalies (Parsons ES, 2000d). The grid was seeded with inert ordnance items indigenous to the former Camp Hero at various depths. Readings were taken at locations atop the seeds and were recorded in a logbook. The locations of all existing and seeded anomalies were recorded on the test grid map. During the EE/CA field investigation, the geophysical survey teams will conduct an initial sweep of this test grid (or similar) and record their instrument readings for each anomaly. These readings will serve as a baseline reading. Prior to beginning each day's work, the geophysical survey teams will re-check their instruments over a subset of anomalies in the test grid. An instrument reading differing more than 25 percent from the baseline reading may suggest equipment failure or procedural error (see Subsection 11.2).

11.4.3.2 Quality control surveys will be performed in site grids and meandering paths after intrusive operations have been completed to evaluate the effectiveness of the geophysical survey instruments at the Camp and to ensure data integrity for subsequent SRE. The methodology for performing the QC survey will vary between the two geophysical approaches that will be conducted at the Camp. For each grid, a 10 percent resurvey will be conducted using the same technique and instrument used for the initial survey. The 10 percent area will be contiguous and adjacent to one of the grid corner stakes or at the grid center (thus 5 choices). The onsite Parsons QC Specialist will use his discretion to select which portion of a given grid will be resurveyed, unless directed otherwise by USAESCH. The Parsons QC Specialist will provide direct oversight of the QC effort. Prior to conducting QC on a given grid, the Geophysical Coordinator will be consulted to determine if all of the selected anomalies were excavated in the grid or if any anomalies were intentionally deleted from the investigation.

11.4.3.3 For geophysical meandering paths, the QC surveys will be modified since the path of the specific meandering paths will not actually be "established". Therefore, the locations of 10 percent of the excavated anomalies will be revisited to ensure that not only was the anomaly selected by the Geophysical Coordinator removed but also that the item recovered was reasonable for the magnitude of the signal recorded on the Anomaly Dig Sheet. The area within at least a five foot radius of the excavated location (reacquired by Parsons and pin-flagged) will be checked. The maximum amplitude responses remaining will be recorded and checked against the original anomaly amplitudes. If it is determined that the anomaly intended for intrusive investigation remains, the meandering path will have "failed" and will need to be resurveyed.

11.4.3.4 A failure will be constituted by the discovery of a UXO or intact OE item as a result of the QC survey. If a failure occurs, the grid to meandering path will be resurveyed and the root cause of the failure will be investigated. Corrective actions will be implemented to preclude repetition of the QC failure.

11.4.4 Data Reporting

11.4.4.1 For all anomaly analyses and review, at a minimum, the GIS data packages/maps will show traceability to the anomaly location and will contain the following information required for data validation:

- Case narrative describing any deviations from the normal anomaly evaluation procedures required and the anomalies affected;
- Anomaly location identifications;

- Geophysical data set identifications;
- Individual parameter results; and
- Summary of all GIS quality control procedures.

11.4.4.2 As a part of the data evaluation process, the GIS operator will confirm that its documentation is complete, paginated, and legible; qualitative identifications are accurate; calculations are accurate; and the results are expressed in the appropriate units. A copy of the OE/UXO data as displayed on the GIS anomaly maps will be checked for completeness and compliance. In addition, the data will be validated and any results not in compliance with established QC criteria will be identified. The effect of any noncompliance on the usability of the data will also be discussed.

11.4.4.3 Parsons will take the data packages generated by the GIS and check them for completeness. The evaluation process will include:

- The anomaly's location with respect to confirmed OE/UXO;
- The detection instrument readings (e.g., the electronic signature);
- Subsurface conditions and proximity to sources of interference that affect the sensitivity and reliability of the detection instrument; and
- Field observations and comments by the geophysical and intrusive investigation personnel.

11.5 INTERNAL QUALITY CONTROL PROCEDURES

11.5.1 Internal Quality Control

The overall effectiveness of the QC program for this project depends on the geophysical survey, intrusive investigation, and the GIS activities being conducted in accordance with a program that ensures the precision and accuracy of analyses by detecting errors and preventing recurrences or measuring the degree of error inherent in the activities and procedures. A field test grid (typically the former Prove-Out grid) will be used during this project. The routine GIS QC procedures to be employed during the project are discussed in the Subsection 6.6.10.

11.5.2 GIS Quality Control Checks

Quality control will be conducted for all GIS hardcopy and electronic deliverables. At a minimum the following measures will be conducted:

- Standard coordinate systems will be used and verified throughout the project.
- Suitable scales will be used and data will be verified with standard map references.
- Electronic templates will be used to minimize errors and ensure consistency in data, naming, and methodology.

- Geometric features will be reviewed for proper topology and geographic position. Corrections will be logged.
- All deliverables will reviewed according to a standard checklist and peer reviewed to ensure accuracy and conformance to the Tri-Services CADD/GIS Standard.
- Electronic data will be backed up periodically.
- Up-to-date Metadata will be created and compared with the corresponding deliverables.
- Programs will be properly formatted and documented. Modular programming will be employed to ensure consistency and ease of reuse.
- Databases will include automatic data input checking routines. Fifteen percent of the data will be manually verified.

11.6 PREVENTIVE MAINTENANCE

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendation and written procedures developed by the operators.

11.6.1 Maintenance Procedures

The manufacturer's written maintenance schedule shall be followed to minimize the downtime of the measurement system. It will be the operator's responsibility to adhere to this maintenance schedule and to arrange any necessary and prompt service as required. At a minimum, equipment used daily will be cleaned at the end of each workday and kept in good operating condition. Qualified personnel shall perform Service to the equipment instruments, tools, etc.. In the absence of any manufacturers recommended maintenance criteria, a maintenance procedure will be developed by the operator based upon experience and previous use of the equipment.

11.6.2 Maintenance Records

Logs shall be established to record and control maintenance and service procedures and schedules. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. Records produced shall be reviewed, maintained, and filed by the geophysical equipment operators and/or UXO technicians when this equipment is used at the site. The Parsons QC Manager can audit these records to verify complete adherence to these procedures.

11.6.3 Equipment Spare Parts

An extra battery pack for each type of geophysical instrument shall be on-site at all times. Due to cost considerations, a back-up geophysical instrument will not be kept on site. However, arrangements shall be made with a equipment vendor so that replacement equipment or any spare parts needed can be delivered to the site by overnight delivery or equivalent means.

11.7 CORRECTIVE ACTION

11.7.1 The following procedures have been established to assure that conditions adverse to quality such as malfunctions, deficiencies, deviations, and errors are promptly investigated, documented, evaluated, and corrected.

11.7.2 **Adverse Conditions and Corrective Actions**. When a significant condition adverse to quality is noted in the field or at other subcontractor locations, the cause of the condition will be determined and corrective action taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned will be documented and reported to the Parsons SM and PM, QC Manager, and involved subcontractor management. Implementation of corrective actions will be verified by documented follow-up action. All project personnel have the daily responsibility to promptly identify problem areas, solicit approved corrective actions, and report any condition adverse to quality.

11.7.3 Corrective actions will be initiated at a minimum:

- When predetermined acceptance standards are not attained;
- When procedures or data compiled are determined to be faulty;
- When equipment or instrumentation is found faulty;
- When quality assurance requirements are violated;
- As a result of system and performance audits; and/or
- As a result of management assessment.

11.8 QUALITY CONTROL REPORTS

11.8.1 During the project, the QC Manager will prepare at least one QC report to discuss:

- The periodic assessment of measurement data accuracy, precision, and completeness; and
- Significant quality assurance problems and corrective actions taken.

11.8.2 In addition, the Parsons PM will receive periodic updates concerning QC in the field or with the GIS. A final report prepared upon completion of the project may include a separate data assessment report summarizing data quality information.

11.9 OVERALL QC MANAGEMENT

11.9.1 The overall responsibility for implementing QC activities for this project is the Parsons QC Manager. Responsibility for field OE/UXO operations QC rests with the Parsons QC Specialist (QCS).

11.9.2 The Parsons PM will have overall responsibility for assigning QC responsibilities and ensuring that QC programs are implemented in accordance with the USAESCH SOW.

11.9.3 Quality Conformance Inspections (QCI) will be conducted as outlined in the QCI Schedule, Table 11.1. The QCS has the latitude to modify this schedule based on the quality of the work being performed and his presence on site.

Table 11.1
QCI Schedule
Former Camp Hero EE/CA
(To be performed by the Parsons QC Specialist, when he is on-site.)

Tasks	Daily	Weekly	Bi-Weekly	As-Needed	100%
Personnel Qualifications					X
Accident-Incident Reporting					X
Search Effectiveness					X
Turn-in of Recovered OE-Related Scrap	X				
Preventive (Operator) Maintenance	X				
Safety Inspections		X			
Personal Protective Equipment		X			
Medical Support		X			
Communication Effectiveness		X			
Explosives Storage and Accountability		X			
UXO Transportation		X			
Surveying & Mapping		X			
UXO Final Disposal		X			
Tasks	**Daily**	**Weekly**	**Bi-Weekly**	**As-Needed**	**100%**
UXO/OE Accountability		X			

Fire Protection- Prevention		x			
Project Administration		x			
Safety & Health Program			x		
Management of GFP/CAP			x		
Currentness of WP/SSHP			x		
Visitor Briefings				x	
Site-Specific Training				x	
Hazard Assessment				x	

11.10 FIELD INVESTIGATION DOCUMENTATION

11.10.1 Daily Field Activity Records

Field activity logbooks will be maintained daily, if applicable, and all entries will be recorded in ink. All personnel will use bound and numbered field logbooks with consecutively numbered pages. The following logs will be maintained.

11.10.1.1 Daily Activity Log

- Date and recorder of field information;
- Start and end time of work activities including breaks, lunch, and down times;
- Visitors;
- Weather conditions;
- Relevant events;
- Important phone calls;
- Changes from approved or planned work instructions; and
- Signature of the Parsons SM.

11.10.1.2 Safety Log

- Date and recorder of log,
- Tailgate safety briefing (time conducted and by whom),
- Weather conditions,
- Significant site events relating to safety,
- Accidents,

- Stop work due to safety,
- Safety audits, and
- Signature of the Parsons SM indicating concurrence.

11.10.1.3 Training Log

- Date and recorder of log;
- Nature of training (personnel will complete the Parsons and the UXO documentation of training form);
- Visitor training; and
- Signature of both the Parsons SM and The USA SUXOS indicating concurrence.

11.10.1.4 QC Activity Log

- Date and recorder of log;
- Equipment testing;
- Equipment monitoring results;
- QC audits;
- Nonconformance reports; and
- Signature of both the Parsons SM and the USA SUXOS indicating concurrence.

11.10.1.5 Ordnance Accountability Log

- Date and recorder of log;
- Assigned identification number;
- Type, condition, and location;
- Disposition; and
- Signature of both the Parsons SM and the USA SUXOS indicating concurrence.

11.10.2 Photographic Records

Site personnel will maintain photographic records. Either digital photographs or 35-mm color prints will document significant activities. Photographic records will be used to supplement information recorded in the daily activity logs, including photographs of equipment prior to use, typical ordnance items, and the condition of AOIs prior, during, and after any activity. Hard copy photographs will be maintained in a photograph logbook with appropriate labels identifying the negative and a complete description of the photograph subject.

11.10.3 Working Maps

Working maps or sketches of the AOIs will be used to document ordnance locations during excavation and removal activities. As UXO are located and identified, the assigned technician will record (on the working map) the location and corresponding log entry number in the Ordnance Accountability Log. If a large number of OE/UXO items are found, such as a burial site, the area will be marked on the working map along with the total number of OE/UXO items found at that site. The status of each individual transect or grid will be maintained on Anomaly Dig Sheets.

11.10.4 Records of Inert Ordnance Items

11.10.4.1 Inert ordnance items and nonhazardous scrap will be disposed of through a local civilian scrap yard at no cost to the government. Appropriate documentation will be obtained from the scrap dealer as instructed by USAESCH.

11.10.4.2 All OE scrap transferred to a scrap dealer will be accomplished by signing DD form 1348-1A. In addition, Parsons and USA will prepare a certificate to be signed by the USA UXOQCS (or Technician III or higher) and verified by the SUXOS. The certificate will state the following:

"This certifies and verifies that the AEDA residue, Range Residue and/or Explosive Contaminated property listed has been 100 percent properly inspected and to the best of our knowledge and belief, are inert and/or free of explosives or related materials."

________________________________ Date ________________

UXOQCS

________________________________ Date ________________

Senior UXO Supervisor

11.10.5 Field Office/Communications

Field QC procedures will include establishing field office entry requirements and communication protocols. A mobile field office will be established within the NY State Parks Department property (adjacent to the east gate). All official visitors will report to the project field office to sign in. No official visitors will be allowed to visit any portion of the AOIs without an escort. All official visitors will be announced to the project team via a two-way radio if the visitors are touring the actual site work areas. All internal communications will be by use of Motorola MTX portable and base station equipment, or equivalent. All official external communications shall be via cellular telephone or landline from the field office.

11.11 USA FIELD INVESTIGATION QC PROCEDURES

11.11.1 QC Objectives

This subsection presents the project field QC requirements for the UXO Subcontractor (USA). The QC procedures described in this subsection will be used for all fieldwork performed during the EE/CA at the project site. These procedures were designed to manage, control, and document performance of work efforts. This subsection of the QC Plan will achieve the following objectives:

1. Identify QC procedures and responsibilities for UXO/OE investigation.
2. Ensure USAESCH and Parsons notifications as required by the SOW.
3. Document the quality of work efforts via audits and independent staff reviews of deliverables.
4. Ensure the development of an appropriate ordnance accountability ledger and appropriate OE chain of custody and disposal.
5. Ensure data integrity through implementation of data management QC procedures.
6. Ensure data precision through implementation of field equipment maintenance and use procedures.
7. Outline an inspection system.

11.11.2 Corrective Action

When a condition adverse to quality is noted at the main office, project site office, or field, the cause of the condition will be determined and immediate corrective actions will be implemented. Quality improvement measures will also be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action will be documented and reported to the USA PM, SUXOS, and Parsons Quality Specialist. All project personnel have the responsibility, as part of their work duties, to promptly identify, solicit approved corrections, and report conditions adverse to quality.

11.11.3 USA Project Manager Responsibilities

The USA PM has the inherent responsibility of ensuring that all UXO-related tasks are implemented in accordance with the WP.

11.11.4 Field Data Management QC

The SUXOS is the onsite field data manager and will be responsible to the USA PM for tabulating all data collected or produced by removal action teams, and placing the data under the custody and control of the project data management system.

11.11.5 Equipment Checkout and Receiving Inspections

11.11.5.1 Equipment pre-operation procedures will be observed by the Parsons QC Specialist and recorded in the daily log. If equipment field checks indicate that any piece of equipment is not operating correctly and field repair cannot be made, the equipment will be tagged and removed from service. The SUXOS will be notified and a request for replacement equipment will be expedited. Replacement equipment will meet the same specifications for accuracy and sensitivity as the equipment removed from service.

11.11.5.2 Specific procedures for QC checks of magnetometers include the following before, during and after maintenance checks:

1. Before operation checks shall include testing on the former Geophysical Prove-Out test grid.
2. During operation, checks shall include frequent battery checks.
3. After operation checks shall include removal of the batteries and cleaning of equipment.

11.11.5.3 Specific procedures for before, during and after checks of radios and cellular phones include the following:

1. Before operation communication checks shall be conducted to insure the equipment is operating correctly.
2. During operation, communication checks at established intervals, shall be conducted to assure the equipment is operating properly.
3. After operation maintenance shall include cleaning of equipment and turning off before inserting into the battery charger.

11.11.5.4 When Contractor Acquired Property (CAP) or Government Furnished Property (GFP) is received, it will be examined to detect damage in transit, for completeness and to insure that the equipment is adequate to perform its intended task. Receiving inspections will also include a function test if applicable. CAP and GFP are considered government property. Inventories of CAP and GFP will be performed by the designated individual (SM or SUXOS). The QCS will conduct audits to verify that the appropriate procedures are being followed.

11.11.6 Nonconformance/Corrective Action Reports

Any nonconformance to WP or contractual requirements will be documented. Nonconformance includes, but is not limited to, the following items:

1. Delivery of items or services that do not meet the contractual requirements by USA and any of its subcontractors.
2. Errors made in following work instructions or improper work instructions.
3. Unforeseeable or unplanned circumstances that result in items or services that do not meet quality, contractual, and/or technical requirements.
4. Technical modifications to the project by individuals without responsibility and authority.
5. Errors in craftsmanship and trade skills.

SECTION 12
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SCOPE OF WORK
FOR
ORDNANCE AND EXPLOSIVE (OE)
ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
AT
CAMP HERO, MONTAUK, NEW YORK
(Project Number CO2NY002404)
A FORMERLY USED DEFENSE SITE
7 November 2000

1.0 BACKGROUND AND OBJECTIVE

1.1 The objective of this delivery order is for the Contractor to prepare an Engineering Evaluation/Cost Analysis (EE/CA) report. The report shall allow and document meaningful stakeholder participation that

- characterizes ordnance and explosives (OE) nature, location and concentration.
- provides a description of the OE related problems affecting human use of the site.
- that identifies and analyzes reasonable risk management alternatives.
- provides a convenient record of the process for use in final decision making and judicial review, if necessary.

The Contractor is expected to use geophysical techniques to identify anomalies in the subsurface for subsequent OE sampling. The Contractor shall conduct OE sampling and dispose of any uncovered UXO and dispose of the UXO and other scrap uncovered during the OE sampling effort.

1.2 OE is a safety hazard and may constitute an imminent and substantial endangerment to site personnel and the local population. This action will be performed in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Sections 104 and 121; Executive Order 12580; and the National Contingency Plan (NCP). All activities involving work in areas potentially containing unexploded ordnance hazards shall be conducted in accordance with CEHNC, USACE, DA and DoD requirements regarding personnel, equipment and procedures. 29 CFR 1910.120 shall apply to all actions taken at this site.

1.3 The work required under this Scope of Work (SOW) falls under the Defense Environmental Restoration Program (DERP) and the Formerly Used Defense Site (FUDS) program. Ordnance and Explosives (OE) may exist on property that was formerly owned, used or controlled by the Department of Defense. The framework underlying this response is the National Contingency Plan (NCP).

1.4 Others will accomplish the Archeological Survey to identify potential archeological sites. The Government will provide this survey for the Contractor to consider in preparing the Work Plan. The Contractor shall provide awareness training to all personnel involved with fieldwork, as outlined in the approved Work Plan. The archeological survey includes all areas that will be (or potentially could be) subjected to ground disturbing of any form which may require examination by qualified archeologists (provided by the Government). This will ideally take place prior to any ground disturbing taking into consideration safety issues and approval by the USACE OE Safety Specialist. Note on EECAs, the Huntsville Safety Specialist is not on site full time, only to initiate the field work. The location of archeological sites is confidential. Site locations will be provided to the Contractor for planning purposes. The Contractor will not disclose locations of archeological sites. The contractor shall refer all questions to the New York District PM, Mr. David Brouwer. A Government Archeologist will provide the Contractor with a briefing on cultural resources related to the project area. No Contractor personnel will remove any artifacts or bones from the property subject to penalties under federal law. The Government Archeologist will brief the Contractor accordingly. Archeological surveys may be performed in conjunction with field work performed by the Contractor. Efforts will be made, if safety allows, to re-locate UXO away from archeological sites. If detonation in-situ is necessary, Government Archeologists will examine the area post-disposal to record any possible damage to archeological sites. This site involves resources that are potentially eligible for listing in the National Register of Historic Places. Work shall comply with the National Historic Preservation Act. If any items of a historical nature are found with the exception of UXO, that item will be turned over to the SHPO.

1.5 Others will identify endangered/threatened species of concern. The Government will provide information that identifies areas of concern. The Contractor shall consider this information in preparing the Work Plan. The Contractor shall provide awareness training to all personnel involved with the field investigation.

2.0 INTRODUCTION

2.1 Background. Former Camp Hero site lands are located on the extreme eastern tip of the south fork of Long Island, New York, approximately five (5) miles east of the Village of Montauk. The former site is bounded by Montauk Highway (Route 27) to the north, the Atlantic Ocean to the south, Montauk Point State Park to the east, and an undeveloped nature preserve owned by the state to the west.

On or about 26 August 1941, the Secretary of War determined that a military necessity existed for the acquisition of this site consisting of approximately 469 acres of land. The site was named Camp Hero and was to be used as a harbor defense installation.

Based on this necessity and 1941 Harbor Defenses of Long Island Sound modernization program guidelines, three (3) batteries and supporting facilities were constructed at Montauk Point (Camp Hero). Battery 112 contained two (2) 16-inch casemated guns, Battery 113 contained two (2) 16-inch casemated guns, and Battery 216 contained two (2) 6-inch shielded guns. Support facilities were also constructed consisting of barracks, mess halls, hospital facilities, administrative facilities, a motor repair shop, a recreation facility, sentry boxes, and water supply and sewerage facilities to accommodate 600 enlisted men, 37 officers, and their required equipment.

Projected future use of the former Camp Hero lands by the state includes opening the site for public uses that could include hiking, fishing, and lodging (in the form of cabins for rent). Some of the historic structures may also be renovated for public touring.

2.2 Not used.

2.3 Chemical Warfare Material (CWM). It is not likely that this site would contain Chemical Warfare Materiel (CWM). However, if suspect CWM is encountered during any phase of site activities the Contractor shall withdraw upwind from the work area, secure the site and contact CEHNC.

2.4 Areas To Be Evaluated. (Note, the contractor shall propose additional areas be included if warranted during the course of this work). The areas identified below are to be evaluated under this SOW. Evaluation efforts shall be completed in cooperation with project stakeholders. Project stakeholders include the landowners, the Government, interested regulatory agencies, and others that may be identified prior to work plan finalization. The total acreage for this site is approximately 757,005 acres, which includes a 756,492-acre offshore firing area . The ordnance in the offshore area is not a concern since there is no exposure pathway to anyone at the site. Based on the information contained in the Archives Search Report (Date: February 2000), approximately 461 acres of the remaining 514 acres lack confirmed or potential ordnance presence and no DOD action is indicated. Therefore, areas of confirmed ordnance to be investigated are areas H, K, and possibly A as follows:

1. Area A: 0.03 acres, Former Usage: Fire control/37 mm AAA, Current Ownership/usage: State of New York/state park.
2. Area H: 8.0 acres, Former Usage: Ordnance destruction range, Current ownership/usage: State of New York/state park.
3. Area K: 44.88 acres, Former Usage: Near shore ordnance area, Current Ownership/usage: State of New York/state park.

Total Acreage=52.91 more or less

3.0 SPECIFIC REQUIREMENTS

3.1 (Task 1) – Project Planning, Site Visit & Records Review.

3.1.1 (Task 1a) Site Visit & Records Review
The Contractor shall make a site visit, review pertinent records (see Paragraph 6.0) and interview personnel knowledgeable of site conditions. The purpose of this task is to permit the Contractor's staff with direct project responsibility to gain necessary information about site conditions. It is not intended that this task be a "records locating task " where new information is located or developed. Prior to the site visit the Contractor must submit, for Government approval, an abbreviated Site Safety and Health Plan (ASSHP). A qualified UXO specialist must escort site visitors to areas potentially contaminated with OE. The Contractor shall ensure that the site visit is fully coordinated and that all members of the site visit team maintain compliance with the ASSHP. A site visit letter report shall be provided to the Contracting Officer after the site visit.

3.1.2 (Task 1b) Work Task Proposal
The Contractor shall develop a work task proposal (WTP) to describe and plan the accomplishment of the related activities described in this SOW. Prior to initiating work on any task, the Contractor shall submit, for Government concurrence, a WTP. The proposal shall be submitted for Contracting Officer (CO) for review and concurrence. The WTP shall describe the work to be accomplished, recommendations on approach, coordination, organization, methods, personnel, schedule and estimated budget. The WTP shall identify the various elements of the work plans. The WTP is intended to be a brief description of the Contractor's understanding of the proposed work.

3.2 (Task 2) - Geophysical Test Plot.

The Contractor shall design and construct a test plot at the site to test various geophysical methods and equipment in order to establish the methods, equipment and procedures best suited to the site. This task is for mobilizing, constructing, removing and demobilizing the test plot. All other aspects of testing, evaluating and reporting of the geophysical equipment test shall be considered in 3.7 (Task 7).

3.3 (Task 3) Technical Project Planning.

The Contractor shall prepare a technical project-planning document for this project in accordance with EM 200 – 1 – 2 which can be found on the web at http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm. This effort will be accomplished in four phases. These phases are; Phase I Identify Current Project, Phase II Determine Data Needs, Phase III Develop Data Collection Options, and Phase IV Finalize Data Collection Program. **The goal of this effort is to start the project with all stakeholders agreeing on the end goal.** This task requires the Contractor to schedule and facilitate meetings and provide project worksheets for project team decision points. The Contractor shall provide the following requirements or seek the appropriate input from others. The Contractor shall consider all stakeholder input when developing the project recommendations. The Government will direct the Contractor on any issues not resolved upon task completion. The Government does not expect the length of this document to exceed 30 pages.

3.3.1 Phase I, Identify Current Project & Develop a Conceptual Site Model:
Using whatever past historical information that can be obtained, the Contractor shall identify;

- The decision makers (USACE, land owner(s), regulatory agencies.)
- Project Objectives, which includes the decision makers' perspectives and community needs and interests as it relates or might impact this project.
- Site constraints and dependencies.
- Legal and regulatory constraints.
- Conceptual Site Model (known impact areas, disposal sites, other OE issues; all potential types of UXO expected at the site; geological setting; estimate of maximum probable depth for sampling.)
- Site closeout statement for each land use category or sector as appropriate.

The closeout statement shall consider the current and future land use, current technology can't guarantee a "clean site", incorporate local initiatives, enlist community support, and encourage recurring reviews. The closeout statement may identify more than one process to achieve site closure but must identify decision points associated with each process alternative.

3.3.2 Phase II, Data Needs:
The Contractor shall identify the data need requirements, intended use of the data, and appropriate sampling and analysis methods, and identify data quality objectives for each data type. Some general types of site data include; 1- physical nature of the site, 2- nature and extent of UXO, 3- regulatory framework, 4- demographics and land use. The Contractor must define the data needs, evaluate the usability of existing data, and identify the data gaps that must be filled. Generally this phase must document:

- "Who" needs the data?
- "What" data is needed?
- "What" project objectives will the data help to satisfy?
- "What" are the intended data uses?
- "What" number of samples is required to satisfy the intended uses?
- "What" are the performance requirements?
- "Where" is the priority/area/location/depth of interest?

3.3.3 Phase III, Data Collection Options:
The Contractor shall develop and document data sampling, gathering and analysis strategies. Items that should be presented include sampling strategy constraints, use of probabilistic or non-probabilistic sampling, and whether we intend to use field screening and analysis techniques. Data types and needs should be categorized as screening data or definitive data. Data quality should be defined for each data type that is based upon the intended use of the data and accepted practices. Once the data "world" is defined for the project each data set shall be classified as "basic" (required data), "optimum" (data would facilitate better decisions and is cost effective to gather), and "excessive" (data would be nice to have but may not be worth the cost to gather the data)

3.3.4 Phase IV, Data Collection Program Design:
The Contractor shall present the data collection program requirements as options and schedules with the budget affects for the various options. Other items such as constraints and uncertainties and regulatory factors must be presented. The Contractor must clearly present the "preferred" data collection plan that ties together the data need requirements, data sampling and analysis methods, and the intended use of the data in satisfying the closeout statements established in Phase I.

3.4 (Task 4) - EE/CA Work Plan.
The Contractor shall prepare an EE/CA Work Plan in accordance with DID OE-001. The Contractor shall include the following aspects in Chapter 10 of the work plan.

Quality Control Plan (QCP) and Quality Assurance, the Contractor shall describe the Contractor's Quality Control and the expected Government's Quality Assurance roles and responsibilities for this project. Note that the Contractor is responsible for developing and implementing only the project QCP. The Government will perform Quality Assurance. However, the plan shall describe both activities. The QCP shall specifically address digital data delivered in the OE GIS data standard format with communications, transmissions and receipt by the various participants. A flow chart may be used to identify the data collection, analysis, storage, transfer and QA/QC process to generate the final dig-sheets. The Contractor shall ensure that the corporate quality policy is understood, implemented, and maintained at all levels in the organization. The Contractor shall propose a system to manage, control, and document the performance of these tasks. The Quality Control Plan shall include:

- Location Surveying and Mapping QC,
- Geophysical QC,
- Data QC: digital data (communications; transmissions and receipt), along with all analog data

(administrative; contractual; survey and geophysical field notes).

- GIS System QC.
- Anomaly reacquisition QC.
- Variance of surface & subsurface influence on geophysical data output across the site.

The most critical component in this project is the geophysical data. The Contractor shall perform continuous tracking, checks, representations, adjustments and visualization of the field data daily for quality control and to establish efficient field procedures. In addition a portion (approximately 2 to 4%) of the site shall be resurveyed and analyzed and compared to the previous results by the Government. The methodology to accomplish the quality control shall be proposed in the WP in accordance with DID OE-005-11, which identifies the minimum QC activities. The QC activities shall be documented and included in the final investigation report.

3.5 (Task 5) - Location Surveys and Mapping.

The Contractor shall perform location surveys as described in the approved Work Plan and in accordance with DID OE-005-07. The Contractor shall supply a minimum base map information which identifies roads and highways, trails, sector boundaries, proposed grid sampling locations, and OE items found in each

3.6 (Task 6) - Establishment and Management of GIS.

The Contractor shall take the GIS Tri-Service Spatial Data Standard data, manual, file, and database structures from the Huntsville Center Ordnance GIS standard and apply it to this project. The standard will be used to create project-specific GIS for the specific OE investigative needs of this site. The GIS shall be assembled and used to direct the daily geophysical investigative activities and to compile and analyze the daily digital data into the GIS. Any changes from the standard shall be proposed to the Contracting Officer with fully documented changes and the reason or benefit of the proposed change. The Contractor shall establish and manage the GIS as described in the approved Work Plan and in accordance with DID OE-005-14.

3.7 (Task 7) Site Characterization.

The Contractor shall characterize the site by implementing the work described in the Project Work Plans. Activities include, but are not necessarily limited to, the following activities:

3.7.1 (Task 7a) Surface Preparation, OE Identification and Removal.

The Contractor shall provide all necessary qualified personnel and equipment to perform surface preparation, as well as surface OE identification, removal and disposal on the sampling grids (total sampling area will be proposed by the contractor, the Government is assuming approximately 50 acres for a basis of estimate) where subsequent site activities are scheduled to occur under this contract. The use of standard vehicles (pickup trucks, four wheel drive jeeps, etc...) may be strictly confined to existing roads. If practicable, OE personnel shall walk from existing roads to sampling grids. Where necessary because of unreasonable distances between roads and grids, small motorized carts (sometimes called gators) with wide rubber tires, minimally knobby treads and inflated to low pressure, may be used. The Contractor shall perform the minimum amount of vegetation clearance necessary to aid in identifying OE and OE scrap or to dispose of UXO where these impede the safety of the geophysical investigation team or other site personnel and activities. Certain plants and any trees two to three inches in diameter or greater shall not be cut for any reason arising from flagging and OE clearance procedures. The outright clearing of perennial vegetation from any tract of land, save the tiny area surrounding an OE item being prepared for demolition in place, may not be allowed. All OE-related activities shall be performed in accordance with applicable sections of the approved work plan

3.7.2 Geophysical Equipment Test and Investigation.

The Contractor shall implement geophysical investigations as described in the approved Work Plan.

3.7.2.1 (Task 7b) Geophysical Equipment Test

The Contractor shall test various geophysical methods and equipment in order to establish the methods, equipment and procedures best suited to the site. During prove out, the Contractor shall coordinate with CEHNC to ensure that a CEHNC representative will be on site for verification and quality assurance. The Contractor shall use the information gathered in this phase of work to evaluate the relative efficiencies of potentially appropriate geophysical investigation procedures. Various procedures must be defined such as, but not limited to, daily equipment standardization, data quality checks and data error resolution process. Afterwards, the Contractor shall propose specific geophysical methods, equipment and personnel appropriate and necessary to accomplish the required geophysical investigations. The results of the test shall be documented in a letter report and submitted to the Government for concurrence. The Contractor shall incorporate the appropriate methods and equipment into the work plan once Government concurrence is received.

3.7.2.2 (Task 7c) Investigation.

The total cumulative area to be geophysically investigated and evaluated under this SOW shall be proposed in the work task proposal by the contractor (the Government assumes approximately 50 acres for basis of estimate.) The size and distribution of the individual grids and/or meandering paths shall be proposed by the contractor and approved by the Government. Actual number and location of grids and/or meandering paths may increase or decrease based upon conditions encountered in the field, if so directed by the Contracting Officer. All aspects of anomaly evaluation, selection, and dig-sheet production shall be routinely reported in a weekly status report per DID OE-085. See Section 4.0 for additional reporting requirements and schedule.

3.7.2.2.1 Evaluation.

After the site is geophysically mapped, the Contractor shall utilize a qualified geophysicist to check and evaluate the geophysical data collected. The geophysicist shall make a professional determination regarding the identification of anomalies at the site. Based on this determination, the Contractor shall provide a "dig-sheet" showing predicted location and character of all suspected anomalies to the CEHNC Project Manager. 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.

3.7.2.2.2 Anomaly Selection.

Note that not all geophysical anomalies meeting the criteria to be considered a potential UXO will be dug. Representative anomalies will be excavated in order to characterize geophysical anomalies and to provide information necessary to estimate location, concentration and nature of UXO present at the site. The Contractor shall propose methodology for selection of anomalies to be excavated. This might be based on OE calculator, percentages of anomalies, a specific number of excavations, anomaly apparent size, work-days, statistical approaches, or some other approach or combination of approaches. Also, the approach for individual anomalies might differ from the approach used for pits/trenches. Generally the Government expects more anomalies selected for sampling at the beginning of the effort with the amount of samples selected for digging reduced over the duration of the sampling effort. The particular approach for this project shall be described in the work plan.

3.7.2.2.3 Data Format and Storage.

The Contractor shall utilize an appropriate data format and storage system for geophysical mapping data that is consistentwith CEHNC computer/CADD systems in accordance with DID OE-005-05 and as described in the approved WorkPlan. In addition the Contractor shall maintain the data in such a way that the Government can remotely access any individual file or multiple files as necessary without day or time restrictions. See Section 4.0 for additional data requirements.

3.8 (Task 8)-Intrusive Investigations (OE Sampling).

The Contractor shall, utilizing qualified personnel, implement site OE sampling as specified in the approved work plan. All aspects of the activities related to this task shall be reported in a weekly field activity report including

DRMO turn in forms. This task shall be accomplished as follows:

3.8.1 OE Access, Evaluation and Management.
The Contractor shall, utilizing qualified personnel, implement site OE sampling as described in the approved Work Plan. The Contractor shall provide all necessary qualified personnel and equipment to perform surface and subsurface OE access, evaluation and management.

3.8.2 Accessing Anomalies.

The Contractor shall investigate anomalies identified by the geophysical investigations and as directed by the Contracting Officer. The Contractor shall, using qualified UXO personnel, determine whether the OE can be moved or destroyed in-place. This is a safety-driven decision that will be based solely on DoD munitions safety standards and requirements. Fuzed OE shall not be moved and shall be blown in place.

3.8.3 OE Destruction.

The Contractor shall be responsible for the destruction, if required, of all OE including UXO and scrap encountered during site investigations and characterizations utilizing qualified personnel and in accordance with all aspects of the project Work Plan. The Contractor shall establish in the Work Plan a method of disposal, if required, for all OE.

3.8.4 Backfilling Excavations.

All access/excavation/detonation holes shall be backfilled by the Contractor. The Contractor shall restore such areas to their prior condition.

3.8.5 OE Accountability.

The Contractor shall maintain a detailed accounting of all OE items/components encountered. This accounting shall include the amounts of OE, the identification and condition, depth located, disposition and location. The accounting system shall also account for all demolition materials utilized to detonate OE on-site. This accounting shall be a part of an appendix to the EE/CA report.

3.8.5.1 DD Form 1348-1A.

The Contractor shall complete a DD Form 1348-1A as turn-in documentation. Instructions for completing this form are contained in the Defense Utilization and Disposal Manual, DoD 4160.21-M. The Senior UXO Supervisor and UXO QC Specialist shall sign a certificate as follows:

"This certifies and verifies that the AEDA residue, Range Residue and/or Explosive Contaminated property listed has been 100 percent properly inspected and to the best of our knowledge and belief, are inert and/or free of explosives or related materials."

DRMO turn-in documentation receipts shall be submitted as an appendix to the EE/CA Report.

3.8.5.2 UXO Quality Control (QC) Specialist.

UXO QC shall be a separate function and is not envisioned as a full-time position. The UXO QC Specialist shall meet the minimum prerequisites of a Senior UXO Supervisor and have the training, knowledge and experience necessary to implement the Contractor's QC plan as outlined in DID OE-025. The Contracting Officer must approve any exceptions.

3.8.6 Quality Assurance Sampling Areas.

In order to evaluate the effectiveness of the geophysical investigation and evaluation methods utilized by the Contractor, the Contracting Officer may direct an independent contractor provided by the Government or Government personnel to independently map, locate and access some detected subsurface anomalies as deemed necessary.

3.9 NOT USED

3.10 (Task 9) Prepare Institutional Analysis, Impact Analysis and EE/CA Report.

3.10.1 (Task 9a) Institutional Analysis
The Contractor shall perform an institutional analysis, using as much of the existing data collected for the TPP process, in accordance with DID OE-100. This report, which should be submitted in draft form for review by the Government, with the final report included in the EE/CA Report, will be a brief report presenting site conditions, in relation to ownership, zoning, future development plans (including replenishment) and Local and State participation in planning activities.

3.10.2 (Task 9b) Impact Analysis.
The Contractor shall refine the Qualitative Impact Analysis (QIA) model CEHNC developed for the Jefferson Proving Ground EE/CA to determine the base line public exposure and the predicted risk reduction for the selected risk reduction option for any areas recommended for removal action as a result of the EE/CA. These refinements may be include but are not limited to developing numerical scales (i.e., rather than using qualitative terms) and adapting the QIA model to address site-specific conditions at the site. These refinements will be provided CEHNC for approval before use. Although OECert will not be used for this task, the Contractor shall write a risk report in accordance with the OECert Standing Operating Procedure that supports the EE/CA report and that determines the base line public exposure and the resultant public exposure for each alternative under consideration.

3.10.2.1 Site UXO Statistical Report. As part of the risk evaluation report the Contractor shall write a statistical report that shows how the UXO densities were determined. The Contractor may use the current version of "UXO "Calculator" software which may be provided by the CEHNC Project Manager. Other statistical approached may be used, if approved by the Contracting Officer.

3.10.3 (Task 9c) EE/CA Report
The Contractor shall prepare and submit an EE/CA report, per DID OE-010 fully documenting the field work and subsequent evaluations and recommendations made by the Contractor. The textual portions of the report shall be fully supported with accompanying maps, charts, and tables as necessary to fully describe and document all work performed and all conclusions and recommendations presented.

3.11 (Task 10) Prepare Action Memorandum.
The Contractor shall, based upon close consultation with the Contracting Officer, prepare an Action Memorandum in accordance with applicable CEHNC guidance documents.

3.12 (Task 11) Community Relations Support.
The Contractor shall plan to attend and participate in three (3) public meetings as directed by the Contract Officer. Additional meetings may be added by modifications to this task order. The support shall include preparation and delivery of briefings, graphics and presentations, and participation in site visits. The actions are independent of the field activities that involve interaction with the community.

3.13 (Task 12) Meetings and Project Management
The Contractor shall perform project management functions, as necessary to maintain project control and to meet required reporting requirements. The contractor shall plan on 4 meetings at CENAN and 2 status meetings in Huntsville. These meetings are in addition to public meetings under Task 11.

3.14 (Task 13) Project Documentation Project documentation will be given to the contractor quarterly to scan onto CDs. This scanning is in addition to any documents that the contractor produces. The documentation will consist of but not be limited to all project correspondence both formal and email, contracts, modifications, and deliverables of all types. The purpose is to have a set of CDs at the end of the project that can be sorted to search for any document created on this project. The contractor shall propose in the work task proposal an estimate of pages that will be scanned based on past projects plus a unit price for any pages required about the estimate.

4.0 SUBMITTALS AND CORRESPONDENCE

4.1 Format and Content of Engineering Reports.

Engineering Reports presenting all data, analyses, and recommendations shall be prepared and submitted by the Contractor. 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. When drawings are required, data may be combined to reduce the number of drawings. Reports shall consist of 8-1/2 inch by 11-inch pages with drawings other than the construction drawing folded, if necessary, to this size. A decimal paragraphing system shall be used, with each section and paragraph of the reports having a unique decimal designation. The report covers for each submittal shall consist of durable 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A report title page shall identify the site, the Contractor, the Corps of Engineers District, Huntsville Center, and the date. The Contractor identification shall not dominate the title page. All data, including raw analytical and electronic data, generated under this delivery 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 contract shall be furnished to the Contract Officer in MS Word 6.0 or higher software, IBM PC compatible format. All final CADD/GIS data, design drawings and survey data generated by the Contractor under this delivery order shall be submitted in the proper format and media that will permit their loading, storage, and use without modification or additional software on the Huntsville Center CADD/GIS workstations.

4.3 HTML Deliverables.

In addition to the paper and digital copies of submittals identified above, the final version of the EE/CA and the Action Memorandum shall be submitted, uncompressed, on one floppy disk or CD ROM in hypertext markup language (HTML) along with a linked table of contents, linked tables, linked photographs, linked graphs and linked figures included and suitable for viewing on the Internet.

4.4 Review Comments.

Various reviewers will have the opportunity to review submittals made by the Contractor under this contract. The Contractor shall review all comments received through the CEHNC Project Manager and evaluate their appropriateness based upon their merit and the requirements of the SOW. The Contractor shall issue to the Project Manager a formal, annotated response to each in accordance with the schedule in paragraph 4.13

4.5 Draft Reports.

Each page of draft reports shall be stamped "DRAFT". Submittals shall include incorporation and notation of all previous review comments accepted by the Contractor.

4.6 Identification of Responsible Personnel.

Each report shall identify the specific members and title of the Contractor's staff and subcontractors that had significant, specific input into the reports' preparation or review. All final submittals shall be sealed by the registered Professional Engineer-In-Charge.

4.7 **Minutes of Meetings.**

Following the presentation, the Contractor shall prepare and submit minutes of all meetings attended to the Contract Officer or his representative within 10 calendar days .

4.8 **Correspondence.**

The Contractor shall keep a record of each phone conversation and written correspondence affecting decisions relating to the performance of this IDO. A summary of the phone conversations and written correspondence shall be submitted with the monthly progress report to the Contract Officer.

4.9 **Project Control and Reporting.**

The Contractor shall prepare and submit a master network schedule (using Microsoft "Project" software), cost and manpower plan, monthly progress reports, technical progress reports, monthly individual performance reports and cost/schedule variance report, work task proposal plan, and a program control plan.

4.10 **Monthly Status Report.**

The Contractor shall prepare and submit a monthly status report according to DID OE-080 describing the work performed since the previous report, work currently underway and work anticipated. This report shall show the earned value curves for the amount of funds obligated, planned and actually spent to date on the project. This will allow the continuous tracking of the actual cost versus the proposed cost oat the beginning of the project. The report shall state whether current work is on schedule. If the work is not on schedule, the Contractor shall state what actions are anticipated in order to get back on-schedule. The report shall be submitted not later than the 10th day of the following month.

4.11 **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 the local Corps District's Public Affairs Office, with a copy furnished to the CEHNC Project Manager. Reports and data generated under this contract are the property of the DoD and distribution to any other source by the Contractor, unless authorized by the Contract Officer, is prohibited.

4.12 **Addresses.**

The following addresses shall be used in mailing submittals:

ADDRESSEE	QUANTITY
Commander US Army Corps of Engineers, Huntsville Center ATTN: CEHNC-OE-DC (Roland Belew) P.O. Box 1600 Huntsville, Alabama 35807-4301	6
Commander U.S. Army Corps of Engineers, New York District ATTN: CENAN-PP-E(Luz Spann-LaBato)State Highway 18, Turnpike Metroplex Building, Suite 205 East Brunswick, NJ 08816	10
Names and addresses to be determined at a later date	20

4.13 Schedule and Submittals.
The Contractor shall submit all deliverable data to the Contract Officer and other reviewers shown in Paragraph 4.12 in accordance with the following schedule. All submittals shall be delivered to all addressees no later than the close of business on the day indicated in this paragraph. In addition, submittals to regulatory reviewers shall be shipped by registered mail or other method where a signed receipt is obtained indicating the date received and the individual accepting the submittal.

DOCUMENT	DATE DUE
WTP	20 Days after NTP
ASSHP	Prior to site visit
Site Visit Letter Report	3 working days after site visit
Draft Geophysical Test Plot Plan	35 days after NTP
Final Geophysical Test Plot Plan	10 days after receipt of Gov. comments
TPP Phase I & II Partnering Meeting	TBD
TPP Phase I Worksheet(s)	14 days after site visit
TPP Phase II Worksheet(s)	14 days after site visit
TPP Phase III & IV Partnering meeting	TBD
TPP Phase III Summary Table(s)	14 days after receipt of GOV comments on Phase I & II worksheets
TPP Phase IV Data Collection Program Design	14 days after receipt of GOV comments on Phase III Summary Table(s).
TPP Final Meeting	TBD
EE/CA Work Plan, Draft	45 days after receipt of GOV comments on TPP Phase IV
EE/CA Work Plan, Draft Final	10 working days after receipt of Gov. comments
Geophysical Equipment Test Report	2 working days after field test
EE/CA Work Plan, Final	5 working days after Geo. Equipment Test Report
Government Grants approval to commence field work.	TBD
Weekly Field Report *	Every Monday for the previous week
Monthly Progress Report	NLT 10th of the following month
EE/CA Report, Draft	TBD
EE/CA Report, Final	TBD
Draft Action Memorandum	TBD
Public Meeting	TBD
Final Action Memorandum & Responsiveness Summary	TBD
Project Meeting, Alabama	TBD
Project Meeting, New York	TBD
Minutes of Meetings	NLT 10 days after each meeting

The overall completion date of this delivery order is TBD.

5.0 SAFETY AND HEALTH PROGRAM
The Contractor shall develop and maintain a Health and Safety Program (HSP) in compliance with the requirements of OSHA standards 29CFR1910.120(b)(1) through (b) (4). The Contractor shall provide written certification the HSP has been submitted to the CO and make the HSP available upon request by the Government. The SSHP required by 29CFR1910.120(b)/29CFR1926.65(b)(4), and as defined by DID OE-005-06, shall be prepared and

submitted with the Work Plan for approval. On-site activities shall not commence until the plan has been reviewed and accepted. The Contractor's Site Safety and Health Officer (SSHO) shall have the training, knowledge and experience necessary to implement the SSHP and have the same minimum qualifications as an UXO Supervisor.

6.0 REFERENCES.
6.1 National Contingency Plan, 40 CFR 300.
6.2 Federal Acquisition Regulation, F.A.R. Clause 52.236-13: Accident Prevention.
6.3 Army Corps of Engineers Safety and Health Requirements Manual, EM-385-1-1, 3 September 1996.
6.4 Not used.
6.5 Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR 1910 and Construction Industry Standards, 29 CFR 1926; especially 1910.120/29CFR1926.65-"Hazardous Waste Site Operations and Emergency Response."
6.6 NIOSH/OSHA/USCG/EPA, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities", October 1985. (DHHS(NIOSH) Publication No. 85-115).
6.7 CEHNC 1115-3-86, "Ordnance and Explosives Cost-Estimating Risk Tool (OECert) Standing Operating Procedure (SOP)", November 1996.
6.8 Not used.

The following references are available on the CEHNC Web Page at http://www.hnd.usace.army.mil/oew/policy/dids/didindx.html

6.9 Not Used.
6.10 CEHNC Data Item Description OE-001 000303 Type I Work Plan
6.11 CEHNC Data Item Description OE-005-02 000303 Technical Management Plan
6.12 CEHNC Data Item Description OE-005-03 000303 Explosives Management Plan
6.13 CEHNC Data Item Description OE-005-04 000303 Explosives Siting Plan
6.14 CEHNC Data Item Description OE-005-05 000303 Geophysical Mapping Plan
6.15 CEHNC Data Item Description OE-005-06 000303 Site Safety and Health Plan
6.16 CEHNC Data Item Description OE-005-07 000303 Location Surveys and Mapping Plan
6.17 CEHNC Data Item Description OE-005-08 000303 Work, Data, and Cost Management
6.18 CEHNC Data Item Description OE-005-09 000303 Property Management Plan
6.19 CEHNC Data Item Description OE-005-10 000303 Sampling and Analysis Plan
6.20 CEHNC Data Item Description OE-005-11 000303 Quality Control Plan
6.21 CEHNC Data Item Description OE-005-12 000303 Environmental Protection Plan
6.22 CEHNC Data Item Description OE-005-13 000303 Investigative Derived Waste Plan
6.23 CEHNC Data Item Description OE-005-14 000320 Geographical Information System Plan
6.24 CEHNC Data Item Description OE-010 000303 Engineering Evaluation/Cost Analysis (EE/CA) Report
6.25 CEHNC Data Item Description OE-015 000303 Accidents/Incidents Reports
6.26 CEHNC Data Item Description OE-025 000303 Personnel/Work Standards
6.27 Not used.
6.28 CEHNC Data Item Description OE-040 000303 Disposal Feasibility Report
6.29 CEHNC Data Item Description OE-045 000303 Report/Minutes, Record of Meetings
6.30 CEHNC Data Item Description OE-055 000303 Telephone Conversation/Correspondence Records
6.31 Not used.
6.32 CEHNC Data Item Description OE-080 000303 Monthly Status Report
6.33 CEHNC Data Item Description OE-085 000303 Weekly Status Report
6.34 Not used.
6.35 CEHNC Data Item Description OE-100 000303 Analysis of Institutional Controls

7.0 GOVERNMENT-FURNISHED.

APPENDIX B

SITE SAFETY AND HEALTH PLAN (SSHP)
TO SUPPORT
ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
FORMER CAMP HERO
MONTAUK, NEW YORK

Prepared for

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE CENTER
Huntsville, Alabama

CONTRACT NO.: DACA87-00-D-0038
Delivery Order: 0002

Prepared and Performed by

PARSONS, INC.
100 West Walnut Street
Pasadena, California 91124

UXO Tasks Performed by:

USA Environmental, Inc.
5802 Benjamine Center Dr., Suite 101
Tampa, FL 33634

April 2001

Prepared, Reviewed, and Approved By:

Brian L. Cook, REM Project Engineer:	Brian L. Cook **(Signature)**	4/16/01 **(Date)**
Don Silkebakken, P.E. Project Manager:	**(Signature)**	4/16/01 **(Date)**
Edward L. Grunwald, C.I.H. Project Health and Safety Officer:	Edward L. Grunwald **(Signature)**	4/16/01 **(Date)**

SUBCONTRACTOR'S APPROVAL STATEMENT

We have reviewed the attached SSHP for the referenced site. We recognize that when this form is completed, the attached SSHP is approved for field activities on the referenced site. Changes to this SSHP will be documented in writing.

FOR GEORGE SPENCER

Reviewed By:
George Spencer, Project Manager

4/16/01
Date

Accepted By:

Date

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SUBCONTRACTOR'S SSHP ACKNOWLEDGMENT

Project: **Engineering Evaluation/ Cost Analysis**

Site: **Former Camp Hero**

Contract No.: **DACA87-95-D-0038**

Site Location: **Montauk, New York**

USA/OES Project Manager: **George Spencer**
USA/OES Senior UXO Site Supervisor: **Edward Komac**

I acknowledge that I understand the requirements of this SSHP and agree to abide by the procedures and limitations specified. I also acknowledge that I have been given an opportunity to have my questions concerning the SSHP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during onsite activities.

USA/OES PERSONNEL

SIGNATURE	EMPLOYEE NO.	DATE

SECTION B1
INTRODUCTION

B1.1 PURPOSE

B1.1.1 The nature of fieldwork has made a Site-Specific Safety and Health Plan (SSHP) a principal concern both during project planning and in the field. Planning and field personnel must develop a health and safety consciousness, avoiding unnecessary risks.

B1.1.2 The purpose of the SSHP is to establish personnel protection standards and mandatory safety practices and procedures for all work conducted for the following project: Engineering Evaluation/Cost Analysis (EE/CA) at the former Camp Hero (the Camp), Montauk, New York. The plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted at fieldwork sites.

B1.1.3 The SSHP provides general guidance for making decisions during field activities. Sections cover field personnel responsibilities and work procedures, physical and chemical risks, emergency procedures, and levels of personal protection. Site-specific information such as a project description and site history, a contingency plan, a list of emergency contacts, and necessary health and safety equipment are also discussed. Attachments B-1 and B-2 contain the Plan Acceptance Form and Accident Report Form, respectively. Attachment B-3 contains an Occupational Safety and Health Administration (OSHA) Job Health and Safety Protection Poster. . Attachment J contains the Standard Operating Procedures for Disposal/Demolition Operations prepared by the UXO subcontractor, USA Environmental, Inc. (USA).

B1.2 APPLICABILITY

B1.2.1 The plan provisions are mandatory for all on-site activities undertaken at the Camp by Parsons, Inc. (Parsons) and the UXO subcontractor, USA Environmental, Inc. (USA) personnel. All site activities comply with the provisions of the Corporate Health and Safety (H&S) Policies and Procedures Manual, *U.S. Army Corps of Engineers Safety and Health Requirements, EM 385-1-1* (September 1996), and applicable standards in 29 CFR Parts 1910 and 1926. As site activities change, this plan may need to be modified. Such modifications are submitted as SSHP addenda and are numbered sequentially. All SSHP addenda are reviewed and approved by the Project H&S Manager. The UXO Safety Officer is responsible for the implementation and compliance of the SSHP.

B1.2.2 Parsons personnel will not be involved in hazardous material activities at this site; therefore, this plan does not cover personnel performing these tasks. USA has submitted a Standard Operating Procedures For Disposal/Demolition Operations

(Attachment J) to the Project H&S Manager to support the SSHP. USA has reviewed and approved this SSHP.

B1.2.3 All Parsons and USA project personnel must read and understand this SSHP and sign the Plan Acceptance Form (Attachment B-1) prior to the start of work at the site. An unbound copy of this form will actually be used for signatures and will be on site. A copy of the signed form will be returned to the Parsons Atlanta office and placed in the project file.

SECTION B2
STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

B2.1 PROJECT TEAM ORGANIZATION

B2.1.1 Assignment of responsibilities for management and supervision of former Camp Hero activities is essential to the successful remediation of the site. The following agencies will have key roles throughout the remedial action at the site:

1) U.S. Army Corps of Engineers, New York District (CENAN)
2) U.S. Army Engineering & Support Center, Huntsville (USAESCH)
3) Parsons, Atlanta
4) USA

B2.2 QUALIFICATIONS

B2.2.1 Project Manager

The Project Manager (PM) will have at least 3 years experience in UXO project management. The PM will have completed 40 hours of initial training in hazardous waste operations (HAZWOPER) before participating in this project, as required by 29 CFR part 1910.120(e), and must be up to date on their annual 8-hour HAZWOPER refresher training.

B2.2.2 Certified Industrial Hygienist

The Certified Industrial Hygienist (CIH) shall meet the Office of Personnel Management Standards for the Industrial Hygiene Series and is certified by the American Board of Industrial Hygiene. The CIH will be responsible for oversight and direction to ensure full compliance with all H&S issues at the project site. He will oversee all aspects of site safety, including: the preparation of the Site Safety and Health Plan, performance of the initial site specific training, and the periodic auditing of site operations to verify OSHA, COE, and SSHP compliance.

B2.2.3 Senior UXO Supervisor

The Senior UXO Supervisor (SUXOS) is USA's most senior OE-qualified on-site representative. The SUXOS will monitor all aspects of the field project, including subcontractor site activities, to ensure efficient performance of the approved WP and SSHP. The SUXOS has the authority to temporarily stop work to correct safety deficiencies. The SUXOS makes Daily Progress Reports to the UXO PM. Internally, the SUXOS reports directly to the UXO PM. The SUXOS meets the USACE requirements as a graduate of one of the following schools: the U.S. Naval Explosive Ordnance Disposal School (Indian Head, MD) or U.S. Army Bomb Disposal School (Aberdeen Proving Ground, MD). Additional requirements include 40-hour HAZWOPER and 8-hour HAZWOPER refresher courses; Supervisor courses in accordance with 29 CFR 1910.120; and has at least 15 years of UXO experience, which may be a combination of active duty military EOD and contractor UXO experience, and shall include 10 years of supervisory positions.

B2.2.4 UXO Safety Officer

The UXO Safety Officer (UXOSO) reports to the UXO PM and the UXO Quality Control Specialist (UXOQCS). The UXO Safety Officer (UXOSO) shall have specific training, knowledge, and experience necessary to implement the SSHP. The UXOSO will be a graduate of either the US Army Bomb Disposal School or US Naval Explosive Ordnance Disposal School. In addition, the UXOSO will have at least 10 years combined experience in active duty military EOD and UXO contractor work.

B2.3 RESPONSIBILITIES OF ON-SITE PERSONNEL

B2.3.1 The names of the principal on-site personnel are listed in Table B2.1. The H&S training of the principal on-site personnel will be provided to USAESCH for approval prior to mobilization to the field. Parsons personnel resumes are located in Appendix C of the Work Plan. Table B2.2 describes the responsibilities of all on-site personnel. Figure B2.1 illustrates the chain of command for on-site safety functions.

TABLE B2.1
PRINCIPAL ON-SITE PERSONNEL AND RESPONSIBILITIES

TITLE	NAME	RESPONSIBILITY	PHONE NO.
Certified CIH/SP	Edward Grunwald	Plan Approval	(678) 969-2394
CENAN Project Manager	Luz Spann-LaBato	Directly Responsible for site activities.	(213) 452-3990
USAESCH Project Manager	Roland Belew	Overall responsibility	(256) 895-1553
USA SUXOS	TBD	Responsible for directing and monitoring UXO subcontractor site activities to ensure efficient performance of the approved WP and SSHP.	TBD
Parsons UXOSO	TBD	Overall responsibility for Safety during site activities.	TBD
Parsons Project Manager	Don Silkebakken	Direct personnel during site activities. Conduct any necessary CPR or First Aid during site activities.	(678) 969-2384
Geophysicists	Andy Schwartz	Conduct any necessary CPR or First Aid during site activities.	(678) 969-2424

TABLE B2.2
RESPONSIBILITIES OF ON-SITE PERSONNEL

Title	General Description	Responsibility
Project Manager (Parsons)	Reports to upper-level management. Has authority to direct response operations. Assumes total control over site activities.	• Prepares and organizes the background review of the situation, the Work Plan, the Site-Specific Safety and Health Plan, and the field team. • Assists CENAN with obtaining permission for site access and coordinating activities with appropriate officials. • Ensures that the Work Plan is completed and on schedule. • Briefs field team on their specific assignments. • Uses the site safety and health officer to ensure that safety and health requirements are met. • Prepares the final report and support files on the response activities.
Certified Industrial Hygienist (Parsons)	Advises the Project Manager and UXOSO on all aspects of H&S.	• Approves final SSHP. • Confirms each Parsons team member's suitability for work based on physician's recommendation. • Conducts field safety and health audits to ensure H&S Plan conformance and Parsons policy compliance. • Certifies that all workers have proper training as per 29 CFR 1910.120(e).

TABLE B2.2 (CONTINUED)
RESPONSIBILITIES OF ON-SITE PERSONNEL

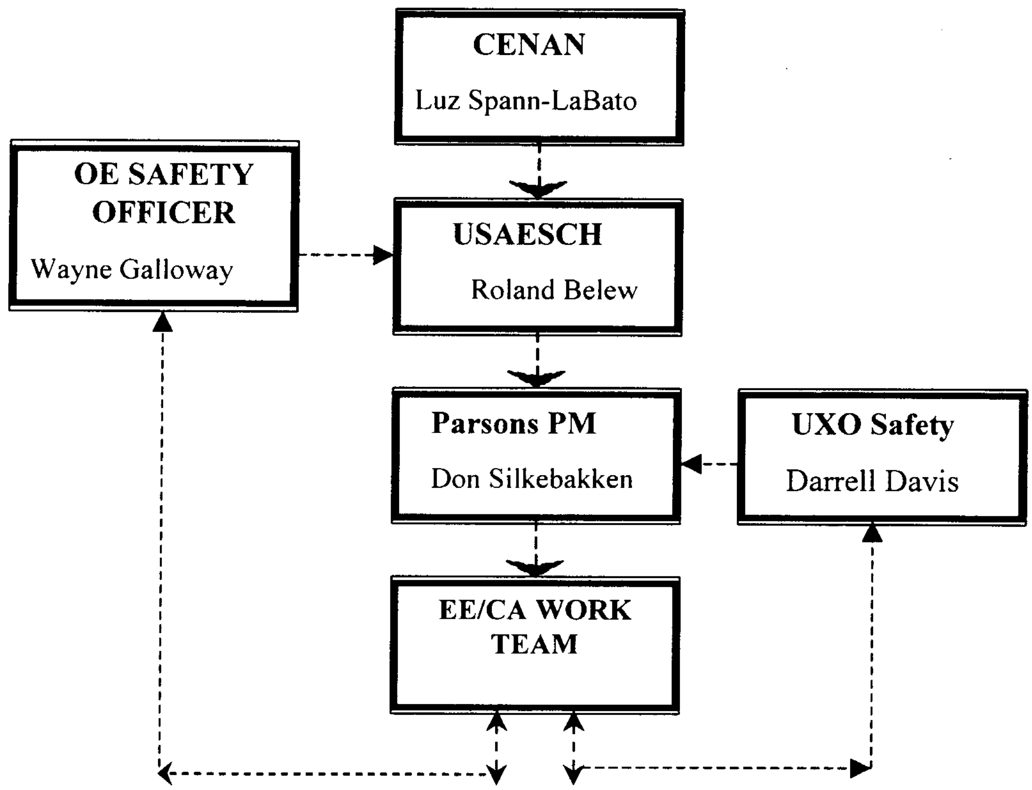
Title	General Description	Responsibility
SUXOS (USA)	Ensures UXO Subcontractor's site activities are in accordance with the approved WP and SSHP.	• Planning, coordinating, and supervising all subcontractor activities/work on-site; • Compliance with all safety and work related standard operating procedures (SOPs), including the SSHP. • Compliance with all federal and state regulations. • Transporting and storing UXO and explosive material. • Coordination with the UXO Safety Officer (UXOSO) to ensure all site safety considerations are enforced.
UXOSO (Parsons)	Advises the Project Manager and SUXOS on all aspects of H&S on site. Stops work if any operation threatens work or public health or safety.	• Implements and enforces the UXO components of the SSHP. • Has STOP WORK authority for safety and health reasons. • Establishes work zones and controls access to these zones. • Confirms all contractor and COE personnel's suitability for work, based upon OSHA and site specific medical and training requirements. • Conducts site-specific safety training prior to initiation of field activities. • Conducts daily tailgate safety meetings.

TABLE B2.2 (CONTINUED)
RESPONSIBILITIES OF ON-SITE PERSONNEL

Title	General Description	Responsibility
UXOSO (Parsons) [continued]		• Notifies emergency response personnel by telephone or radio in the event of an emergency. • Maintains logbook for site workers and visitors. • Certifies that all workers have proper training as per 29 CFR 1910.120(e). • Acts as spokesperson if OSHA inspector arrives.
Site Manager (Parsons)	Responsible for field team operations and safety	• Manages field operations. • Executes the Work Plan and schedule. • Has STOP WORK authority for safety and health reasons. • Coordinates with the UXOSO in determining PPE level. • Enforces site control. • Serves as liaison with public officials. • Inspects personal protective equipment prior to, during and after each use.
Work Team	The work party must consist of at least two people	• Safely completes the onsite tasks required to fulfill the Work Plan. • Complies with the SSHP. • Notifies UXOSO or Field Supervisor of suspected unsafe conditions.

Title	General Description	Responsibility
		• Inspects personal protective equipment prior to, during and after each use.

FIGURE B2.1
LINE OF AUTHORITY FOR ON-SITE SAFETY



________ Operations
------------ Safety

SECTION B3
SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

B3.1 SITE DESCRIPTION AND HISTORY

The following description and history of the former Camp Hero were adapted from the Archives Search Report (ASR) prepared for U.S. Army Corps of Engineers (USACE), Rock Island District, September, 1993.

B3.1.1 Site Description

B3.1.1.1 The former Camp Hero is located on the extreme eastern tip of the south fork of Long Island, New York, approximately 5 miles east of the Village of Montauk. The Camp is bounded by Montauk Highway (Route 27) to the north, the Atlantic Ocean to the south, Montauk Point State Park to the east, and an undeveloped nature preserve owned by the state to the west. The Camp is located in Suffolk County, NY. The Camp consists of approximately 468.69 acres of area and had its main military function during WWII when it was a Coastal Defense Installation.

B3.1.1.2 Ordnance and explosives contamination (OE) may be buried on the property. This situation may be a safety hazard. Although Chemical Warfare Material (CWM) may have been used at the site, no evidence or contamination by CWM or CWM byproducts remains.

B3.1.2 Site History

B3.1.2.1 Military site history at the former Camp Hero begins well before the World War II era. Revolutionary War and War of 1812 American and British warships reportedly used the "Montauk Bluffs" for firing practice with cannons. Teddy Roosevelt and his Rough Riders, part of an estimated 29,500 men force returning from the Cuba, Puerto Rico, and Florida campaigns of the Spanish American War in 1898, camped in the Fort Pond Bay area of Montauk. Their camp was called Camp Wikoff and served as a quarantine station for these returning soldiers. Camp Wikoff was active for only a few months.

B3.1.2.2 Between WWI and WWII, a Navy observation post housing two reconnaissance blimps were stationed at a hangar adjacent to the current Montauk Tower, and a number of oceangoing seaplanes were positioned at a Naval Base on Fort Pond Bay. From about 1921 until around 1923, thousands of soldiers from Regular Army, National Guard, and Citizen Military Training Corps Field Artillery units camped and trained in the Montauk area. A campsite on the east side of Fort Pond Bay, presumably named Camp Walsh, was chosen to accommodate the training units. From 1936 through the 1970s, Army Air Corps planes conducted bombing target practice on an island off of Montauk Point known as Gardiner's Point. This island also contained an abandoned Spanish American War Fort known as Fort Tyler. In 1942, the Department of the Navy built a facility on Fort Pond Bay to develop and test torpedo propulsion systems. This facility remained in existence until the end of WWII.

B3.1.2.3 Camp Hero was established in early 1942 as a Coastal Defense Installation to defend the approaches to New York and was named in honor of Major General Andrew Hero. Three self sufficient batteries (Battery 112, 113, and 216) and supporting facilities were constructed which included barracks, mess halls, hospital facilities, a motor repair shop, a recreation facility, sentry boxes, and water supply and sewage facilities. A total of 600 enlisted men and 37 officers were stationed at the Camp. Battery 216 contained two M1903A2 6-inch shielded guns that were delivered to the battery in January 1943. Battery 113 (also known as Battery Dunn) consisted of two Navy MKIIM1 16-inch casemated guns that were completed on June 56, 1943. The guns of Battery 112 were identical to Battery 113 and were completed on January 12, 1944. Additionally, 37mm weapons and .50 caliber antiaircraft weapon platoons were assigned to protect the Camp from air attack. The Camp's weaponry was periodically fired to practice over water but was never fired as a result of an act of hostility.

B3.1.2.4 The Camp was placed on inactive status on July 31, 1947 and ultimately declared surplus by the Department of the Army on December 31, 1949. Simultaneously a portion of the Camp lands were also transferred to the Department of the Air Force for an aircraft control and warning station. On January 24, 1951 the Camp was withdrawn from surplus and designated for use as a firing range and field exercise area for antiaircraft artillery (AAA) from Fort Totten, NY. Arrangements were made for the permanent Army AAA cadre at the Camp. 90mm and quad .50 caliber antiaircraft artillery began firing exercises from firing positions established in the southern bluff overlooking the Atlantic Ocean.

B3.1.2.5 In 1952 the Air Force property was renamed the Montauk Air Force Station and was occupied by the 773rd Aircraft Control and Warning Squadron (ACWS). Training continued using 90mm and 120mm guns, 3.5-inch rockets, and .50 caliber guns until 1957. The facility was inactive until October 1958 when the 773rd ACWS was redesignated as the 773rd Radar Squadron with a new mission to provide surveillance data of air traffic in the area. In order to accomplish this mission, advanced Specific Frequency Diversity Search Radar was built in late 1960. The facility was closed in 1982. Between 1974 and 1984 all site lands were transferred to State, Local, and other Federal agencies.

B3.2 PREVIOUS INVESTIGATIONS AND RECORDS REVIEW

B3.2.1 DERP-FUDS Field Inspection for Preliminary Assessment

B3.2.1.1 During October 1990 CENAN conducted a PAE of the former Camp Hero to gather data regarding potential applicability of DERP-FUDS. The PAE was revised in July 1998. At that time, it was determined that the site was formerly used by the U.S. Army and Air Force.

B3.2.2 Findings and Determination of Eligibility

B3.2.2.1 The signed FDE concluded the following:

- The signed FDE concluded that the site consisted of 468.49 acres used from August 1944 to April 1983 and was eligible for restoration under the purview of DERP-FUDS. However, the ASR discovered that actual fee acres consisted of 468.69 acres.
- A use agreement, three leases, one permit, and numerous cable and utility easements outside of the 468.69 acre fee parcel of Camp Hero Land were included in Camp Hero land acquisition. A 0.03-acre parcel in front of the Montauk Point Lighthouse in which a fire control tower housed a 37mm AAA weapons section was the only addition to site land that had a significant OE relevance.
- In addition to use agreement lands, an ocean firing zone (consisting of 756,491.75 acres) and a near shore ordnance area (consisting of 44.99 acres) were determined to exist due to coastal defense and AAA firing activities at Camp Hero, and should be included with site acreage.
- The 756,491.75-acre ocean firing area, although FUDS qualified, should not be added to the FUDS database in accordance with Headquarters, CEMP-RF memorandum, dated 15 March 1994.

B3.2.3 1998 Feasibility Study and Hazardous Materials Survey Preliminary Report

B3.2.3.1 In June 1998 Cashin Associates, P.C. of Hauppauge, New York, conducted a Feasibility Study and Hazardous Materials Survey Preliminary Report for the New York Office of Parks, Recreation, and Historic Preservation, Babylon, New York. The report identified several areas which had an actual or potential HTW presence based on buildings and refuse found on-site. In addition to the HTW, projectile fragments were discovered along the southern bluffs of the site (Area K), indicating the potential presence of OE.

B3.2.4 2000 Archives Search Report

B3.2.4.1 In February of 2000 the USACE, Rock Island District, conducted a records search and site inspection for the Camp. The final report, the ASR, documents the extent and nature of their finds of OE/UXO contamination. The Camp was divided into 13 areas (A through M) for evaluation purposes. Areas H, K, and L were classified as having "confirmed" ordnance present. Areas A through G, I, J, and M were classified as "No Ordnance Presence."

B3.2.4.2 Due to the nature and size of Area L (756,525 acres of ocean) SI team was unable to inspect this area. Area L was determined to be a "Confirmed Ordnance Presence" based on its historical use of 6-inch and 16-inch coastal defense guns and AAA battalions in drone target practice. A 1993 National Ocean Service Coast and Geodetic Survey LORAN-C Map for Block Island displays three areas in the ocean south and southwest of the former Camp Hero shoreline which displayed an unexploded ordnance hazard. Even though Area L could not be inspected by the SI team, a substantial remaining OE presence is certain to exist in this area, due to the volume of artillery fire which occurred and the numerous discoveries of OE items in the Near Shore Ordnance Area (Area K) over the years, especially after severe storm events.

B3.2.4.3 Area L, although DERP-FUDS qualified, will not be added to the FUDS database in accordance with Headquarters CEMP-RF memorandum, dated 15 March 1994.

B3.2.4.4 The ASR Conclusions and Recommendations document, also published in February 2000, recommended EE/CA investigation of Areas H & K, based on confirmed presence of ordnance leading to a combination RAC score of 1. Area L also received a RAC score of 1, but due to the nature of the area, it was determined not to be technically or financially feasible to remediate the area at that time. Areas A through G, I, J, and M received RAC scores of 5, and the document concluded: NDAI for them.

B3.2.5 2000 Site Visit

B3.2.5.1 In December 2000 an investigation team from Parsons ES visited the former Camp Hero. The purpose of the Site Visit was to survey the former Camp Hero for familiarity, visually inspect areas identified as confirmed or potentially contaminated with OE in the ASR, photograph the Areas of Interest for potential EE/CA, and meet with local regulatory agencies.

B3.2.5.2 The site visit is described in the January 2001 document Site Visit Report and Work Task Proposal Former Camp Hero Montauk, New York produced by Parsons ES. The document restates the ASR conclusion that Areas H and K will receive further EE/CA investigation. The document also indicate that a small parcel consisting of only 0.03 acres (Area A – Fire Control/37mm AAA station) was included for EE/CA investigation in the EE/CA SOW (see Attachment Y). The total acreage identified for EE/CA investigation per the SOW is 52.91 acres. The State of New York owns/controls all 52.91 acres of the former Camp Hero property within the EE/CA study area.

B3.3 SUMMARY OF OE RISK

B3.3.1 As part of the ASR, an OE risk assessment was conducted for the Camp as a whole using the procedure developed by USACE in accordance with MIL-STD-882C and AR 385-10. The output is a RAC score used to prioritize the response action at FUDS.

B3.3.2 Areas H, K, and L received RAC scores of 1. Areas H and K were recommended for the performance of an EE/CA, whereas Area L was not because it was technically and financially unfeasible. Areas A through G, I, J, and M received RAC scores of 5, and were recommended for NDAI.

B3.3.1 Area A – Fire Control Station/37mm AAA Station (Additional Lands)

The Fire Control Station/37mm AAA Station was classified as no ordnance presence, and was recommended for NDAI. This area has been included in the EE/CA SOW to be performed by Parsons ES. This area is approximately 0.03 acres, and contained a fire control tower, auxiliary power plant, and a 37mm (later 40mm) AAA position to defend Camp Hero in the event of air attack.

B3.3.4 Area B – Battery 216

Battery 216 is considered to be an area of no ordnance presence, and is recommended for NDAI. The area is approximately 2.90 acres. No historical, interview, or physical evidence could be located to substantiate a remaining OE or OE debris presence in this area.

B3.3.5 Area C – AAA Firing Area

The AAA Firing Area is considered to be an area of no ordnance presence and is recommended for NDAI. The area is approximately 5.80 acres.

B3.3.6 Area D – AAA Battalion Bivouac Area

The AAA Battalion Bivouac Area is considered to be an area of no ordnance presence. The area is approximately 11.00 acres.

B3.3.7 Area E – Battery 113 (Dunn)

Battery 113 (Dunn) is considered to be an area of no ordnance presence. The area is approximately 1.80 acres.

B3.3.8 Area F – Battery 112

Battery 112 is considered to be an area of no ordnance presence. The area is approximately 2.23 acres.

B3.3.9 Area G – Makeshift Small Arms Firing Range

The Makeshift Small Arms Firing Range is considered to be an area of no ordnance presence. The area is approximately 0.60 acres.

B3.3.10 Area H – Ordnance Destruction Range

The Ordnance Destruction Range is considered to be an area of confirmed ordnance presence. An EE/CA investigation is planned for this area. The area is approximately 8.00 acres.

B3.3.11 Area I – Target Plane Launching Area

The Target Plane Launching Area is considered to be an area of no ordnance presence. The area is approximately 1.00 acres.

B3.3.12 Area J – Plotting/Switchboard Rooms

The Plotting/Switchboard Rooms are considered to be an area of no ordnance presence. The area is approximately 0.50 acres.

B3.3.13 Area K – Near Shore Ordnance Area

The Near Shore Ordnance Area is considered to be an area of confirmed ordnance presence. An EE/CA investigation is planned for this area. The area is approximately 44.88 acres.

B3.3.14 Area L – Off Shore Ordnance Area

The Off Shore Ordnance Area is considered to be an area of confirmed ordnance presence, but due to technical and economical feasibility restrictions, no EE/CA is currently planned for this area. The area is approximately 756,525.00 acres.

B3.3.15 Area M – All Other Lands

Area M is made up of all former Camp Hero lands that does not include those previously mentioned. It is considered to be an area of no ordnance presence. The area is approximately 434.86 acres.

B3.4 RISK ANALYSIS

B3.4.1 UXO Hazards

UXO may be present and located during site activities. UXO-qualified personnel shall follow the requirements of USAESCH's *Basic Concepts and Safety Considerations for UXO Operations*, which outlines the safety and health precautions to be taken if UXO are encountered. All non-UXO-qualified personnel shall follow the safe work practices listed below:

- Non-UXO-qualified personnel shall receive site specific UXO recognition training prior to participation in site activities.
- No soil penetrating activities shall be allowed without the area first being cleared by UXO qualified personnel.
- Non-UXO-qualified personnel shall be escorted onsite by UXO qualified personnel, until such time as the area is cleared.
- Once an area has been cleared and flagged, non-UXO qualified personnel may perform duties in the area unescorted, but shall not leave the cleared area unescorted.
- Non-UXO-qualified personnel shall not touch or disturb any object which could potentially be UXO related, and shall immediately notify the nearest UXO qualified person of the presence of the object.

B3.4.2 Chemical and Biological Hazards

Studies of the Camp Hero area have not confirmed any chemical or biological warfare hazards on the site. Should suspected chemical warfare munitions (CWM) or biological warfare munitions (BWM) be encountered, personnel will immediately evacuate the work area to an upwind location and notify USAESCH for guidance.

B3.4.2.1 Biological Hazards

Biological hazards that are usually found on site include hazardous plants, poisonous snakes, and insects, such as ticks and spiders, rodents, and bloodborne pathogens. Employee awareness and the safe work practices outlined in the following paragraphs should reduce the risk associated with these hazards.

B3.4.2.1.1 Hazardous Plants

Due to thick vegetation in parts of the Camp, the number and variety of hazardous plants that may be encountered is great. The ailments associated with these plants range from mild hay fever to contact dermatitis, to carcinogenic affects. The plants that present the greatest degree of risk to site personnel (i.e. potential for contact vs. affect produced) are those that produce skin reactions and skin and tissue injury.

B3.4.2.1.1.1 Plants Causing Skin and Tissue Injury

Contact with sharp leaves and thorns are of special concern to site personnel. This concern stems from the fact that punctures, cuts and even minor scrapes caused by accidental contact may result in non-infectious skin lesions, and the introduction of fungi or bacteria through the skin or eye. This is especially important in light of the fact that the warm moist environment created inside protective clothing is ideal for the propagation of fungal and bacterial infection. Personnel receiving any of the injuries listed above, even minor scrapes, shall report immediately to the UXOSO for initial and continued observation and care of the injury. Keeping the skin covered as much as possible (i.e., long pants and long sleeved shirts) in areas where these plants are known to exist will limit much of the potential exposure.

B3.4.2.1.1.2 Plants Causing Skin Reactions

B3.4.2.1.1.2.1 The poisonous plants of greatest concern are poison ivy, poison oak, and poison sumac. Contact with the poisonous sap of these plants produces a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim also may develop a high fever and may be very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

B3.4.2.1.1.2.2 The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each (Figure B3.1). In certain seasons, both plants also have greenish-white flowers and berries that grow in clusters. Poison sumac is a tall shrub or small tree with 6-12 leaflets arranged in pairs with a single leaflet at the end. This plant grows in wooded, swampy areas. The reaction associated with exposure to these plants will generally cause the following signs and symptoms:

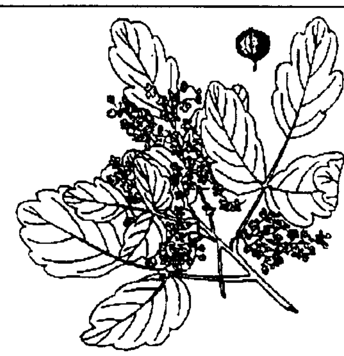
1. Blistering at the site of contact, usually occurring within 12 to 48 hours after contact.
2. Reddening, swelling, itching and burning at the site of contact.
3. Pain, if the reaction is severe.

4. Conjunctivitis, asthma, and other allergic reactions if the person is extremely sensitive to the poisonous plant toxin.

B3.4.2.1.1.2.3 If the rash is scratched, secondary infections can occur. Preventive measures that can prove effective for most site personnel are:

1. Avoid contact with any poisonous plants on site, and keep a steady watch to identify, report and mark poisonous plants found on site.
2. Wash hands, face or other exposed areas at the beginning of each break period and at the end of each workday.
3. Avoid contact with, and wash on a daily basis, contaminated tools, equipment and clothing.
4. Barrier creams, detoxification/wash solutions and orally administered desensitization may prove effective and should be tried to find the best preventive solution.
5. Keeping the skin covered as much as possible (i.e., long pants and long sleeved shirts) in areas where these plants are known to exist will limit much of the potential exposure.

Figure B3.1
Poison Ivy/Poison Oak/Poison Sumac

Poison Ivy	Poison Oak	Poison Sumac
		

B3.4.2.1.2 Snakes

The only venomous snake that may be encountered at the Camp Hero site is a member of the "pit-viper" family, the timber rattlesnake. A description and photograph of this snake is shown below.

B3.4.2.1.2.2 Timber Rattlesnake

The large, heavy-bodied timber (or canebrake) rattlesnake can be found throughout most of the state in habitats ranging from rocky hillsides to river valleys. These are not particularly aggressive snakes. They can be yellowish or gray to black in color, with a dark back, side blotches on the front of body, and crossbands on rear of body. The head is unmarked and they have a black tail.

Timber Rattlesnake-35-74"

B3.4.2.1.2.6 Snake Bites

B3.4.2.1.2.6.1 A snakebite is usually characterized by extreme pain and swelling at the site of the bite; the presence of one or more puncture wounds created by the fangs; and a general skin discoloration. The manifestations of the bite include general weakness, rapid pulse, nausea and vomiting, shortness of breath, dimness of vision, tingling or numbness of the tongue, mouth or scalp, and shock.

B3.4.2.1.2.6.2 Physical reactions are aggravated by acute fear, anxiety, the amount of venom injected and the speed of absorption of venom into the victim's circulation, the size of the victim, protection provided by clothing (including shoes and gloves), quick anti-venom therapy, and location of the bite.

B3.4.2.1.2.6.3 First Aid – The rules to follow if a snake bites someone are:

1. DO NOT cut "Xs" over the bite area as this will intensify the effect of the venom.
2. DO NOT apply suction to the wound since this has a minimal effective in removing venom.
3. DO NOT apply a tourniquet since this will concentrate the venom and increase the amount of tissue damage in the immediate area.
4. If possible, try to get a good look at the snake so it can be identified for proper selection of anti-venom.
5. DO NOT allow the victim to run for help since running increases the heart rate and will increase the spread of the venom throughout the body.
6. Calm, reassure and keep the victim calm and immobile. Do not delay evacuation.
7. Have the victim hold the affected extremity lower than the body while waiting for medical assistance.
8. Transport the victim to medical attention immediately.

B3.4.2.1.2.6.4 An incision through the fang marks is not advisable; this procedure is too hazardous to underlying structures and at best removes only 20% of the venom. Do not use cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy. Several other factors must be considered by the caregiver: A person bitten by a snake should try to lie still and be quiet. If the bite is in the arm or leg, keep the bite lower than the heart. Staying still and holding the bite lower than the heart will help to slow any poison spreading through the body. Ice the affected area if swelling or color change occur. Get medical care as soon as possible, even if the snake was known to be non-poisonous. The use of snakebite kits is prohibited.

B3.4.2.1.2.6.5 Identification Features - Non-poisonous snakes are often erroneously identified as poisonous. The features identified in Table B3.1 will assist in properly identifying a snake as poisonous or non-poisonous.

Table B3.1
Snake Identification Features

Feature	Poisonous	Non-Poisonous
Eye Pupils	Elliptical, or cat-like	Round
Sensing Pits	Pit between the eyelids and nostrils	No pit between the eyelids and nostrils
Teeth	Two enlarged teeth (fangs) in front of the upper jaw	All teeth are approximately the same size
Scales	Form a single row on the underside and below the tail	Arranged in a double row on the underside of the tail
Head	Head much wider than the neck	Head slightly wider than the neck
Tail	Single anal plate	Divided anal plate

B3.4.2.1.2.6.6 Prevention of Snakebite -- The best snakebite treatment is to avoid getting bitten. The following suggestions will help in this process:

- Learn to identify poisonous snakes – this shall be reviewed during site-specific safety training.
- Watch where you sit and place your hands and feet.
- Avoid rock piles, stacks of old boards, and brush in wooded areas. If movement is necessary, use a remote means to initially relocate the material. Prior to entering a heavily wooded or brush area, look and listen carefully.
- Never handle "dead" snakes; they may not be completely dead.
- Do not attempt to capture or kill ***ANY*** snakes.

B3.4.2.1.3 Insects

B3.4.2.1.3.1 Ticks

B3.4.2.1.3.1.1 The Center for Disease Control (CDC) has noted the increase of Lyme Disease and Rocky Mountain Spotted Fever (RMSF) which are caused by bites from infected ticks that live in and near wooded areas, tall grass, and brush. Ticks are small, ranging from the size of a comma up to about one quarter inch. They are sometimes difficult to see. When embedded in the skin, they may look like a freckle. The tick season extends from spring through summer.

Deer Tick up to 0.25 inch

B3.4.2.1.3.1.2 Lyme disease has occurred in 43 states, with the heaviest concentrations in the Northeast (Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania), the upper Midwest (Minnesota and Wisconsin), and along the northern California coast. It is caused by deer ticks and the lone star ticks which have become infected with spirochetes. Female deer ticks are about one quarter inch in size, and are black and brick red in color. Male deer ticks are smaller, and completely black. Lone star ticks are larger and chestnut brown in color.

B3.4.2.1.3.1.3 RMSF has occurred in 36 states, with the heaviest concentrations in Oklahoma, North Carolina, South Carolina, and Virginia. It is caused by Rocky Mountain wood ticks and dog ticks that have become infected with rickettsia. Both are black in color.

B3.4.2.1.3.1.4 The first symptoms of either disease are flu like chills, fever, headache, dizziness, fatigue, stiff neck, and bone pain. If immediately treated by a physician, most individuals recover fully in a short period of time. If not treated, more serious symptoms can occur.

B3.4.2.1.3.1.5 If you believe a tick has bitten you, or if any of the signs and symptoms noted above appear, contact the UXOSO, who will authorize you to visit a physician for an examination and possible treatment.

B3.4.2.1.3.1.1 Protective Measures

Standard field gear (work boots, socks and light-colored coveralls) provide good protection against tick bites, particularly if the joints are taped. However, even when wearing field gear, the following precautions shall be taken when working in areas that might be infested with ticks:

1. When in the field, check yourself often for ticks, particularly on your lower legs and areas covered with hair.
2. Apply deet (vapor-active repellent) to any exposed skin surface (except eyes and lips) and apply the permethrin repellent spray to field clothing, particularly pant legs and socks, **BUT NOT YOUR SKIN**.
3. When walking in wooded areas, wear a hard hat, and avoid contact with bushes, tall grass, or brush as much as possible.

4. If you find a tick, remove it by pulling on it gently with tweezers. Do not squeeze the tick's body. Grasp it where the mouthparts enter the skin and tug gently, but firmly, until it releases its hold on the skin.

5. If the tick resists, cover the tick with salad oil/Vaseline for about 15 minutes to asphyxiate it, then remove it with tweezers.

6. DO NOT use matches, a lit cigarette, nail polish or any other type of chemical to "coax" the tick out.

7. Be sure to remove all parts of the tick's body, and disinfect the area with alcohol or a similar antiseptic after removal.

8. For several days to several weeks after removal of the tick, look for the signs of the onset of Lyme disease, such as a rash that looks like a bulls-eye or an expanding red circle surrounding a light area, frequently seen with a small welt in the center.

9. Also look for the signs of the onset of RMSF, such as an inflammation which is visible in the form of a rash comprising many red spots under the skin, which appears 3 to 10 days after the tick bite.

B3.4.2.1.3.2 Chiggers

Chiggers, or harvest mites, are red, eight-legged arachnids. They are grouped with spiders, ticks and scorpions and measure approximately 1/16 of an inch in length. Chiggers do not burrow into the skin. They generally attach to those areas of the body where clothing fits tightly, such as at the sock line and waistline and feed at the base of a hair follicle or in a pore. Chiggers usually dislodge within several hours of attachment. The bites commonly cause itching in about 3 to 6 hours and dermatitis develops in about 10 to 16 hours. Some people experience allergic reactions to the bites and develop blister-like lesions. They are commonly encountered at the woodland borders, along the periphery of swamps, and in shrub thickets and unmowed areas of lawn. Areas that contain thick layers of pine straw, leaf litter or thatch are suitable habitats for chiggers and their prey. For personal protection, apply insect repellent to clothing and exposed skin.

B3.4.2.1.3.4 Bees, Wasps, Hornets, and Other Insects

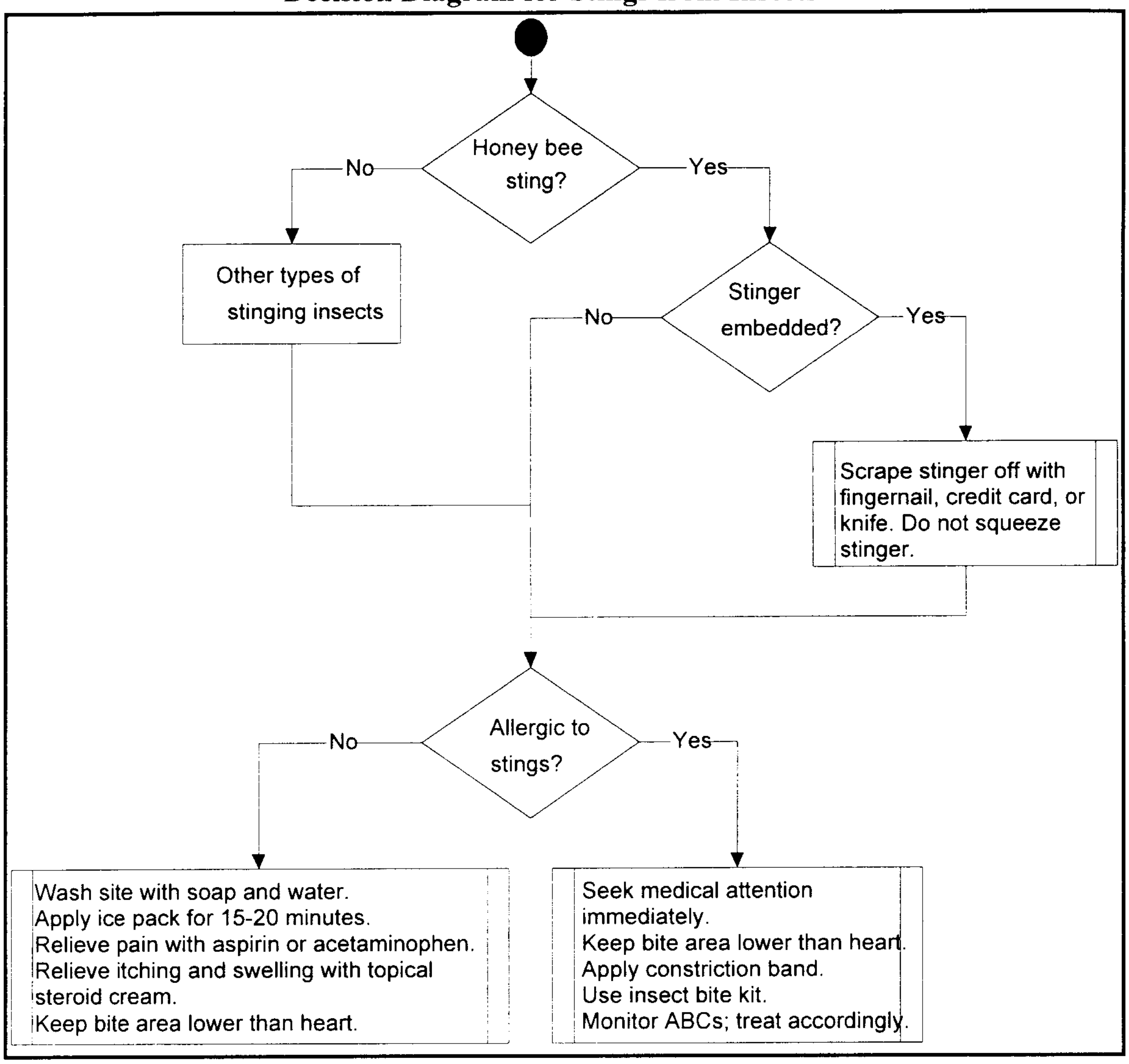
B3.4.2.1.3.4.1 Symptoms of an insect bite are normally a sharp, immediate pain in the body part bitten. Poisonous insects and insect-like creatures that may be encountered at former Camp Hero sites include the following:

- Bees (honeybees, bumble bees, wasps, and hornets);
- Mosquitoes; and
- Beetles/Bugs.

B3.4.2.1.3.4.2 Site personnel will comply with the following work practices:

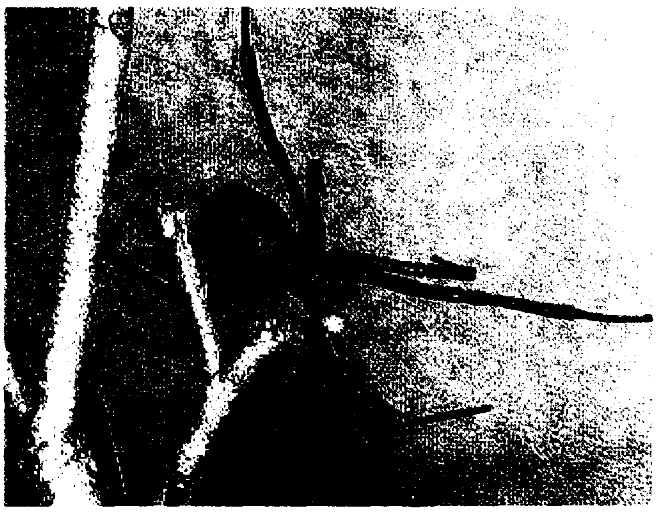
- Personnel with a known hypersensitivity to bee, wasp, or hornet stings will inform the UXOSO of this condition prior to performing site activities.
- Personnel with a known hypersensitivity condition will keep emergency medication in their possession.
- All personnel will remain vigilant for the presence of these stinging insects. Discovered nests will be flagged and their location reported to other site personnel.
- If stung, immediately inform the UXOSO to receive treatment, per Figure B2.2.

Figure B3.2
Decision Diagram for Stings from Insects



B3.4.2.1.3.4.3A bloodborne pathogen that has recently come to the attention of the health community is the West Nile Virus. Prior to August 1999, West Nile virus had never been reported in the U.S. In 1999, 61 cases of severe disease and 7 deaths occurred in the New York area. West Nile encephalitis is caused by West Nile virus, a flavivirus previously only found in Africa, Eastern Europe and West Asia. Encephalitis means an inflammation of the brain and can be caused by either head injury, bacterial infections, or, most commonly, viral infections. People are infected from the bite of a northern house mosquito that is infected with the virus. Mosquitoes get it when they bite, or take a blood meal, from birds infected with West Nile. Those mosquitoes then transmit the virus to people and animals when taking a blood meal. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. Headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, and paralysis mark more severe infection. There is no specific therapy. In more sever cases, hospitalization and intensive supportive therapy may be needed. If a person thinks he/she has West Nile virus, medical attention should be sought immediately.

B3.4.2.1.3.5 Spiders



Black Widow
0.12-0.75"

B3.4.2.1.3.5.1 Use extreme caution when lifting manhole covers, sumps, wood debris, etc., since spiders are typically found in these areas. One poisonous spider may be encountered on the former Camp Hero project: the Black Widow. The Black Widow is a bulbous black spider with a red hourglass-shaped mark on the underside.

B3.4.2.1.3.5.2 Persons that have been bitten by a Black Widow spider should be immediately transported to a hospital. The spider should be collected (if possible) for confirmation of the species. Reactions to a Black Widow spider include intense pain at the site of the bite after approximately 15 to 60 minutes, followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.

B3.4.2.1.3.5.3 First Aid

- If possible, catch the spider to confirm its identity. Even if the body is crushed, save it for identification.
- Clean the bitten area with soap and water or rubbing alcohol.
- To relieve pain, place an ice pack over the bite.
- Keep the victim quiet and monitor breathing.
- Seek immediate medical attention.

B3.4.2.1.4 Rats, Mice, and Bats

B3.4.2.1.4.1 Rats, mice, and bats may be found at the site. These animals may carry rabies and should be avoided. In addition, Hanta Virus is also a concern when coming in contact with these animals. Hanta Virus is a disease spread primarily from infected rodent droppings. Hanta Virus results from intimate contact with rodents, such as may occur in agricultural areas with dense human and rodent populations or during soil excavation. There is no evidence of spread of this virus from person to person. The overwhelming evidence is that spread is from rodent to humans through contact with infected rodent secretions or airborne transmission by infected dust particles.

B3.4.2.1.4.2 Preventive measures should focus on cleaning all cuts and scratches with soap and water, followed by rinsing with hydrogen peroxide. Put liquid skin on the affected areas. The best preventative measure is to avoid all rodent nests during geophysical surveys. If rodent nests are discovered field team members should be apprised of their locations and avoid working adjacent to the nests. If work must be performed at that location, a 10% bleach solution should be sprayed on the nest and adjacent areas to kill the virus. If work must be performed at a location where rodent infestation is evident personal protective equipment should be worn. PPE shall the ensemble presented in section B3, plus:

- Full face APR with N-100 cartridges
- Tyvek coveralls
- Tyvek boot covers
- PVC or latex gloves

B3.4.2.1.5 Bloodborne Pathogens

B3.4.2.1.5.1 Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions (see below) all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens.

B3.4.2.1.5.2 Insects and arthropods transmit some infections where the infection cycle includes the human blood system. Examples include malaria, Lyme, and West Nile disease, which are transmitted by mosquitoes and ticks, respectively. These diseases are serious, and the possibility for infection should be considered in planning field operations in areas where these disease vectors are present. However, these diseases cannot be transmitted through personal contact with human blood, and are not covered by the OSHA *Bloodborne Pathogen Standard.*

B3.4.2.1.5.3 Potential bloodborne pathogen exposure include:

- Contact with contaminated medical equipment or medical waste or sharps.

- Medical emergency response operations such as administering first aid or CPR.
- Contact with human wastes such as domestic sewage.

B3.4.3 Safety Hazards

B3.4.3.1 Slip, Trip and Fall Hazards

B3.4.3.1.1 The site may contain slip, trip and fall hazards for site workers, such as:

- Holes, pits, or ditches.
- Slippery surfaces.
- Steep grades.
- Uneven grades.
- Sharp objects, such as nails, metal shards, and broken glass.

B3.4.3.1.2 To limit these hazards, hazard recognition techniques taught during the site-specific training session will emphasize housekeeping, walkways, walking surfaces, and conditions that could cause this type of injury. Site personnel will be instructed to look for potential safety hazards and immediately contact the Site Safety and Health Officer if hazards are discovered. The Site Safety and Health Officer will inform team members of the locations of slip, trip, and fall hazards during daily site safety briefings.

B3.4.4 Heat Stress

B3.4.4.1 Heat stress is one of the most common (and potentially serious) illnesses that affect UXO/OE site workers. When site personnel are engaged in operations involving hot environments, a number of physiological responses can occur which may seriously affect the health and safety of the workers. Heat stress can result in health effects ranging from transient heat fatigue to serious illness or death. These affects can be eliminated or controlled through the use of a comprehensive heat stress prevention and monitoring program (see Section B14).

B3.4.4.2 Sweating does not cool the body unless moisture is removed from the body. The use of personal protective equipment (PPE) reduces the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired and this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. At the Camp Hero site, Level D PPE will be utilized, thus providing minimal increase in the potential for heat stress. Level D PPE is defined as standard work clothes with long pants, hard hats (when overhead hazard is present), and safety boots (when working around heavy equipment). The selection of PPE is discussed in Section B6.

B3.4.5 Cold-Related Illness

B3.4.5.1 Cold-related illnesses are not a concern at the Camp due to the mild winter temperatures. However, cold-related illnesses are covered for completeness in the SSHP.

B3.4.5.2 The affects experienced by site personnel when working in cold environments depend upon many environmental and personal factors, such as ambient air temperature, wind speed, duration of exposure, type of protective clothing and equipment worn, type of work conducted, level of physical effort, and health status of the worker. Exposure to low temperatures present a risk to employee safety and health both through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. The symptoms of cold exposure include immersion, hypothermia, and frostbite. Section B14 provides information about the most common cold stress disorders, treatments, prevention, and monitoring.

B3.4.6 Other Hazards

B3.4.6.1 Unforeseen Hazards

Should any unforeseen hazards become evident during the performance of work, HFA shall immediately halt operations until appropriate health and safety provisions have been discussed between the Safety Manager and UXOSO.

B3.4.6.2 Vehicular Traffic

Areas of site work near roads shall be accomplished during no vehicular traffic. That is if a vehicle approaches the site, all intrusive activities will cease until the vehicle is clear of the site. Only personnel vehicles will be allowed within operational area of site. All private vehicles must park in designated areas. Blocked roadways will only be used during daily detonation and coordinated with Parsons and USAESCH representatives. All attempts will be made to avoid conducting work in roads and streets. However, if work is to be performed in roadways, barricades, signs and emergency flashers will be utilized to protect the workers. The blocking of roadways will be coordinated with local law enforcement officials prior to performing work activities.

B3.4.6.3 Ultraviolet Radiation

The sun emits ultraviolet radiation (UV) as heat and light. The skin's natural defense mechanisms attempt to reject the UV by distributing melanin pigmentation where needed. However, overexposure to direct sunlight can cause inflammation or blistering of the skin (sunburn). The use of sunscreen, long sleeve shirts, and wide brim hats can help prevent sunburn. Chronic exposure to UV radiation is known to cause skin cancer. In case of sunburn, do not apply burn ointment, cold cream, or butter to relieve pain. Use a dry dressing and get medical attention for severe, extensive sunburns.

B3.4.6.4 Lightning

B3.4.6.4.1 Electrical storms may occur in the project area. When they occur, the resulting lightning poses a safety hazard to field personnel. Since the storms are sometimes fast moving, team personnel should watch for indications of electrical storms The distance to an electrical storm can be estimated by observing the interval between the lightning flash and the sound of thunder. Since sound travels approximately 1,100 feet per second, an interval of 5 seconds corresponds to a storm distance of approximately 1-mile.

B3.4.6.4.2 The Site Manager, SUXOS, and team lead personnel will monitor the site for approaching storms If an electrical storm is observed within five miles of the sites, field personnel will cease outside activities and proceed to the site office for further instructions. If caught in the open by an electrical storm, all personnel will immediately seek shelter in their vehicle and proceed as above. In the event, their vehicle is inaccessible; they will move to a topographically low area away from tall objects and conductors and wait for the storm to leave the area.

SECTION B4
HAZARD ANALYSIS AND RISK ASSESSMENT

B4.1 INTRODUCTION

B4.1.1 Parsons has performed a hazard assessment and risk analysis for each task to be performed on-site by Parsons personnel. Table B4.1 summarizes this analysis. The hazards identified are further discussed in the following subsections.

B4.1.2 The number of persons visiting the site shall be held to a minimum. No more than 8 people per Unexploded Ordnance Safety Officer (UXOSO) shall be allowed to traverse the site at one time. A UXOSO will be on site to observe the geophysical prove-out. The UXOSO may modify this SSHP if site conditions warrant and without risking the safety and health of the team members. Any modifications will be coordinated with the team members and the UXOSO shall notify USAESCH and the Project Health and Safety Manager of any changes as the situation allows.

TABLE B4.1
ACTIVITY HAZARD/RISK ANALYSIS

HAZARDS: Safety, Chemical, Physical, Radiological, Biological, OE (*See Below)	ACTION LEVELS: (**See Below)
- Safety Hazards include falling (open pits, rocks, steep inclines, wet surfaces); climbing (uneven terrain); walking (uneven terrain, surface indentations); eye hazards (windy conditions); and OE. - Physical Hazards include cold or heat injuries. - OE hazard potential. - Biological hazards present.	None / Avoidance

Notes to Hazard/Risk Analysis:

***HAZARDS:**

Safety:

Structural: (e.g. sagging roof or floor, broken or missing stairs, railings, floor boards, leaning or deteriorated load bearing walls/support beams, etc.)

Falling: (e.g. open pits; manholes; silos; wells; shafts; rocks; steep inclines; wet surfaces; etc.)

Climbing: (e.g. falls from structures > 4 feet; deteriorated ladders or missing rungs; etc.)

Walking or Debris: (e.g. Uneven terrain; animal burrows; surface indentations; exposed nails; broken timbers; sharp protruding objects; broken glass; etc.)

Confined Space (e.g. excavations > 4 feet deep; surface/underground utility vaults; vats/silos/grain bins; open surface tanks/cisterns/septic tanks; cellars/crawl spaces; tunnels; wells; boilers; underground/above ground storage tanks; etc.)(NO ENTRY)

Eye Hazards: (e.g. Thicket branches; airborne dust/windy conditions; contaminated liquid splashes; etc.)

OE/Other: (e.g. explosives; combustible or flammable materials; oxygen deficiency; etc.)

Chemical: Evaluate the chemical hazards that may be encountered during site activities for each task. For activities utilizing this plan, encounters with chemicals above the PEL, or TLV are not expected. THIS PLAN SHALL NOT BE USED IF OVEREXPOSURES OR IDLH CONDITIONS ARE EXPECTED. (List the chemical TLV/PEL/REL; OSHA/NIOSH IDLH; odor threshold/warning levels; warning signs/symptoms of overexposure; concentrations expected on site.)

Physical: Evaluate the potential for injury from physical agents such as noise, electricity, moving parts/machinery, heat and cold stress that may be present (e.g. loud machinery; overhead or underground power lines; personal protective clothing, etc.)

Radiological: Evaluate the risk to human health caused by radioactive materials in the area where work is to be performed.

Biological: Evaluate the potential for illness of injury due to biological agents (e.g. poisonous plants, animals, insects, microorganisms, medical waste, etc.)

OE: Evaluate exposure; minimize people, time, and amount of hazardous material. Age or condition of ordnance DOES NOT decrease hazard. Ordnance exposed to fire EXTREMELY hazardous: EVACUATE IMMEDIATELY.

****ACTION LEVELS:**

Action Levels shall typically be defined as requiring site evacuation only, if significant hazards are encountered. Note: The activities for which this SSHP is designed, will not typically encounter ordnance, chemical contaminant or radioactive exposures above background. In the event that chemical or radioactive exposures which are judged to be significant are encountered (reasonable potential to exceed permissible exposure limits or encounter IDLH conditions, or where OE is expected) this plan requires evacuation of the site, reevaluation, and development of a SSHP by the Certified Industrial Hygienist/Safety Personnel which addresses the potential overexposures.

B4.2 CHEMICAL HAZARDS

Studies of this project area have not identified any chemical hazards on the site. If any chemical hazards are suspected, work will be stopped and appropriate procedures will be adopted. Should suspected chemical warfare material (CWM) be encountered during this investigation personnel will immediately withdraw upwind to a safe location.

B4.3 PHYSICAL HAZARDS

During the UXO/OE removal action activities, physical hazards will be present. Prior to entry to any work area on-site, USA (UXO Subcontractor) will perform screening (clearance) of areas of interest. Table B4.2 assesses the hazards associated with each site task.

B4.3.1 General Safety Hazards

- Slip, trip and fall hazards may be encountered at the site including holes, pits, ditches, steep grades, and uneven grades. Personnel should use caution when traversing the site and should report any such hazards to the Field Supervisor and UXOSO if they are discovered.
- Site rules/prohibitions: Use the buddy system during all activities on the site. Eating, drinking, and smoking will be performed in designated areas only.
- Work permit requirements: None. [e.g. No radioactive work, excavation, hot work, confined space, etc.]
- Material handling procedures: Do not handle soils, liquids, radioactive materials.
- Drum/container handling procedures and precautions: Do not open, sample or overpack.
- Confined space entry procedures: Avoid/ Do not enter.
- Hot work, sources of ignition, fire protection/ prevention, and electrical safety: Avoid all electrical hazards, smoking will be permitted in UXOSO-designated areas only. Avoid spark producing objects.
- Excavation and trench safety: Avoid/Do not enter.
- Guarding of machinery and equipment: N/A
- Lockout/Tagout: N/A
- Fall protection: No structural climbing, avoid potential areas where fall through could occur.
- Hazard Communication: N/A
- Illumination: Daylight hours only; flash lights will be carried for emergency use.
- Sanitation: Sanitation facilities will be available at the National Guard Training Center.

- Engineering controls: N/A
- Process Systems Safety: N/A
- Signs and labels: N/A

B4.3.2 Ordnance Hazards

Ordnance and ordnance-related items may be encountered at the site. Personnel should be alert for OE and OE-related scrap. The following general precautions with regards to ordnance will be observed at all times:

- DO NOT touch or move any ordnance item(s) regardless of the markings or apparent condition.
- DO NOT visit an ordnance site if an electrical storm is occurring or approaching. If a storm approaches during a site visit, leave the site immediately and seek shelter.
- DO NOT use radios or cellular phones in the vicinity of suspect ordnance items.
- DO NOT walk across an area where the ground cannot be seen. If dead vegetation or animals are observed, leave the area immediately due to potential contamination by chemical agent.
- DO NOT drive vehicles into a suspected OE area, use clearly marked lanes.
- DO NOT carry matches, cigarettes, lighters, or other flame-producing devices onto an OE site.
- DO NOT rely on color code for positive identification of ordnance item(s) nor their contents.
- Approach ordnance items from the side, avoid approaching the front or rear areas.
- Always assume ordnance items contain a live charge until it can be ascertained otherwise.

B4.3.2.1 Specific Actions to Be Taken Upon Locating Ordnance

- Do not be misled by markings on the ordnance item stating practice bomb or inert. Even practice bombs have explosive charges that are used to mark/spot the point of impact; or the item could be mismarked.
- Do not roll the item over or scrape the item to identify the markings.
- The location of any ordnance items found during site investigation should be clearly marked so it can be easily located and avoided.
- Upon locating any UXO, notify USAESCH PM at (256) 895-1553 during office hours, (Central Time). If after hours, notify USAESCH at (256) 895-1180.

TABLE B4.2 – PROJECT ACTIVITIES AND HAZARDS

Activity	Potential Chemical Hazard	Physical/Safety Hazard	OSHA Standard	COE EM 385-1-1
Geophysical survey and anomaly reacquisition		Cold stress	None	06.J.05-06.J.11
		Heat stress	None	06.J.03 & 06.J.04
		Slip, Trip, and Fall	None	None
		Biological hazards	1926.50	03.A.02 & 03.A.03
Intrusive excavation	Potential exposure to OE	Noise Explosion	Noise-1910.95	Ordnance avoidance Hearing protection (05.C)
	Low exposure potential to OE	Explosion	None	Ordnance Avoidance during Geotechnica l Surveys

B4.3.3 Excavation Hazards

USA personnel will conduct the intrusive activities during this investigation. Although Parsons personnel will not be directly involved with intrusive activities during this investigation, personnel need to be aware of the hazards associated with this type of work. The hazards associated with site activities include:

- Personnel should be cautious of UXO/OE items that may be partially buried or hidden by grass or shrubbery.
- Heavy equipment may traverse work areas.
- Personnel should exercise caution while working in the vicinity of a street and near vehicular traffic.
- Personnel should be trained in the use and safety inspection of hand tools.

B4.3.3.1 Noise

B4.3.3.1.1 Operating heavy equipment can be a potential noise source. This hazard must be evaluated and provisions made to provide site personnel with hearing protection devices if 8-hour average noise levels may exceed 85 dBA, or peak impact noise levels may exceed 140 dBA.

B4.3.3.1.2 USA will administer a continuing effective hearing conservation program whenever noise exposures equal or exceed 85 decibels measured on the A Scale (slow response).

B4.3.3.1.3 The noise TLV refers to sound pressure levels and duration of exposure that represent conditions which it is believe that nearly all workers may be repeatedly exposed without adverse effects on their ability to hear and understand normal speech.

B4.3.3.2 Heavy Equipment

Although the use of heavy equipment is not necessary at Camp Hero, this section is included to complete the SSHP. If heavy equipment becomes necessary, it will be operated under strict adherence to the applicable OSHA regulations found in OSHA 29 CFR 1910, OSHA 29 CFR 1926, the requirements of USACE EM 385-1-1, Section 16 and the USA/OES Safety Program. The procedures and requirements listed below will be followed as a minimum:

1. The operation of heavy equipment will be limited to authorized personnel specifically trained in its operation.
2. The operator will visually inspect heavy equipment daily prior to operation, and report any abnormalities/deficiencies to the UXOSO. Equipment found to be defective will be removed from service immediately.
3. The operator will use the safety devices provided with the equipment, including seat belts, backup warning indicators and horns, which will be operable at all times.
4. While in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
5. The operator's cab will be kept free of all non-essential items and any loose items will be secured.
6. Personnel will avoid moving into the path of operating equipment, and areas blinded from the operator's vision will be avoided.
7. When heavy equipment must negotiate in tight quarters, or if operators of earth moving equipment cannot see the bucket, a secondary person will be stationed to guide the operator.
8. Additional riders will not be allowed on equipment unless it is specifically designed for that purpose i.e., there is an additional seat with a seat belt.

B4.3.3.3 Hand Tools and Small Equipment

Personnel will be trained in the use of hand tools and small equipment. The tools must only be used for their intended purposes and hands will not be used as a substitute for tools. All tools and equipment should be inspected daily for defects or safety issues. Electrical tools and equipment must be properly grounded or be of double-insulation construction and use ground-fault circuit interrupter (GFCI) protection devices.

Additionally, sharp edges on tools will be shielded when not in use. Power tools designed to accommodate guards shall be equipped with such guards and must not be altered.

B4.4 ACTIVITY HAZARD ANALYSIS

B4.4.1 Individual hazard analyses have been performed for each major task at this project site. The potential hazards have been identified, control measures have been outlined, training requirements and personal protective equipment requirements have been established, and equipment inspection procedures have been established. Should new operations be introduced to this site, the USA/OES Safety Manager will perform a hazard analysis. Should operations change significantly during the course of this project, the hazard analysis will be updated to accommodate these changes. Any changes in personal protective equipment, or safe operating procedures will be approved by the Safety Manager.

B4.4.2 The Hazard Analyses that have been performed for this project follow:

1. Backhoe operation.
2. Clearing and Grubbing
3. Magnetometer Survey
4. Motor Vehicle Operation
5. Transport of Explosives
6. Site Preparation
7. OE Sampling/Removal
8. Demolition Operations
9. OE Removal

HAZARD ANALYSIS

Activity: Backhoe Operation

Principal Steps: Inspect equipment to assure it is functioning properly.
Have guide in clear view at all times.
When guide signals it is clear to start operations, begin.
Using signals by guide, perform operation of equipment.
When guide signals path is clear, move the load to designated location.
When guide signals it is clear to do so, lower to load.
When guide signals all is clear, back away from load.
When guide signals path is clear, return equipment to next item to be lifted.
When operations are complete, safely store equipment with bucket fully lowered.

Potential Safety/Health Hazards: Head injuries to personnel working around the heavy equipment from overhead loads.
Heavy equipment injuring personnel from backing into them, moving parts of equipment, or personnel working in blind areas of operator.
Exhaust from equipment in breathing zone of workers.
Noise from equipment motors during operation.
UXO hazards.
Contact of equipment with overhead electrical lines or buried utilities (electric, water, gas, etc.).

Recommended Controls: All persons working in the vicinity of heavy equipment will wear hard hats.
No personnel will be permitted to place any part of body under a raised load.
Location of overhead electrical lines and buried utilities will be established prior to operations.
One guide will be assigned to give signals and he will be in view of the operator at all times.
The guide will assure the area is clear of unnecessary personnel before giving the signal to start any operation, and necessary personnel will be out of the path of travel of the equipment.
No heavy equipment operations will occur without a ground guide first signaling the start of the operation.
All heavy equipment operations will occur outdoors to prevent build-up of exhaust.
Any worker experiencing a problem with exhaust in their work zone, will be removed from that area during equipment operations.
Personnel working near heavy equipment will wear hearing

protection.
The equipment will not be used to dig within 12 inches of anomalies.

Equipment To Be Used: Backhoe

Personal Protective Equipment Requirements: Level D PPE
Cotton work clothes or coveralls
Hard hat
Leather safety boots
Leather work gloves
Hearing protection
Safety Glasses

Inspection Requirements: All PPE will be inspected prior to use. Defective items will be removed from service until repaired or replaced. The heavy equipment will be inspected by the operator daily prior to use for condition and function. Any problems will be immediately corrected prior to use. All safety devices and equipment will be in place and in working order.

Training Requirements: All UXO operations will be performed by UXO-qualified personnel (graduates of the Naval EOD School at Indian Head, MD or US Army Bomb Disposal School, Aberdeen Proving Ground, MD). All personnel working in this operation shall have current OSHA HAZWOPER training. All UXO personnel shall receive site specific training on UXO expected to be located on this site, other anticipated hazards of the site, as well as all PPE requirements. The heavy equipment operator shall be trained and certified on that piece of equipment.

Analyzed By: ______________________________ Date: ____________________

HAZARD ANALYSIS

Activity: Clearing and Grubbing

Principal Steps: Fuel weed-eater and chain saw.
Use weed-eater and chain saw to cut vegetation.
Remove cut vegetation from pathway.

Potential Hazards: Handling flammable liquid during fueling.
Tripping hazards.
Use of power tools.
Flying pieces of debris.
Cuts and abrasions.
Noise
Biological hazards
Heat/cold stress

Recommended Controls: Proper training in equipment use.
Maintaining equipment in good condition.
Wearing personal protective equipment.
Storage of gasoline in approved flammable liquid containers.
Perform fueling in area free of combustible debris/vegetation
Assure fueling is not performed in back of pick-up truck with a nylon bed liner.
Implement heat/cold stress control program.

Personal Protective Equipment Requirements: Modified Level D PPE
Hard hat
Face shield
Leather gloves
Work clothes or coveralls (cotton)
Leather work boots with steel toe or toe-guard
Hearing protection
Leggings or chaps

Equipment to be Used: Weed-eater
Chain saw

Inspection Requirements: Equipment will be inspected in accordance with the manufacturer's instructions daily prior to use. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/ replacement. All safety guards designed on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be tagged out of service until it can be repaired/replaced.

Training Requirements: Operators will be trained in the safe use of required equipment and in the required personal protective equipment. A copy of the manufacturer's instructions and recommendations shall be kept with the equipment. All persons performing operations around UXO will be graduates of the Naval EOD School at Indian Head, MD or US Army Bomb Disposal School, Aberdeen Proving Ground, MD. All personnel performing operations on this site will have current OSHA HAZWOPER training.

Analyzed By: ______________________________ Date: ____________________

HAZARD ANALYSIS

Activity: Magnetometer survey

Principal Steps: Using magnetometer to assure there are no anomalies where stakes are to be driven by the survey team to mark the site. If anomalies are indicated, magnetometer will be used to find another suitable location for the stake, free of anomalies. Magnetometer surveys will also be used to locate buried UXO.

Potential Hazards:
Tripping hazards.
UXO/OE hazards.
Cuts and abrasions from surface debris.
Heat/cold stress.

Recommended Controls:
Operators will be trained in proper use of magnetometer.
Equipment will be maintained in good condition.
Operators will wear required PPE.
Implement heat/cold stress control program.

Personal Protective Equipment Requirements:
Modified Level D PPE
Work clothes or coveralls (cotton)
Leather work gloves
Leather work boots

Equipment to be Used: Schoenstedt Magnetometer

Inspection Requirements: Magnetometer is to be inspected daily before use. It is to be calibrated in accordance with manufacturer's instructions. If equipment is not functioning properly or is not in useable condition, it is to be turned in for repair/replacement.

Training Requirements: Operators will be trained in proper use and function of magnetometer and in required personal protective equipment. All personnel performing this operation will be graduates of the Naval EOD School at Indian Head, MD or US Army Bomb Disposal School, Aberdeen Proving Ground, MD. All operators will have current OSHA HAZWOPER training.

Analyzed By: ______________________ Date: ______________

HAZARD ANALYSIS

Activity: Motor Vehicle Operation

Principal Steps: Perform vehicle inspection to assure vehicle is working properly.
If vehicle is not working properly, it will be turned back to rental agent for repair/replacement. Minor repairs will be made on site.
Assure vehicle is equipped with first aid kit, bloodborne pathogen kit, emergency eyewash kit, fire extinguisher, cellular telephone and/or radios, and tools for the day's operations.
If traveling to a remote area, supervisor and UXOSO will be informed of location, and a supply of drinking water and cups will be packed into vehicle.
Driver will use safety belt when operating vehicle and will assure that all passengers are using safety belts. NO PASSENGER IS PERMITTED TO RIDE IN OR ON ANY PART OF A VEHICLE NOT DESIGNED FOR PASSENGER TRANSPORT AND NOT EQUIPPED WITH A SAFETY BELT.
If transporting equipment or materials, they will be carefully placed in back of truck and secured.
Posted speed zones must be obeyed. If signage is not present, safe speeds will be established by UXOSO for types of roads on site (i.e., paved, gravel, dirt, etc.) and safe speeds will be observed at all times by vehicle operators.

Potential Hazards: Injuries due to loss of control of vehicle.
Fire in vehicle.
Heat/cold stress.

Recommended Controls: Driver and all passengers will wear seat belts (lap and shoulder belts) when vehicle is in operation.
Vehicles will be equipped with fire extinguishers.
Vehicles will have ample supply of drinking water.
Cargo will be secured to prevent additional sources of injury in the event of an accident.
Driver will observe approved speed limits.
Driver will assure telephone or radio contact is available in the vehicle.
Heat/cold stress control program will be implemented.

Personal Protective Equipment Requirements: Seat Belts
Two way radio or cellular telephone

Equipment to be used: Vehicle

Inspection Requirements: Vehicle will be inspected daily prior to use. Any hazardous conditions noted during the inspection will be repaired prior to using the vehicle.

Training Requirements: Any vehicle operator on this site is required to have a valid driver's license issued from his state of residence. All personnel driving or riding as passengers in vehicles will be trained in fire extinguisher usage and in the symptoms and prevention of heat related illnesses, as well as emergency procedures.

Analyzed By: ______________________________ Date: ____________________

HAZARD ANALYSIS

Activity: Transport of Explosives

Principal Steps: Perform vehicle inspection to assure vehicle is working properly.
If vehicle is not working properly, it will be turned back to the rental agent for repair/replacement. Minor repairs will be made on site.
Assure vehicle is equipped with first aid kit, bloodborne pathogen kit, emergency eyewash kit, two fire extinguishers, cellular telephone and/or radios, sandbags, metal explosives storage boxes, and tools for the day's operations.
If traveling to a remote area, Supervisor and UXOSO will be informed of the location, and an adequate supply of drinking water and cups will be packed into the vehicle.
Vehicle will be placarded as carrying explosives.
Driver will use safety belt when operating vehicle and will assure that any passengers are using safety belts.
Explosives for the day's operations will be signed out from the storage magazines.
Explosives will be securely placed in the back of the pick-up truck and sandbagged. Blasting caps will be placed in a separate storage container, segregated from the perforators and detonation cord.
Excess explosives will be turned in to the storage magazines at the end of the shift.

Potential Hazards: Explosive hazards
Fire hazards
Heat/cold stress
Injuries due to loss of control of vehicle

Recommended Controls: Driver and all passengers will wear seat belts when vehicle is in operation.
Vehicles will be equipped with two fire extinguishers.
Vehicles will have ample supply of drinking water.
Driver will observe posted speed limits.
Driver will assure telephone or radio contact is available in the vehicle.
Blasting caps will be in separate storage container from detonating cord and perforators.
Explosives will be sandbagged and secured to prevent movement of cargo.
Vehicle with explosive cargo will not be left unattended.
Heat/cold stress control program will be implemented.

Personal Protective Equipment: Seat belts
Two way radio or cellular telephone

Equipment to be used: Vehicle

Inspection Requirements: Vehicle will be inspected daily prior to use. Any hazardous conditions noted during the inspection will be repaired prior to using the vehicle. Inspection of the contents of the vehicle will assure that emergency supplies and communication equipment are readily available. If traveling to a remote location, the inspection of the vehicle will assure that an adequate supply of drinking water and cups are available. The driver will inspect the packing of explosive materials for transport to assure segregation of blasting caps from other explosive items, and to assure sandbagging is in place and explosives are in a secure position prior to transport.

Training Requirements: Any vehicle operator on this site is required to have a valid driver's license issued from his state of residence. All personnel driving or riding as passengers in vehicles shall be trained in fire extinguisher usage and shall be trained not to attempt to fight any fire involving explosive materials. Personnel will be trained in the symptoms and prevention of heat related illnesses. Any person involved in handling or transporting explosive materials will be a graduate of the Naval EOD School at Indian Head, MD or US Army Bomb Disposal School, Aberdeen Proving Ground, MD.

Analyzed By: ____________________ Date: ______________

HAZARD ANALYSIS

ACTIVITY Site Preparation ANALYZED BY/DATE M. Winningham - 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Grubbing and Brush Clearing Preliminary site inspection	Potential UXO	Be alert. Mark and report all UXO located during this task. Do not subject UXO to heat, shock, or friction.
	Cold/heat stress	Take appropriate weather protection measures
	Wildlife, venomous snakes, insects, biological hazards	Be alert. Watch for snakes, make noise, and do not handle wildlife. Check yourself at end of the day for ticks. Wear light color clothing with cuffs and openings closed.
	slips, trips, falls	Be alert. Watch for trip hazards and look where you walk.
	Cuts and lacerations from using cutting tools and from brush (required PPE level)	Personnel will wear Level D PPE to include the following; leather gloves, hard hats, safety boots, and eye protection when cutting and clearing brush, personnel using chainsaws or machetes will wear protective kevlar chaps. Hearing protection will be worn when using power equipment. Have water, first aid kits, communication on location.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Chainsaws, axes, brushhooks, machetes	Check chainsaw for good working conditions, saw bar and chain, fuel and spark arrestor	Inspection criteria; starting procedures; fuel is a flammable and explosive material. Proper safety equipment on site and in use. Personnel read and comply with SSHP
Heavy Equipment	Check equipment for good, working condition, back-up alarms, equipment complies with 29 CFR 1926.	Vehicle operations training as needed.

HAZARD ANALYSIS

ACTIVITY OE Sampling/Removal ANALYZED BY/DATE M. Winningham 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Establishing Boundaries and Grids	Potential UXO	Be alert. Mark and report all UXO located during this task. If using an subcontractor provide UXO escort and perform magnetometer check prior to driving stakes into the ground.
	Wildlife, venomous snakes, insects	Be alert. Watch for snakes, make noise, and do not handle wildlife. Check yourself at end of the day for ticks. Wear light color clothing with cuffs and openings closed.
	Slips, trips, falls	Be alert. Watch for trip hazards and look where you walk.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Magnetometers, measuring tapes	IAW manufactures manuals	Brief subcontractor(s) on UXO Hazards.

HAZARD ANALYSIS

ACTIVITY OE Sampling/Removal ANALYZED BY/DATE M. Winningham - 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Marking and Searching Grids Identify OE/UXO	Potential UXO	Follow WP, SSHP, and other standard practices. Stay alert. Wear level D PPE, IAW SSHP. Apply USAESCH Safety Concepts and Basic Consideration for UXO Operations.
	Wildlife, snakes, insects	Be alert. Watch for snakes, make noise, and do not handle wildlife. Check yourself at end of the day for ticks. Wear light color clothing with cuffs and openings closed.
	Slips, Trips, Falls	Stay alert. Look for trip hazards.
	Heat stress	Take appropriate weather protection measures
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Magnetometers/Metal Detectors	Daily operational checks	Train operators in the use of locating equipment and brief workers in UXO safety.
Hand tools		40 hour hazards waste worker course. Graduate of the Naval EOD School or US Army Bomb Disposal School.
		Site-specific UXO and hazard training. Read and comply with SSHP.
Heavy Equipment	Check equipment for good working condition, back-up alarms, equipment complies with 29 CFR 1926.	Vehicle operations training as needed.

HAZARD ANALYSIS

ACTIVITY OE Sampling/Removal ANALYZED BY/DATE M. Winningham - 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Removing contacts Identify OE/UXO	Potential UXO Unplanned Detonation Unauthorized personnel in area	Only qualified UXO personnel will excavate UXO in accordance with the WP/SSHP and USAESCH Basic Concepts and Safety Considerations dated February 1996. Only necessary personnel to perform the excavation will be in the work area. Only hand excavations will be permitted for uncovering OE/UXO. Post warning signs, establish exclusion zones, and stop all unauthorized persons from entry. Use caution when moving around the site
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Shovels, trowels, picks,	Good repair, check daily before use	UXO personnel are graduates of the Naval EOD School or US Army Bomb Disposal School. Brief personnel on site specifics.
Schonstedt GA-52C/72B		Training in the use of hand tools
		Daily Tailgate Safety meetings
Heavy Equipment	Check Equipment for good working condition, back-up alarms, equipment complies with 29 CFR 1926.	Vehicle operations training as needed.

HAZARD ANALYSIS

ACTIVITY Demolition Operations ANALYZED BY/DATE M. Winningham - 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Detonating in place	Unplanned Detonation	Handle in accordance with WP, SSHP, and standard demolition procedures.
Preparing and placing charges	Unplanned Detonation	Handle in accordance with WP, SSHP, and standard demolition procedures.
	Noise	Distance and tamping. Provide hearing protection and monitor noise emission.
	Flying debris	Distance and tamping material. Protection during demolition operations at least the fragmentation distance away from disposal sites.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Demolition materials and equipment	Good working order	In accordance with EODB/TM/TO 60A-1-1-31 and state laws.
Explosives	Properly stored and in good condition	Handle in accordance with WP, SSHP, and standard practices.
		Graduates of the Naval EOD School or US Army Bomb Disposal School.

HAZARD ANALYSIS

ACTIVITY Demolition Operations   ANALYZED BY/DATE M. Winningham - 11/3/98   REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Transporting demolition materials to site	Unplanned detonation/vehicle accident or fire	Handle and transport in accordance with WP, SSHP, and standard procedures. Use only qualified drivers. Plan routes and travel times. Inspect vehicle for explosive transportation suitability. Fire extinguisher. Vehicles will be placard. Blasting caps and demolition materials will be in separate containers. Use proper lifting techniques.
Preparing and placing charges	Unplanned detonation	Handle and transport in accordance with WP, SSHP, and standard procedures.
	Noise	Distance and tamping material.
	Flying debris	Distance and tamping material.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Demolition equipment & materials.	Good working order	In accordance with EODB/TM/TO 60A-1-1-31 and state laws.
Explosives	Properly stored	In accordance with the WP, SSHP, and standard procedures.
		Graduates of the Naval EOD School or US Army Bomb Disposal School.

HAZARD ANALYSIS

ACTIVITY OE Removal ANALYZED BY/DATE M. Winningham - 11/3/98 REVIEWED BY/DATE Ed Grunwald – 10/12/00

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
(Identify the principal steps involved and the sequence of work activities.)	*(Analyze each principal step for its potential hazards.)*	*(Develop specific controls for each potential hazard.)*
Heavy Equipment Operations	Potential UXO/Detonation	Be alert. Mark and report all UXO located during this task. Remotely move all stuck/wedge UXO.
	Dust Particulate	Use dust suppression, if necessary upgrade to Level C PPE
	Noise	Hearing protection, noise monitoring.
	Crushing Hazard	Be alert, wear orange vest, designate safety observer, stay in sight of heavy equipment operators.
	Falling objects from buckets	Be alert, wear hard hats around equipment, ensure that shaker is turned off before working around it.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
(List equipment and/or machinery to be used in conducting the work activities.)	*(List inspection requirements for the equipment and/or machinery used.)*	*(Determine requirements for worker training, including hazard communication.)*
Heavy Equipment	IAW manufactures manuals	Brief personnel on Hazards.

SECTION B5
TRAINING

B5.1 TRAINING

All field personnel must have received 40 hours of initial training in hazardous waste operations before participating in this project, as required by 29 CFR part 1910.120(e). In addition, all field personnel will have had at least three days of field experience under the supervision of a trained supervisor. On-site personnel must be up to date on their annual 8-hour refresher training. The names of on-site personnel, along with their training history and medical certifications, will be submitted to USAESCH for approval prior to commencing fieldwork. The UXOSO will collect and maintain at the site training (40- and 8-hour HAZWOPER) and medical certifications for all workers participating in site operations at the former Camp Hero. The Field Team Leader and UXOSO must have completed the above training and an additional 8-hours of supervisory instruction.

B5.1.1 UXO Personnel

USA personnel must provide the UXOSO with documentation of the successful completion of Naval Explosive Ordnance Disposal training or US Army Bomb Disposal School. All personnel must meet the requirements set forth in "Personnel/Work Standards" (DID OE-025), March 3, 2000. UXO personnel will be U.S. citizens and graduates of one of the following: U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland; U.S. Naval EOD School, Indian Head, Maryland; EOD Assistants Course, Redstone Arsenal, AL or Eglin Air Force Base, FL; or DoD certified equivalent course. Credit for the EOC experience while assigned to the National Guard or Reserve will be based on the actual documented time spent on active duty, not on the total time of service.

B5.1.2 Site-Specific Training

B5.1.2.1 The UXOSO is responsible for developing a site-specific occupational hazard training program. The UXOSO is responsible for providing training to all Parsons personnel and Parsons subcontractors under Parsons H&S supervision that are to work at the former Camp Hero. This training will cover the following topics:

- Names of personnel responsible for site safety and health.
- Safe work practices.
- Site history.

- Safety, health, and other hazards at site.
- Work zones and other locations.
- Emergency procedures, evaluation routes, emergency phone numbers.
- Acute effects of compounds at the site.
- OE recognition and reporting.
- Prohibitions in areas and zones, including:
    - ◊ Site layout,
    - ◊ Procedures for entry and exit of work areas and zones.
- Cold/Heat Illnesses (Depending on time of year).
- Visitors to the support zone will receive training in the following areas:
    - ◊ Emergency signals and procedures.
    - ◊ Work areas and locations.
    - ◊ Names of field team leader and site health and safety officer.

B5.1.2.2 Employees will also be instructed in the use of the buddy system, which is a method of organizing work groups so that there is someone that is always available to:

- Provide his or her partner with assistance in an emergency.
- Observe his or her partner for signs of chemical or physical exposure.
- Periodically check the integrity of his or her partner's PPE.
- Notify the emergency response personnel when an emergency occurs.

The buddy system will be used at all times when employees are within an EZ.

B5.1.2.3 At the completion of site-specific training, all employees will be required to sign a form that states they have received site-specific training and read, understood, agreed, and will abide by the health and safety procedures outlined in this SSHP. Attachment B-2 contains the Plan Acceptance Form.

B5.1.3 Tailgate Safety Meetings

A short tailgate safety meeting will be held each morning. Topics will include a review of safety procedures for that day's activities, which may include changes in site conditions, topics covered in the initial health and safety meeting as they apply to daily activities, medical surveillance program, PPE, potential chemical and physical hazards, etc. Certificates and records of on-site training will be maintained by the UXOSO. Additionally, each field team member will sign the Daily Safety Meeting Log (Attachment B-4) attesting to their understanding and acceptance of the SSHP and copies of these forms will be kept on file.

B5.1.4 CPR/First Aid Training and Bloodborne Pathogens

B5.1.4.1 Two USA/OES personnel certified in First Aid/CPR will be on site to provide immediate response to an accident situation until medical assistance arrives on the site. These selected employees are trained in CPR and first aid for emergency use only.

B5.1.4.2 An indoctrination to the bloodborne pathogens standard (29 CFR 1910.1030) will be provided to all employees either during their first aid training, and/or during the initial site health and safety meeting. Infections can be transmitted during emergency first aid and CPR through contact with blood. It is important to recognize the concept of universal precautions. Universal precautions require one to assume that all blood and bodily fluids contain pathogens and require the use of protective barriers to prevent exposure. Latex gloves and CPR barriers will be available in the first aid supplies stored at each site and should be used prior to attending to a victim's needs. Additionally, washing any body part or surface that has been contaminated with blood is an important part of the universal precautions. The UXOSO should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job.

B5.1.5 Emergency Response Procedures

All employees will be made aware of the project emergency assistance network, the most probable route of evacuation from the site in the event of an emergency, and other emergency procedures included in Section B11.

B5.1.6 Hazard Communication Training

In accordance with the OSHA Hazard Communication Standard (29 CFR 1920.1200 and CFR 1926.59), copies of all material safety data sheets (MSDS) for hazardous chemical materials that are used during site operations or that are present on-site will be available from the UXOSO. The UXOSO will conduct hazard communication training in accordance with 29 CFR 1920.1200 and CFR 1926.59 and the Hazard Communication Program (see Section B15). Training will include, but not limited to, all hazards or potential hazards associated with site activities and any hazardous chemical materials brought to or found on site.

B5.1.7 Laborers Training

Site-specific laborer training will be provided for all on-site laborers in accordance with 29 CFR 1910.120.

B5.1.8 Visitor Training

B5.1.8.1 Any visitor entering the work zone must provide documentation of 40-hour training and enrollment in medical monitoring program. The UXOSO will provide initial safety training as outlined below.

- Location and description of potential hazards and risks;
- A short briefing about chemical and physical hazards found on-site;
- Areas of the site that are closed to visitors;
- The site excavation plan and emergency procedures; and
- Other topics as deemed appropriate.

B5.1.8.2 Site visitors wishing to enter the EZ during site operations will be subject to the same site specific and hazard information training as specified for Parsons and USA. In case of a visitor entering the Exclusion Zone, all intrusive activities will cease. Visitors requesting entry to the EZ will also be required to present documentation of OSHA hazardous waste training and medical surveillance, consistent with the requirements of the general site employees. All visitors will make appropriate entries in the Visitor's Log.

B5.2 TRAINING DOCUMENTATION

Documentation of training requirements is the responsibility of each employer. Written documentation verifying compliance with 29 CFR 1910.120 (e)(3), (e)(4) (as applicable) and (e)(8) must be submitted to the Certified Industrial Hygienist or UXOSO prior to entering the EZ. Documentation of worker's current training credentials will be kept on site and submitted to the PM upon request.

SECTION B6
PERSONAL PROTECTIVE EQUIPMENT

B6.1 GENERAL

B6.1.1 Personnel working in close proximity to the established work zones will be required to wear OSHA Level D protection. Level D PPE is not allowed in areas of the site where atmospheric hazards are known or expected to exist. Level D should be worn only if the activity in which personnel are engaged does not have the potential for splash, immersion or any other contact with hazardous substances. This will consist of at a minimum:

- Work clothes or coveralls (cotton).
- Leather work gloves.
- Leather work boots (safety toe if foot hazards exist).
- Safety glasses.
- Hard Hat when working around heavy equipment.
- Hearing Protection.
- Snake Chaps (if necessary).
- Two-way radio, one.
- Kevlar Chaps (when using chain saw).

B6.1.2 Personnel working away from active field investigations will not be required to wear safety boots or hard hats.

B6.1.3 Hazard and risk assessment is a continuing process, to be conducted throughout the duration of the project. Changes in specific PPE, levels of PPE or respiratory protection may be made, in accordance with information obtained from actual implementation of site activities and data derived from the Site Specific Monitoring Plan. As a rule, levels of PPE and respiratory protection will need to be reassessed if any of the following occur:

- Appearance of previously unidentified or anticipated chemical conditions or task hazards.
- Ambient weather conditions change which impact the use of assigned PPE.
- A new task is introduced or a previously assigned and evaluated task is expanded in scope.

B6.1.4 If work tasks are added to the SOW after approval of this SSHP, the UXOSO shall identify and assess the task hazards and relay that information to the

Parsons CIH. The CIH will then complete a Certification of Hazard Analysis form and designate the level and type of PPE to be used during conduct of the task. The new certificate, along with any other additions, changes or modifications to the approved SSHP shall be approved by the Parsons's CIH and PM.

B6.1.5 USA shall provide the PPE and respiratory protective equipment, if necessary, for the completion of site tasks. Ensure that all PPE and respirator use complies with all applicable OSHA, USACE, and Army regulations. The following special considerations shall be observed in the selection of PPE:

- Hard hats will be required when working around heavy equipment or when an overhead hazard exists.
- Steel toe/shank boots are not required during surface/subsurface location of UXO unless a serious toe hazard exists, whereupon a composite fiber safety toe will be used.
- Safety glasses shall be selected which provide site personnel with the best protection from not only physical hazards, such as flying objects, but also provide adequate ultra violet radiation protection.
- The OSHA standard for PPE, 29 CFR 1910.132, is very vague concerning selection of specific PPE, therefore, USA shall continually evaluate site tasks to identify hazards and shall provide any PPE necessary to ensure the safety and health of site personnel, regardless of the activity they perform.
- Other task-specific PPE as specified in Table B6.1.

B6.2 PERSONAL PROTECTIVE EQUIPMENT (PPE) PROGRAM:

- PPE Selection: Level D
- PPE Use and Equipment Limitations: No known atmospheric hazard; work tasks preclude splashes, immersion and potential for unexpected inhalation/contact with chemical hazards.
- Work Mission Duration: Team Leader/UXOSO Instructions
- PPE Maintenance and Storage: N/A
- PPE Decontamination and Disposal: N/A
- PPE Training/Fitting: N/A
- PPE Donning and Doffing: N/A
- PPE Inspection: Team Leader/UXOSO Instructions
- PPE Program Effectiveness: N/A; Level D only
- PPE Temperature Limitations: N/A

When site conditions warrant, additional protective clothing will be worn (e.g., working in wet and cold weather conditions wear proper rain gear, including gloves and boots).

B6.3 EQUIPMENT

B6.3.1 First aid kits for the treatment of minor injuries and burns shall be maintained onsite. The first aid kits shall be inspected by the UXOSO at least weekly to ensure adequate supplies are available and in proper working order. The contents and number of first aid kits shall be determined by EM-385-1-1, Section 03.B and approved by the UXOSO prior to the start of site activities.

B6.3.2 At a minimum, the following general emergency equipment will be available at the site at all times:

Equipment	Location
Fire Extinguishers	Two in the vehicle transporting explosives, one in each transport vehicle and piece of heavy equipment
Emergency Eyewash	Each vehicle on-site
First Aid Kit	Each vehicle on-site
Stretchers	One in the UXOSO vehicle

TABLE B6.1 - PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS BY TASK

Task	PPE	Level D	15 Minute Escape Pack	Coveralls/Pants	Work Boots (steel toed boots if foot hazard)	Work Gloves	Hearing Protection (Near machinery)	Protective Eyewear	Protective Chaps (as required)	Hard Hat (Near overhead hazards)
Site Management	D			√	√					√
Site Preparation	D			√	√	√	√	√	√	√
Surface Clearance	D	√		√	√	√	√	√		√
Intrusive Excavation	D	√		√	√	√	√	√		√
Disposal Operations	D	√		√	√	√	√	√		√
Disposition of Scrap Metal	D	√		√	√	√	√	√		√
Quality Control	D	√		√	√	√	√	√		√
Close-out/Demobilization	D	√		√	√	√	√	√		√

SECTION B7
MEDICAL SURVEILLANCE

B7.1 MEDICAL SURVEILLANCE PROGRAM

All Parsons and UXO Subcontractor personnel performing on-site field activities participate in an ongoing medical surveillance program in accordance with 29 CFR Part 1910.120(f). Parsons ES utilizes the services of a licensed occupational health physician to provide the medical examinations and surveillance. The content of the examination is designed to determine each individual's fitness for duty, including ability to work while wearing protective equipment (e.g., respirator, impermeable clothing, etc.). The medical surveillance program requires all field personnel receive medical examinations:

- Prior to site activities;
- Annually;
- Upon termination;
- Following exposure or injury; and
- Additionally as needed on a case-specific basis.

B7.1.1 Dosimetry

Exposure to ionizing radiation resources is not anticipated.

B7.1.2 Exposure Monitoring/Air Sampling Program

- Air Monitoring/Air Sampling: N/A
- Real-time Screening for Ionizing Radiation: N/A
- Sampling and analytical methods: N/A
- Sample analysis laboratories: N/A
- Meteorological data: N/A
- Noise monitoring: N/A
- Monitoring/sampling results: N/A
- Exposure monitoring records: N/A

B7.2 DOCUMENTATION

All personnel on this project will present to the UXOSO a physician's certification of completion of a comprehensive medical monitoring examination within the 12 months prior to the beginning of activities. No one shall be permitted to conduct site operations until a copy of their medical certification is received by the UXOSO. Additionally, the UXOSO will ensure that workers remain current in their medical monitoring throughout the duration of the project. Copies of employees' Health Status Reports will be available to the Contracting Officer upon request. All medical and exposure records will be retained on file at least 30 years after employment has been terminated.

SECTION B8
ENVIRONMENTAL AND PERSONAL MONITORING

No hazardous materials have been confirmed at this site. If there is any indication of toxic substances (discolored soil) discovered in these or other locations where intrusive investigations are to occur, work will be suspended until proper monitoring equipment can be obtained and properly utilized.

SECTION B9
SITE CONTROL

B9.1 GENERAL SITE ACCESS CONTROL

B9.1.1 The purpose of site access control is to protect the public and workers from the site's hazards and prevent vandalism of the site operations. Site access control will be implemented by the UXOSO and will be accomplished through a program that limits movement and activities of people and equipment at the project site. Site control requires the establishment of site work zones, a communications network, an evacuation protocol, and site security. Site access control will be based on site-specific characteristics including:

- Potential chemical, biological, physical or explosive hazards;
- Terrain;
- Expected weather conditions;
- Planned site activities; and
- Site proximity to populated areas.

B9.1.2 Site access control will include the following:

- Worker/visitor registration;
- Escort of visitors;
- PPE requirements; and
- Posting of site/work area boundaries.

B9.2 WORK ZONES

9.2.1 Work Zones will be established utilizing the minimum separation distance (MSD) for each individual sector to be investigated. A MSD will be established around each anomaly intrusively investigated within a transect or grid in order to protect non-essential/non-UXO personnel and the general public in the event of an accidental detonation. MSDs will also be established during demolition activities. The MSD's boundaries will not be physically marked, but rather will be identified by using key terrain features at or beyond the calculated arc distance. Access and egress routes will be strictly controlled while MSDs are in force. Parsons will post sentries at discernible ingress points at the site. Only UXO personnel and the USAESCH Safety Specialist (if on-site) will be authorized access to the MSD. The MSDs will be enforced at all times during intrusive activities and when demolition activities are in progress. The UXOSO shall brief the UXO-qualified personnel on entering/exiting procedures and will establish and maintain the integrity of the MSD.

9.2.2 Parsons submitted a request to the USAESCH-OE-DC Project Manager requesting calculated fragmentation distances, which has been signed by Dr. Michelle Crull, based on the most probable munition (MPM) suspected for each area. The approved MSD safety distances are presented in Appendix E of the Work Plan. The USAESCH-approved MSDs will be utilized unless an ordnance item with a greater MSD than the MPM is discovered in a given area. Appendix E shows the MSD for each area. The approved MSD may be reduced by USAESCH to a distance based on one hazardous fragment per 600 square feet by USAESCH. A reduction of the MSD may also be requested for implementation of engineering controls. In both cases, a written concurrence letter is required from USAESCH and will be kept in the project file.

B9.3 SITE MAP

A site map will be used by the UXOSO during the Tailgate Safety Briefings to inform the workers of the location of hazardous areas on the site, the assembly areas to be used in the event of a site evacuation, and any other information relevant to the day's activities.

B9.4 SITE SECURITY (PHYSICAL AND PROCEDURAL)

Site security will be adjusted for each activity at the site. At a minimum, the MSDs will be enforced during intrusive and demolition activities. Access will be limited to project team personnel for other activities, where possible. Access will be controlled utilizing various means. This may include personnel check points, barriers, tape, etc. Generally, it is anticipated that the site team will be the only personnel on the site.

B9.5 COMMUNICATIONS

B9.5.1 On-Site Communications

On-site communications will be used to communicate safety information and for other work-required communications. On-site communications will be achieved orally with a contingency for hand signals, or on-site cellular phone / FM two way radio (in the absence of suspected ordnance).

B9.5.2 Off-Site Communications

A cellular phone will be available to the UXOSO to contact emergency response organizations if needed (EMS, Fire Department, Police, etc.).

SECTION B10
PERSONNEL AND EQUIPMENT DECONTAMINATION

Decontamination is not required at the former Camp Hero site because there are no confirmations of Hazardous, Toxic, or Radiological Waste (HTRW) materials or CWM at the site.

10.1 PERSONAL HYGIENE AND DECONTAMINATION

- Necessary facilities and their locations: To be determined at site.
- Decontamination SOPs: N/A

10.2 EQUIPMENT DECONTAMINATION

- Decontamination facilities/locations: N/A
- Decontamination procedures: N/A

SECTION B11
EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

B11.1 INTRODUCTION

B11.1.1 The purpose of the Emergency Response and Contingency Procedures (ERCP) is to define procedures to protect human health and the environment both on and off site in the event of an accident or emergency during the remediation activities at the former Camp Hero. The ERCP complies with 29 CFR 1910.120(1) and addresses the following elements:

- Pre-emergency planning;
- Personnel roles, lines of authority, training, and communications;
- Posted instructions and emergency contacts;
- Emergency recognition and prevention;
- Site topography, layout, and prevailing weather conditions;
- Criteria and procedures for site evacuation; and
- Procedures for decontamination and medical treatment.

B11.1.2 The ERCP meets the guidelines given in *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, Appendix B, Contingency Plan* (EPA, 1990). As suggested by EPA, the ERCP includes elements to protect the local affected population in case of an accident or emergency. These are:

- Name of person responsible for responding in the event of an emergency incident;
- Plan and date for meeting with the local community;
- First-aid and medical information;
- Air monitoring plan; and
- Spill control and countermeasures.

B11.2 PRE-EMERGENCY PLANNING

B11.2.1 If an emergency develops on site, the procedures delineated herein are immediately followed. Emergency conditions exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure;
- A condition occurs that is more hazardous than anticipated; and/or
- Fires, explosions, structural collapses/failures, and/or unusual weather conditions (thunderstorms, lightning, high winds, etc.) occur.

B11.2.2 If an emergency occurs, direct voice communication is used to sound the alarm. If personnel are out of range of direct voice communication, an air horn meeting the requirements of 29 CFR 1910.165 is sounded. One vehicle shall remain on site at all times while work is in progress. This vehicle will be used to transport personnel in cases of emergencies. All motor vehicles will be operated in accordance with EM 385-1-1. General emergency procedures and specific procedures for personal injury are described within this section. Table B11.1 is a list of emergency contacts. Figures B11.1 shows the route to the hospital closest to the former Camp Hero site.

B11.2.3 In case of emergency, UXOSO will implement the site emergency procedures. The following procedures will be followed:

- Notify the contact listed in Table B11.1 when an emergency occurs. This list is posted prominently at the site.
- Use the "buddy" system (pairs).
- Maintain visual contact between "pairs." Each team member remains close to the other to assist in case of emergencies.
- If any member of the field crew experiences any adverse effects or symptoms of exposure, the entire field crew will immediately halt work and act according to the instructions provided by the Site Manager.
- Any condition that suggests a situation more hazardous than anticipated will result in evacuating the field team and re-evaluating the hazard and the level of protection required.
- If an accident occurs, the Site Manager is to complete an Accident Investigation Report Form, Eng. Form 3394 (Attachment B-5) within five working days and submit to USAESCH. Follow-up action will be taken to correct the situation that caused the accident.
- Refer to Subsection B11.8.1.3.2 for steps to take when a personal injury occurs.

The UXOSO is specifically responsible for the following:

- Implementing the site ERCP, including ordering site evacuations, coordinating fire fighting efforts, and directing spill control and cleanup.
- Supervising site evacuation.
- Contacting emergency services such as the fire department, ambulance and security services, as may be required.

- Assisting in providing first aid services and medical support or evacuation for injured or exposed personnel.
- Determining the cause of the incident and ways to prevent future occurrences.
- Preparing a written incident report for submission to the Parsons, USAESCH and CENAN Project Managers.

B11.2.4 On-site personnel are responsible for reporting emergencies or conditions immediately to their supervisors, alerting other employees; helping injured personnel, and assisting as directed to mitigate the incident.

B11.2.1 Accident Investigation and Reporting

B11.2.1.1 In case of an accident on-site, the UXOSO and Site Manager shall be notified immediately. The UXOSO is responsible for initiating first aid and contacting off-site emergency-medical services, if necessary. The UXOSO will initiate the site Emergency Response Contingency Plan if necessary.

B11.2.1.2 Initial notification of an accident may be verbal, in person, by hand signals, or by an alarm device such as an air horn. In high-hazard areas where radio or other communications are hampered or impractical, air horns and the buddy system shall be used, as will emergency escape or self-rescue provisions for workers. Specific on-site procedures will be given at the site-specific safety meeting.

B11.2.1.3 Once the initial accident report has been received by the UXOSO and necessary emergency procedures are initiated, verbal reports will be given to the Parsons PM, USA Safety Manager, and other interested parties. Personal injury reports will be completed, filed, and recorded on an OSHA 200 Log of injuries and illnesses.

B11.2.1.4 All injuries, recordable accidents, and illnesses will be reported to the Parsons PM. Accident/incident reporting will be in accordance with DID OE-015. A completed ENG Form 3394 (Attachment B-5) will be submitted to the USAESCH and CENAN within two working days. Following is a detailed description of a recordable accident as defined in AR 385-40 and USACE supplements. (Note that these definitions do not apply to recordable accidents with regard to OSHA.)

B11.2.1.5 Recordable accidents are those accident Classes A through C, and some types of Class D accidents and occupational illnesses (explained below). Only Class D accidents and occupational illnesses for which a Federal Employees Compensation Act (FECA) claim has been sent to the Department of Labor will be considered recordable to the CENAN and USAESCH. Class D accidents dealing with cumulative exposure occupational illnesses (noise induced hearing loss, organic solvent exposure, dermatosis, silicosis, etc.) will also be forwarded to the USAESCH and CENAN.

- **Class A Accident**. An accident in which the resulting total cost of property damage and personal injuries is $1,000,000 or greater; or an injury or occupational illness resulting in a fatality or permanent total disability.

- **Class B Accident.** An accident in which the resulting total cost of property damage and personal injuries is $200,000 or more, but less than $1,000,000; or an injury or occupational illness resulting in a permanent partial disability or when five or more people are hospitalized.

- **Class C Accident.** An accident in which the resulting total cost of property damage and personal injuries is $10,000 or more, but less than $200,000; or an injury or occupational illness that results in a lost workday case with days away from work.

- **Class D Accident.** An accident in which the resulting total cost of property damage and personnel injuries is $2,000 or more, but less than $10,000; or an injury or occupational illness that does not cause lost time from work beyond the end of the shift or workday.

B11.2.1.6 The UXOSO will be responsible for conducting an investigation of all on-site accidents involving personal injury, illness, death, or property damage on incidents that are regarded as "near misses." The investigation will consist of conducting interviews with witnesses and/or persons involved in the accidents; inspecting the accident site and equipment involved in the accident; reviewing the operating procedures, existing site or weather conditions; and qualifications, training, and experience of the workers involved and examination of generally accepted safety procedures and regulations. The objective of the investigation is to clarify the actual events of the accident, to establish the probable cause or causes, and to determine appropriate preventative or protective measures. The UXOSO will prepare a written report of his findings including recommendations for preventing future incidents. The report will be discussed in detail with the Parsons, USA, USAESCH, and CENAN PMs. The conclusions reached regarding the accident and preventative measures will be included in the next tailgate safety meeting.

B11.3 PERSONNEL ROLES, LINES OF AUTHORITY, TRAINING, AND COMMUNICATIONS

B11.3.1 Personnel roles, lines of authority, and training are discussed in Section B2. Communications, both on site and off site, are covered in Section B9.5. The following paragraphs provide a brief summary of the activities that take place prior to and during site activities.

B11.3.2 Before starting site activities, the SUXOS and the UXOSO will review the emergency procedures of this plan and will ensure that all necessary emergency equipment is ready for use. The UXOSO will ensure that all personnel are trained on emergency procedures. When appropriate, the UXOSO shall modify or make additions to the emergency procedures to enhance the effectiveness of the procedures. These modifications are subject to Parsons H&S Manager approval.

B11.3.3 The SUXOS and UXOSO will also establish emergency evacuation routes and review potential emergencies and how they may occur. The SUXOS and UXOSO will address the containment and storage of hazardous materials, and will take measures to prevent leaks, spills or accidents. Hazardous materials shall be properly packaged, stored, protected, and secured including, but not limited to, protection from sun, heat, flames, water, and weather; isolation from personnel; segregation by hazard classifications; protection from vehicles, equipment or traffic; posting of appropriate warning signs; and providing secondary containment as may be necessary.

B11.3.4 The UXOSO will ensure that all personnel working on or visiting the site are briefed on emergency procedures, including alarms or other warning devices and evacuation routes. On-site personnel will also be briefed on their roles in emergencies, such as fire fighting, spill cleanup, and first aid.

B11.3.1 Subcontractor Supervision

B11.3.1.1 The rules of construction as published in 29 CFR 1926.16 shall be followed where applicable. USA shall assume all obligations prescribed by OSHA standards. The subcontractors also assume responsibility for compliance with respect to their portions of the work.

B11.3.1.2 Site-specific pre-entry training will be provided to all subcontractors (i.e., surveyors, waste hauler, port-a-potties, and security guards) as described in Section B5, Training. Subcontractors will read, sign, and comply with the SSHP. Subcontractors will attend daily safety meetings conducted by the UXOSO.

B11.3.1.3 The UXOSO will have the right and responsibility to inspect subcontractor's work, operations, equipment, and materials for compliance with the SSHP. Deficiencies or violations will be reported to the Parsons site safety representative and the USA Safety Manager for appropriate corrective actions. If an immediately dangerous condition exists, the UXOSO is authorized to shut down subcontractor activities for the protection of the workers. Under no conditions are deviations from safe work practices to be tolerated by anyone on site.

B11.4 POSTED INSTRUCTIONS AND EMERGENCY CONTACTS

B11.4.1 Table B11.1, listing emergency contacts along with directions and maps (Figures B11.1 and B11.2) to the local medical facilities, will be posted prominently at the site. Should any situation or unplanned occurrence require outside assistance or support services, the appropriate contact from Table B11.1 will be notified.

TABLE B11.1
EMERGENCY CONTACTS

Agency	Telephone Number
Southampton Hospital	631 283-9425
Central Suffolk Hospital	631-548-6000
Poison Control Center	800-962-1253
Montauk Police Department	631-668-3709
Highway Patrol (Needles)	760-326-2000
Amagansett Fire Department	631-267-3300
Stonington Ambulance Service	860-535-3721
National Response Center /CHEMTREC	800-424-9300
USAESCH Safety Office	256-895-1582
USAESCH PM (Roland Belew)	256-895-1553
Qualysys (Dr. Mitchell)	800-874-4676 ext. 111
USEPA Emergency Response	(215) 596-1260
USEPA Hazardous Waste Hotline	(800) 621-3191

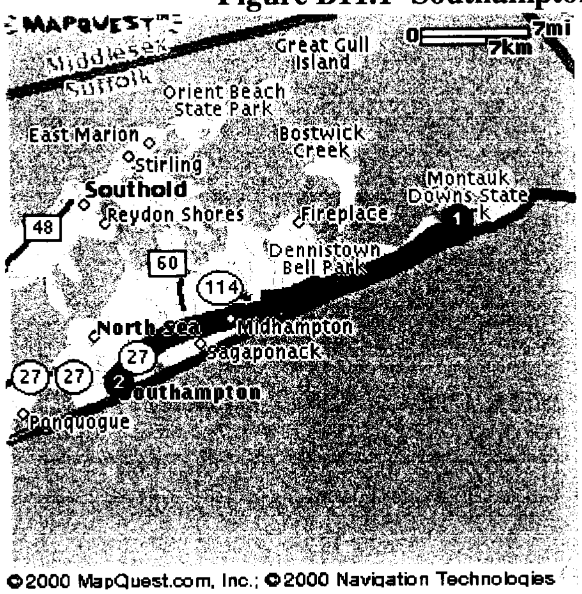
For emergencies involving the discovery of OE or CWM, contact USAESCH. Huntsville will determine the nature of the emergency and contact appropriate authorities.

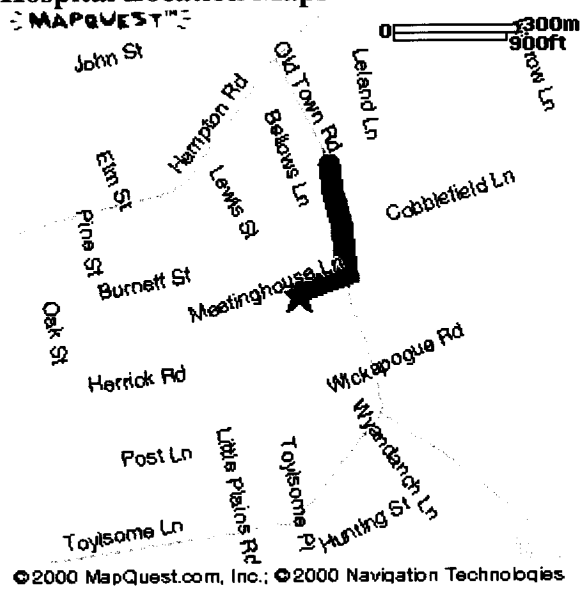
TABLE B11.1
EMERGENCY CONTACTS (Cont.)

Responsible Person	Telephone Number (w)	Telephone Number (h)
Don Silkebakken (Parsons PM)	678-969-2386	770-642-7135
Michael Short (Parsons Technical Director)	626-440-3115	
Ed Grunwald (Parsons H&S)	678-969-2394	770-594-9760
George Spencer (USA Project Manager)	(813) 884-5722 ext. 152	
TBD (Parsons Site H&S Officer)	TBD	

Directions to Southampton Hospital: To reach the Southampton Hospital (see Figure B11.1), proceed west on Montauk Highway/NY-27 for 26.2 miles. Turn left onto Old Town Road and go 0.4 miles. Turn right onto Meetinghouse Lane and go 0.1 miles. Total distance is approximately 27 miles. Estimated travel time is 1 hour 15 minutes.

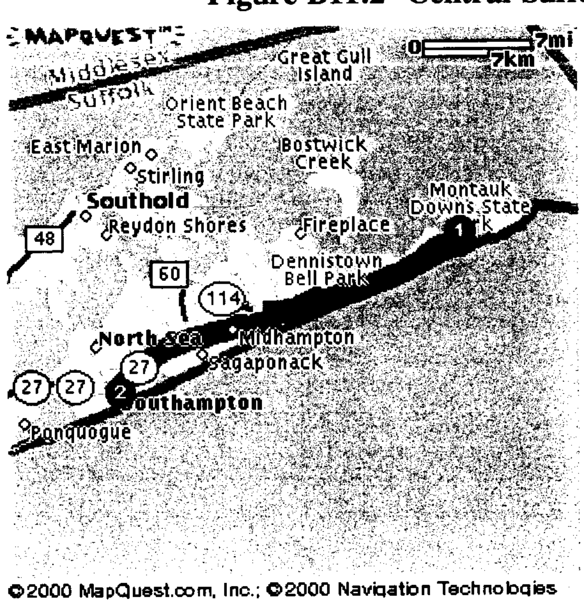
Figure B11.1- Southampton Hospital Location Maps

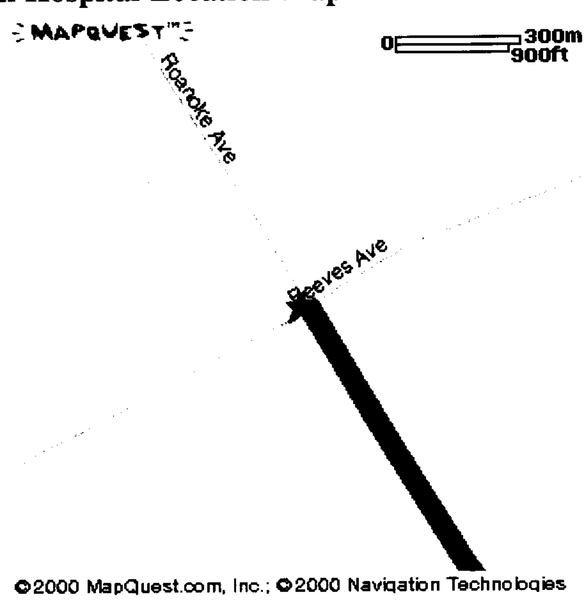




Directions to Central Suffolk Hospital: To reach the Central Suffolk Hospital (see Figure 10.1), proceed west on Montauk Highway/NY-27. Take the CR-104 north exit towards Riverhead and merge left. Enter next roundabout and take 2nd exit onto Peconic Avenue, turn right onto West Main St. Turn left onto Roanoke Avenue and proceed 3 miles to the hospital. The total trip is approximately 46 miles. Estimated travel time is 1 hour and 50 minutes.

Figure B11.2- Central Suffolk Hospital Location Map





B11.5 EMERGENCY RECOGNITION AND PREVENTION

B11.5.1 All field personnel receive site-specific health and safety training before starting any site activities. The UXOSO is responsible for implementing and enforcing the accident prevention program. An accident prevention program identifies actual and potential site hazards so that no contractor, subcontractor, laborer, operator, mechanic, or other employee is required to work in surroundings or under conditions which are dangerous to their health and safety. This program must include frequent and regular inspection of the job site to ensure successful implementation. On a day-to-day basis, individual personnel should watch for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. The general elements of an accident prevention program are discussed in this section. Emergencies can be averted by rapid recognition of dangerous situations. Before assigning daily tasks, tailgate safety meetings will be held. Discussion should include:

- Tasks to be performed.
- Time constraints (e.g., rest breaks).
- Hazards that may be encountered, including the effects, how to recognize or monitor symptoms, and danger signals.
- Emergency procedures.
- Radio communication.

B11.5.2 Hardhats and safety boots must be worn as a minimum within 50 feet of heavy equipment. The Site Manager or UXOSO supervises the field team to ensure they are meeting health and safety requirements. If deficiencies are noted, work is stopped and corrective action is taken (e.g., retain/purchase additional safety equipment). A report of health and safety deficiencies and the corrective action taken is forwarded to the Project Manager and project UXOSO.

B11.5.1 Training

All site workers, including subcontractors, will be trained to their level of responsibility before beginning work. In addition to the hazardous waste health and safety training required by 29 CFR 1910.120(e), workers will receive training in the operational and health and safety aspects of site work. This may include use of fire extinguishers, first aid, CPR, drum handling, heavy equipment, electrical hazards, hearing protection, and excavation. In addition, all site workers will be briefed on the hazards associated with UXO/OE.

B11.5.2 Daily Safety Inspections

B11.5.2.1 Each day, the UXOSO shall conduct a site inspection to ensure that operations are being performed in accordance with the Parsons SSHP, USAESCH requirements, and OSHA regulations. Results of the inspections will be documented daily in the UXOSO's safety logbook. Any health and safety deficiencies or potential problems discovered during the daily site inspection will be discussed at the next tailgate safety meeting. Inspections will be focused on the following areas:

- General Site Safety
  - Housekeeping
  - Sanitation
  - Communication equipment
  - Safety/warning signs/labels
  - Security
  - Illumination
  - Excavation
  - Fire hazards

- Emergency Equipment
  - Alarm systems operability/access
  - Fire extinguisher access
  - Safety shower/eyewash access/operability
  - First-aid cabinet access
  - Spill containment and control supplies access

- Hazardous Materials
  - Warning sign/labels
  - Proper hazard class segregation
  - Gas cylinder storage/use
  - Leakage/spillage protection
  - Unsafe condition/ignition source

- Equipment and Tools
  - Vehicle
  - Mechanical equipment
  - Power tools
  - Hand tools
  - Ropes, chains, and slings
  - Safety harnesses

B11.5.2.2 Any problems in implementation of the SSHP shall be reported immediately to the UXOSO, and work shall not proceed until all deficiencies have been corrected. Violations of the SSHP by workers (including subcontractors) require corrective action. As appropriate, this may include additional training, closer supervision, or disciplinary action.

B11.5.3 Chemical Treatment Protocols

There is no suspected chemical warfare material (CWM) in any of the areas-of-concern. Therefore, this section will not be utilized.

B11.5.4 Fire or Explosion

Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during the conduct of site activities, such as moving drums, mixing/bulking of site chemicals, and during refueling of heavy or hand held equipment. Some potential causes of explosions and fires include:

- Mixing of incompatible chemicals, which cause reactions that spontaneously ignite due to the production of both flammable vapors and heat.
- Ignition of explosive or flammable chemical gases or vapors by external ignition sources.
- Ignition of materials due to oxygen enrichment.
- Agitation of shock or friction-sensitive compounds.
- Sudden release of materials under pressure.

B11.5.5 Fire Prevention and Protection

B11.5.5.1 Every effort will be made to prevent fires or conditions that contribute to fire development or ignition, including the following:

- All electrical wiring will be free from frayed ends and sections, and all hook-ups will be checked for loose fittings. Portable power tools will be connected to a ground fault circuit interrupter and care will be taken to ensure that electrical connections do not exceed the maximum load capacity for any one circuit.
- Smoking or open ignition sources will be prohibited at locations or operations constituting a fire hazard.
- Equipment used in the presence of flammable gases and liquids will be intrinsically safe and approved for use with flammable gases or liquids.
- Flammable or combustible materials will be stored in a secure, well ventilated, protected area and segregated and/or separated from oxidizers, corrosives, or other incompatible materials.
- Storage of flammable or combustible liquids must comply with 29 CFR 1926.152 and Pamphlet 30 of the National Fire Code. This directive includes properly labeling containers, using storage cabinets for small containers (less than 5 gallons), storing chemicals only in designated areas, following safe fueling procedures, and using only approved safety containers.

B11.5.5.2 If a fire develops, fire fighting equipment will be readily and immediately available. The UXOSO will ensure the following:

- Access to fire fighting and medical emergency equipment will be maintained at all times.
- Fire fighting equipment will be conspicuously located. All heavy equipment and transport vehicles will be equipped with portable fire extinguishers.
- Regular (at least monthly) inspection of all emergency and fire fighting equipment shall be performed. Defective or used equipment will be replaced immediately.
- Fire safety/hazard recognition and correction will be part of the daily safety inspection.
- Fire fighting equipment will be selected according to the hazards anticipated and in accordance with 29 CFR 1926 Subpart E.
- A fire alarm for alerting on-site personnel, employees, and visitors and a notification system for contacting off-site emergency services will be established.
- All on-site personnel and employees will be trained in on-site emergency procedures, evacuation routes, fire safety, and use of portable fire extinguishers.
- Through pre-arrangement, the local fire department and other emergency services will be familiar with the site location and its hazards.
- Road access will be clear for fire, medical, and other emergency service vehicles.

B11.5.5.1 Immediate Action

B11.5.5.1.1Upon detecting a fire/explosion, employees will determine whether the fire is small enough to readily extinguish with immediately available portable extinguishers or water, or if other fire fighting methods are necessary. Non-essential personnel will be directed away from the area of the fire. If it is judged that a fire is small enough to fight with available extinguishing media, employees will attempt to extinguish the fire provided that:

- They are able to approach the fire from the upwind side, or opposite to the direction of the fire's progress.
- The correct extinguisher is readily available. (Type ABC fire extinguishers will be provided in work areas and on vehicles.)
- No known complicating factors are present, such as the likelihood of rapid spread, imminent risk of explosion, or gross contamination.

B11.5.5.1.2 Personnel leaving a fire/explosion area will account for all employees in that work area as soon as possible. The UXOSO or designee will perform a head count for that work area.

B11.5.5.2 Notification

The SUXOS will be notified as soon as possible of the location, size, and nature of the fire/explosion. As conditions dictate, the SUXOS and/or UXOSO will declare an emergency, initiate the remedial procedures, request assistance from the Fire Department, and make the necessary telephone notifications to the Parsons, USAESCH, and CENAN PM. Outside personnel, responding to the fire/explosion may seek assistance from the SUXOS with regard to the routing of equipment within the incident site for minimizing and/or avoiding exposure to any site contaminants.

B11.5.5.3 Fire fighting Procedures

In the event a fire occurs during working hours, USA will take the following measures to extinguish the fire:

- Sound an alarm.
- Utilize fire extinguishers mounted on equipment, i.e. backhoe and transport vehicles or those in reserve.
- Request assistance from the Fire Department.
- Utilize earth-moving equipment, such as a backhoe, as appropriate. Brush fires will be extinguished with water.
- Confirm that request for assistance from the Fire Department has been made. The Fire Department will provide fire fighting equipment (water and pump trucks).

No attempt by site personnel will be made to extinguish large fires. These will be handled by the Fire Department.

B11.5.5.4 Protection of Personnel

B11.5.5.4.1To ensure adequate fire protection, the UXOSO will inspect the site to ensure that all flammable and combustible materials are being safely stored in appropriately configured storage areas and containers. The UXOSO will also ensure that no flammable/combustible materials are stored near any sources of ignition, and that sources of ignition are removed a safe distance from storage areas. If needed, storage areas will be segregated from the remainder of the site using flagging. Portable fire extinguishers shall be located on site.

B11.5.5.4.2 Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel onsite and members of the public living or working nearby. Site personnel involved with potentially flammable material or operations shall follow the guidelines listed below and EM 385-1-1, Section 9, to prevent fires and explosions:

- Potentially explosive/flammable atmospheres involving gases or vapors shall be monitored using a combustible gas indicator.
- Prior to initiation of site activities involving explosive/flammable materials, all potential ignition sources shall be removed or extinguished.
- Non-sparking and explosion-proof equipment shall be used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists.
- Dilution or induced ventilation may be used to decrease the airborne concentration of explosive/flammable atmospheres.
- Smoking shall be prohibited at, or in the vicinity of, operations which may present a fire hazard, and the area shall be conspicuously posted with signs stating "No Smoking or Open Flame Within 50 Feet."
- Flammable and/or combustible liquids must be handled only in approved, properly labeled metal safety cans equipped with flash arresters and self-closing lids.
- Transfer of flammable liquids from one metal container to another shall be done only when the containers are bonded.
- The motors of all equipment being fueled shall be shut off during the fueling operations.
- Metal drums used for storing flammable/combustible liquids shall be equipped with self-closing safety faucets, vent bung fittings, grounding cables and drip pans, and shall be stored outside buildings in an area approved by the UXOSO.
- Outdoor flammable/combustible materials storage areas will be: lined and surrounded by a dike of 12 inches in height, and of sufficient volume to contain 110% of the stored materials; located fifty feet from buildings; and kept free of weeds, debris, and other combustible materials.

B11.5.6 Spill Remediation

Chemical spills are not expected to be a problem at the Camp Hero site. The only chemicals being brought into the site would be fuels and oils for equipment that would be used on the site. This will be brought onto the site in small quantity containers in the amounts needed for that day's operations. If a spill should occur while performing fueling on equipment, the spill would be a small quantity (under a gallon) and it would be cleaned up immediately. The spill and contaminated soil would be containerized and labeled, properly manifested, and shipped to an approved hazardous waste facility.

B11.5.7 Traffic Control

B11.5.7.1 Parsons shall utilize traffic control measures to minimize inconvenience to the former Camp and the risk of traffic accidents and pedestrian injuries. These measures will include the use of flagmen, signs, barricades, and markings, as necessary, for the safe movement of traffic during the remediation activities.

B11.5.7.2 All field staff workers are required to employ defensive driving techniques, and obey all site speed limits and vehicle safety requirements. All vehicular accidents will be reported immediately and investigated. The objective of the investigation is to clarify events of the accident, establish the probable cause or causes, and to determine appropriate preventative or protective measures. The UXOSO will prepare a written report of his/her findings, including the recommendations to prevent future accidents. The report will be discussed with the Parsons PM. Vehicular accidents that are recordable, as defined by AR 385-40 and USACE supplement 1 to that regulation, are also to be reported to the Parsons, USAESCH and CENAN PMs via Form ENG 3394 (See Attachment B-5). The conclusions reached regarding the accident and preventative measures will be included in the next tailgate safety meeting.

B11.5.8 Site Housekeeping

During the course of the project, scrap materials, tools, construction materials, containers, and debris shall be kept cleared from work areas, and in and around buildings or other on-site structures or equipment. Site access and egress routes for pedestrian and vehicular traffic will be kept clear. Materials will not be stored under or piled against buildings or in front of doors and exits. Work areas will be cleared and cleaned at least once per shift. However, garbage and debris shall be removed more frequently.

B11.6 SITE TOPOGRAPHY, LAYOUT AND PREVAILING WEATHER CONDITIONS

The site topography and layout can be found in the WP (Section 2). Severe weather that should be anticipated at the Camp includes thunderstorms, hurricanes, snow, and cold. Preparedness and response for complications associated with cold are discussed in Sections B3 and B14. When severe storms, thunderstorms, snowstorms, and/or tornadoes threaten the area, the UXOSO will suspend all site activities. Lightning and tornadoes in proximity to the site is reason to immediately suspend outdoor and elevated work. When site activities are suspended due to severe weather, workers will be notified immediately. They will secure their equipment and work area as quickly as possible, evacuate the work area, and gather at the pre-determined location. Work will resume when the threat of severe weather has past.

B11.7 EVACUATION ROUTES AND RESOURCES

B11.7.1 Evacuation routes may be needed in cases of certain discoveries of UXO/OE items. Safe distances, places of refuge, and evacuation routes will be identified and the locations briefed daily by the UXOSO. Evacuation should be conducted immediately, without regard for equipment, under conditions of extreme emergency.

B11.7.2 Evacuation notification will be three long blasts on an air horn or vehicle horn or by verbal communication via radio.

B11.7.3 In the event that emergency site evacuation is necessary, all personnel are to:

- Escape the emergency situation.
- Meet at the designated safe haven.

B11.7.4 The UXOSO will conduct a head count to ensure all personnel have evacuated safely.

B11.8 PROCEDURES FOR DECONTAMINATION AND MEDICAL TREATMENT

Decontamination is not required at the former Camp Hero site because there are no indications of Hazardous, Toxic, or Radiological Waste (HTRW) materials or CWM at the site.

B11.8.1 On Site Medical Personnel, Equipment, and Procedures

B11.8.1.1 Medical Personnel

The project will be staffed with a minimum of two (2) on-site personnel who are trained and certified in first aid and cardiopulmonary resuscitation (CPR) will be on-site at all times. Names of medically trained people will be posted on-site and training records will be kept on-site.

B11.8.1.2 Equipment

B11.8.1.2.1 First aid kits for the treatment of minor injuries and burns shall be maintained onsite. The first aid kits shall be inspected by the UXOSO at least weekly to ensure adequate supplies are available and in proper working order. The contents and number of first aid kits shall be determined by EM-385-1-1, Section 03.B and approved by the UXOSO prior to the start of site activities.

B11.8.1.2.2 At a minimum, the following general emergency equipment will be available at the site at all times:

Equipment	Location
Fire Extinguishers	Two in the vehicle transporting explosives, one in each transport vehicle and piece of heavy equipment
Emergency Eyewash	Each vehicle on-site
First Aid Kit	Each vehicle on-site
Stretchers	One in the UXOSO vehicle

B11.8.1.3 General Procedures

B11.8.1.3.1 The UXOSO will be the on-site emergency coordinator in case of an accident or incident requiring emergency response. Emergency contact telephone numbers will be posted and kept readily available. All personnel will be briefed and know the location of the cellular telephones and who has on-site radio communications. The UXOSO is responsible for maintaining a first aid treatment log of all first aid administered, regardless of severity.

B11.8.1.3.2 In case of personal injury at the site, follow the procedures listed below:

- Field team members or on-site emergency medics trained in first aid can administer treatment to an injured worker.
  - For injuries due to falls, such as broken bones and sprains/strains, the following initial steps should be taken:
    - Contact emergency services if necessary;
    - Make the victim comfortable;
    - Apply ice, if possible, to control swelling and pain;
    - Immobilize the injury with a splint, blankets, towels, etc. Only use a splint if it can be done without causing pain to the worker;
    - Prepare worker for transporting.
- The victim will be transported to the nearest hospital or medical center using an on site vehicle. If necessary, an ambulance will be called to transport the victim.
- The Site Manager is responsible for the completion of an Accident Report Form, if applicable.

B11.8.1.3.3 Agencies that may provide emergency response, such as the Fire Departments and Ambulance Services, will be notified of the type of operation being conducted and the associated hazards. The agencies will acknowledge in writing that they have been briefed; a copy of the acknowledgement will be retained on-site.

B11.8.1.3.4 If an emergency response rescue operation is required, nobody will re-enter the area until the situation has been assessed and it is determined that resources are on-hand to handle the rescue without jeopardizing additional personnel. Safe emergency response and/or rescue may include the following elements:

- Designate an emergency response vehicle to remain on-site during field operations.
- Enforce the Buddy System -- no one will be permitted to enter the exclusion area alone. Personnel within the exclusion zone will remain in contact with each other at all times.
- Locate all victims, assess their conditions, and make an on-scene determination of the resources needed to stabilize and transport.

- Request emergency response by outside agencies, if required.
- Assess the situation, determine the existing hazards, potential for additional hazards, and need for additional response. Supervisors must stabilize or permanently fix the hazardous condition. If personnel or properties are jeopardized, a determination must be made to alert the local community.
- Ensure personnel have the proper PPE and are trained in its correct use.
- Remove injured personnel from the area. Decontamination, if required, will be accomplished prior to personnel leaving the area.

B11.9 HAZARD COMMUNICATION

All project work will be conducted in accordance with Parsons's standard policies for hazard communication (see Section B15). Material safety data sheets for any chemicals brought on site will be located at Parsons's field trailer. Site orientation and training will be provided to all new employees brought on site and this will include an overview of all known hazards associated with the site.

SECTION B12
CONFINED SPACE ENTRY

Due to the nature of the work that will take place at the former Camp Hero, confined space entry is not required. Therefore the inclusion of procedures are not applicable.

SECTION B13
SPILL CONTAINMENT

Chemical spills are not expected to be a problem at the former Camp Hero site. The only chemicals being brought into the site would be fuels and oils for equipment that would be used on the site. This will be brought onto the site in small quantity containers in the amounts needed for that day's operations. If a spill should occur while performing fueling on equipment, the spill would be a small quantity (under a gallon) and it would be cleaned up immediately. The spill and contaminated soil would be containerized and labeled, properly manifested, and shipped to an approved hazardous waste facility.

SECTION B14
HEAT/COLD STRESS MONITORING

B14.1 INTRODUCTION

Heat/cold stress is one of the most common (and potentially serious) illnesses that affect UXO/OE site workers. When site personnel are engaged in operations involving hot or cold environments, a number of physiological responses can occur which may seriously affect the health and safety of the workers. These affects can be eliminated or controlled through the use of a comprehensive heat/cold stress prevention and monitoring program.

B14.2 HEAT STRESS DISORDERS

This section outlines the major heat-related illness that may result from exposure to high heat environments, which include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. For the purpose of this program, reference to "liquids" will indicate the use of water or an electrolyte replacement solution, and not tea or coffee (unless it is decaffeinated) or carbonated soft drinks.

B14.2.1 Early Symptoms of Heat-Related Problems:

- 1. Decline in task performance
- 2. Lack of coordination
- 3. Decline in alertness
- 4. Unsteady walk
- 5. Excessive fatigue
- 6. Muscle cramps
- 7. Dizziness

B14.2.2 Heat Rash

Heat rash is caused by continuous exposure to heat and humid air and is aggravated by wet chafing clothing. This condition can decrease a worker's ability to tolerate hot environments.

Symptoms: Mild red rash, especially in areas of the body that sweat heavily.

Treatment: Decrease amounts of time in protective gear and provide powder such as corn starch or baby powder to help absorb moisture and decrease chafing. Maintain good personal hygiene standards and change into dry clothes if needed.

B14.2.3 Heat Cramps

Heat cramps are caused by a profuse rate of perspiration that is not balanced by adequate fluid and electrolyte intake. The occurrence of heat related cramps are often an indication that excessive water and electrolyte loss has occurred, which can further develop into heat exhaustion or heat stroke.

Symptoms: Acute, painful spasms of voluntary muscles such as the back, abdomen and extremities.

Treatment: Remove victim to a cool area and loosen restrictive clothing. Stretch and massage affected muscles to increase blood flow to the area. Have patient drink one to two cups of liquids immediately, and every twenty minutes thereafter. Consult with physician if condition does not improve. If available, an electrolyte replacement solution should be taken along with liquids.

B14.2.4 Heat Exhaustion

Heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. It is a state of very definite weakness or exhaustion caused by increased stress on various organs to meet increased demands to cool the body due to excessive loss of fluids from the body. This condition leads to inadequate blood supply and cardiac insufficiency. Heat exhaustion is less dangerous than heat stroke, but nonetheless must be treated. If allowed to go untreated, heat exhaustion can quickly develop into heat stroke.

Symptoms: Pale or flushed, clammy, moist skin, profuse perspiration, and extreme weakness. Body temperature is basically normal or slightly elevated, the pulse is weak and rapid, and breathing is shallow. The individual may have a headache, be dizzy or nauseated.

Treatment: Remove the individual to a cool, air-conditioned place, loosen clothing, elevate feet and allow individual to rest. Consult physician, especially in severe cases. Have patient drink one to two cups of liquids immediately, and every twenty minutes thereafter. Total liquid consumption should be about one to two gallons per day. If the signs and symptoms of heat exhaustion do not subside, or become more severe, immediate medical attention will be required.

B14.2.5 Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by failure of the heat regulating mechanisms of the body. The failure of the individual's temperature control system causes the perspiration system to stop working correctly. When this occurs, the body core temperature rises very rapidly to a point (105+ °F) where brain damage and death will result if the person is not cooled quickly.

Symptoms: The victim's skin is hot, and may or may not be red, dry and spotted, due to the fact that the individual may still be wet from having sweat while wearing protective clothing earlier; nausea; dizziness; confusion; extremely high body temperature; rapid respiratory and pulse rate; delirium; convulsions; unconsciousness or coma.

Treatment: Cool the victim immediately. If the body temperature is not brought down quickly, permanent brain damage or death may result. The victim should be moved to a shady area; he should lie down and keep head elevated. Cool the victim by either sponging or immersing the victim in very cool water to reduce the core temperature to a safe level (<102 °F). If conscious, give the victim cool liquids to drink. Observe the victim and obtain immediate medical help. Do not give the victim caffeinated or alcoholic beverages. Heat stroke is considered a medical emergency. Medical help should be summoned immediately. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.

B14.2.6 Preventive Measures

B14.2.6.1 Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat exhaustion, that person may become predisposed to additional heat injuries. In order to avoid heat related illnesses, proper preventive measures will be implemented whenever environmental conditions dictate the need, normally whenever the temperature reaches at least 75 °F. These preventive measures represent the minimal steps to be taken and will include the following procedures:

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1. The UXOSO will examine each site worker prior to the start of daily operations, and periodically throughout the day, to determine the individuals susceptible to heat induced stress. Evidence of extreme dehydration, illness or drug or alcohol use may require the UXOSO to restrict the worker's activities until such time as the worker is fit for duty.
2. Personnel identified as being at high risk for heat stress who are allowed to participate in site operations will be monitored frequently by the UXOSO.
3. Site workers will be trained to recognize and treat heat-related illnesses. This training will include the signs, symptoms and treatment of heat stress disorders as outlined in this SSHP.
4. In order to maintain workers' body fluids at normal levels, workers will be encouraged to drink, as a minimum, approximately sixteen ounces of liquids prior to start of work in the morning, after lunch and prior to leaving the site at the conclusion of the day's activities. Disposable four (4) to twelve (12) ounce cups and liquids will be provided on site. Liquids to be provided will include water and an electrolyte replacement solution, with the intake of each being equally divided. Liquids containing caffeine are to be avoided.
5. When ambient conditions and site workload requirements dictate, as determined by the UXOSO, workers will be required to drink a minimum of 16 to 32 ounces of liquids during each rest cycle. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drank to replace lost sweat. When

heavy sweating occurs, workers shall be encouraged to drink even though they may not be thirsty.

6. A shelter or shaded area will be provided where workers may be protected from direct sunlight during rest periods.

7. Monitoring of ambient or physiological heat stress indices will be conducted to allow prevention and/or early detection of heat induced stress. Monitoring will be conducted in accordance with applicable paragraphs of this SSHP.

8. Site workers will be given time to acclimatize to site work conditions, temperature, protective equipment, and workload. Acclimatization is the adaptive process that results in a decrease of the physiological response produced by the application of a constant environmental stress. On initial exposure to a hot environment, there is an impaired ability to work and evidence of physiological strain. If the exposure is repeated on several successive days, there is a gradual return of the ability to work and a decrease in physiological strain. Acclimatization usually takes two to six days of continued work in hot environments, and allows the worker's body to become adjusted to this level and type of work. This process involves a gradual increase in the workload over the required period, the length of which depends upon the nature of the work performed, the ambient temperatures, and the individual's susceptibility to heat stress. The results of acclimatization include: subjective discomfort practically disappears; body temperature and heart rate are lower; there is a more stable blood pressure; and the sweat is more profuse and dilute.

9. Work schedules will be adjusted as follows:
   - Modify work/rest schedules according to monitoring requirements.
   - Mandate work slowdowns as needed.
   - Rotate personnel: alternate job functions to minimize over-stress or overexertion at one task.
   - Add additional personnel to work teams.
   - Perform work during cooler hours of the day if possible.

10. Workers will be encouraged to achieve and maintain an optimum level of physical fitness. Increased physical fitness will allow workers to better tolerate and respond to hot environments and heavy workloads. In comparison to an unfit person, a fit person will have: less physiological strain; a lower heart rate and body temperature; and a more efficient sweating mechanism.

11. Alcohol should not be consumed in a hot environment because the loss of body fluids increases the risk of heat stress.

B14.2.6.2 The amount and type of PPE worn directly influence reduced work tolerance and the increased risk of excessive heat stress. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure. Therefore, when selecting PPE, each item's benefit should be carefully evaluated in relation to its potential for increasing the risk of heat stress. Once PPE is selected, the safe duration of work/rest periods should be determined based on the:

1. Anticipated work rate.
2. Ambient temperature and other environmental factors.
3. Type of protective ensemble.
4. Individual worker characteristics and fitness.

B14.2.6.3 Sweating does not cool the body unless moisture is removed from the body. The use of personal protective equipment (PPE) reduces the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired and this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. At the Camp Hero site, Level D PPE will be utilized, thus providing minimal increase in the potential for heat stress. Level D PPE is defined as standard work clothes with long pants, hard hats (when overhead hazard is present), and safety boots (when working around heavy equipment). The selection of PPE is discussed in Section B6.

B14.3 HEAT STRESS MONITORING

B14.3.1 Because the incidence of heat stress depends on a variety of factors, all workers shall be monitored. Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work. The length of the work cycle will be governed by the frequency of the required physiological monitoring.

B14.3.2 Monitoring of personnel wearing PPE should begin when the ambient temperature is 70°F or above. Table B14.1 presents the suggested frequency for such monitoring. Monitoring frequency should increase as the ambient temperature increases or as slow recovery rates are observed. A person with a current first aid certification who is trained to recognize heat stress symptoms should perform heat stress monitoring. Other methods for determining heat stress monitoring, such as the wet bulb globe temperature (WBGT) index from American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLV) booklet can be used.

B14.3.3 For workers wearing permeable clothing (i.e., standard cotton work clothes), follow recommendations for monitoring requirements and suggested work/rest schedules in the current ACGIH Threshold Limit Values for Heat Stress (Table 14.2). For workers in tyvek suits, work/rest schedules will be adjusted in accordance with physiological monitoring requirements.

B14.3.4 To monitor the worker, measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
  - - If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
  - - If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
  - If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.
  - If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third.
  - Do not permit a worker to wear a semipermeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

B14.3.1 Wet Bulb, Globe Temperature (WBGT) Monitoring

For site conditions where personnel are working in Level D PPE, and the ambient temperature is greater than 75°F, the UXOSO will conduct WBGT monitoring to assist in controlling the potential for site workers experiencing heat related adverse health affects. The UXOSO will take readings on a WBGT monitor throughout the day to determine the work/rest schedule to be implemented. The values outlined in this table are designed such that nearly all acclimatized, fully clothed workers with adequate water and electrolyte replacement liquids intake will be able to function without the body temperature exceeding 100.4°F.

B14.4 HEAT STRESS DOCUMENTATION

The UXOSO will be responsible for recording all heat stress related information. This will include training sessions and monitoring data. Training sessions will be documented on the Documentation of Training Form, and WBGT data and other information will be recorded in the Safety Log.

TABLE B14.1 - SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR FIT AND ACCLIMATIZED WORKERS[a]

ADJUSTED TEMPERATURE[b]	NORMAL WORK ENSEMBLE[c]	IMPERMEABLE ENSEMBLE
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-28.1°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj °F = ta °F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

TABLE B14.2 - PERMISSIBLE WBGT HEAT EXPOSURE THRESHOLD LIMIT VALUES

Work – Rest Regimen	WORK LOAD Light*	Moderate	Heavy
Continuous work	86 (30.0)	80 (26.7)	77 (25.0)
75% Work - 25% Rest, each hour	87 (30.6)	82 (28.0)	78 (25.9)
50% Work - 50% Rest, each hour	89 (31.4)	85 (29.4)	82 (27.9)
25% Work - 75% Rest, each hour	90 (32.2)	88 (31.1)	86 (30.0)

* Consult the ACGIH TLV booklet for definitions of Light, Moderate and Heavy workloads. Values are given in °F and (°C) WBGT, and are intended for workers wearing single layer summer type clothing. Use of semi or totally impermeable clothing require monitoring IAW the OES Heat Stress Prevention Program. As workload increases, the heat stress impact on a nonacclimated worker is exacerbated. For nonacclimated workers performing a moderate level of work, the permissible heat exposure TLV should be reduced by approximately 2.5°C.

B14.5 COLD-RELATED ILLNESS

The affects experienced by site personnel when working in cold environments depend upon many environmental and personal factors, such as ambient air temperature, wind speed, duration of exposure, type of protective clothing and equipment worn, type of work conducted, level of physical effort, and health status of the worker. Exposure to low temperatures present a risk to employee safety and health both through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Presented below is information about the most common cold stress disorders, treatments, and prevention.

B14.5.1 Cold Stress Disorders

The symptoms of cold exposure include immersion, hypothermia, and frostbite. Wind increases the impact of cold on a person's body. Recognition of the symptoms of cold-related illness are discussed below and will be discussed during the health and safety briefing conducted prior to the onset of site activities.

B14.5.1.1 Immersion Foot or Trench Foot

These two cold injuries occur as a result of exposure to cool or cold weather and persistent dampness or immersion in water. Immersion foot usually results from prolonged exposure when air temperatures are above freezing, whereas trench foot normally occurs from shorter exposure at temperatures near freezing.

Symptoms: Tingling, itching, swelling, pain in some cases or numbness in others, lack of sweating, and blisters.

Treatment: Bring victim to warm area and replace wet or damp clothing with dry clothing.

B14.5.1.2 Hypothermia

- Hypothermia results when the body loses heat faster than it can produce it. When this occurs, the blood vessels in the skin and extremities constrict, reducing the flow of warm blood to those areas, thereby reducing the rate of heat loss. This reduction in blood flow usually affects the peripheral extremities first.

Symptoms: Ears, fingers and toes begin to experience chilling, pain and then numbness; uncontrollable shivering; apathy; listlessness; sleepiness; glassy stare; slow pulse; slow respiratory rate; and lose of consciousness.

Treatment: Remove victim to warm area and allow them to rest and warm-up. If clothing is wet, it should be removed and replaced by dry clothing, or allowed to dry before resuming work. A warm, non-alcohol, de-caffeinated drink (not coffee) or soup may be given. Re-warming should be gradual.

B14.5.1.3 Frostbite

Frostbite occurs when there is actual freezing of the water contained in body tissues. This usually occurs when temperatures are below freezing, but excessive wind can result in frostbite even at ambient temperatures that are above freezing. Frostbite can occur from several types of cold exposure, such as: exposure of bare skin to cold and wind; exposure to extremely cold ambient temperatures; or from skin contact with objects whose temperatures are below freezing.

Symptoms: Sudden blanching or whitening of the skin; a waxy or white appearance of the skin and it is firm to the touch; tissues are cold, pale, and solid; skin will return to shape when depressed. For deep frostbite, the skin will either not depress when pressed by the finger or it will depress but not return to the original contour.

Treatment: The victim should be sheltered from the wind and cold and given warm drinks. If the frostbite is superficial, the frozen part should be covered with extra clothing or blankets or warmed against the body. **Do not use direct heat, and do not pour hot water over or rub the affected area.** Warming should be gentle and gradual. Failure to do this could lead to bleeding in the tissues and increase the possibility of infection. If the frostbite is deep, i.e. the affected area is frozen and hard to the touch, immediate medical attention should be obtained. DEEP FROSTBITE IS

A SERIOUS INJURY, it is essential to get the patient to the hospital as quickly as possible.

B14.5.1.4 Prevention of Cold Stress Disorders

B14.5.1.4.1 During work in cold environments, the UXOSO will use the tailgate safety briefing to inform site personnel of the measures to be utilized in the prevention and control of cold stress and to educate workers to recognize the symptoms of frostbite and hypothermia. The UXOSO will also use meteorological data and temperature/wind chill table (see Table B2.5) to inform site personnel of the combined temperature/wind chill affect to be expected during the day's activities. Work will cease under unusually hazardous conditions (e.g., wind-chill less than 10°F, or wind chill less than 20°F with precipitation). Prevention methods which site personnel will utilize include:

1. Wear adequate, appropriately layered clothing, including a water repellant outer layer if precipitation is forecasted.
2. Layered clothing should include, an innermost layer, such as cotton to trap heat and absorb perspiration, an insulating layer, a layer of work weight clothing, and an outer protective layer designed to be wind/water proof. Use of synthetic material fabrics should be watched closely due to their ability to generate increased levels of static electricity. Cotton is the recommended fabric when working with explosives.
3. Wear a hat, gloves and socks that are insulated, to help retain body heat.
4. Remove outer layers of clothing during breaks in heated shelters to prevent excessive sweating.
5. In windy, cold conditions, cover all exposed skin.
6. Eat well-balanced meals and maintain adequate intake of non-alcoholic, decaffeinated fluids.
7. Watch for pain in the extremities, which may be the first early warning of cold stress.
8. Seek shelter in a warm protected area when signs and symptoms of cold stress become evident.
9. Protect clothing from getting wet, this includes keeping clothing from getting wet with sweat, so remove outer layers if work activities cause excessive sweating.

B14.5.1.4.2 Parsons will assist in the prevention of cold stress by providing sheltered, warm areas where site personnel can rest and regain body heat during breaks. The workers should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria are indications for immediate return to the shelter. Parsons will also provide the following to assist site personnel in abating cold stress:

1. Warm fluids, such as soup or de-caffeinated tea and cocoa, will be provided as needed at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of the diuretic and circulatory effects.
2. Assure the availability of insulated dry clothes.
3. Develop capability for temperature recording at the site.
4. A minimum of one fifteen-minute break in a heated shelter every two hours.
5. If approved, a heated shelter may be provided inside the exclusion zone (EZ), upwind from the work area, where site personnel can rest and warm-up after having processed through a limited personal decontamination station (PDS) consisting of glove wash and removal, respirator wash and removal, and hand washing.

NOTE - To date, there are no Federally mandated regulations related to work/rest schedules. The fifteen-minute break every two hours is a recommended routine, but may not be adequate for all cold environments. The American Conference of Governmental Industrial Hygienist (ACGIH) has published a work/rest schedule, which is provided in Table B2.6. However, this table only applies to, and should be implemented for, temperatures below 0°F. Therefore, for temperatures above 0°F, workers will be encouraged to seek shelter and rest in a warm area whenever they exhibit signs or symptoms of cold stress, as discussed previously.

B14.5.1.4.3 Special protection of the hands is required to maintain manual dexterity for the prevention of accidents:

1. If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 60.8°F, special provisions should be established for keeping the workers' hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be used.
2. If the air temperature falls below 60.8°F for sedentary, 39.2°F for light, 19.4°F for moderate work and fine manual dexterity is not required, then gloves should be used by the workers.

B14.5.1.4.4 To prevent contact frostbite, the workers should wear anti-contact gloves.

1. When cold surfaces below 19.4°F are within reach, a warning should be given to each worker by the supervisor to prevent inadvertent contact by bare skin.
2. If the air temperature is 0°F or less, mittens should protect the hands.

B14.5.1.4.5 Provisions for additional total body protection are required if work is performed in an environment at or below 39.2°F. The workers should wear cold protective clothing appropriate for the level of cold and physical activity:

1. Wind should be reduced by shielding the work area or by wearing an easily removable windbreak garment.

2. If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use may be of a type impermeable to water. With more severe work under such conditions, the outer layer should be water repellent, and the outerwear should be changed as it becomes wet. The outer garments should include provisions for easy ventilation in order to prevent wetting of inner layers by sweat.

3. If exposed areas of the body cannot be protected sufficiently to prevent sensation of excessive cold or frostbite, protective items should be supplied in auxiliary heated versions.

4. If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work should be modified or suspended until adequate clothing is made available or until weather conditions improve.

B14.5.1.4.6 For work practices at or below 10.4°F, the following should apply:

1. The worker should be under constant protective observation (buddy system or supervision).

2. The work rate should not be so high as to cause heavy sweating that will result in wet clothing.

3. Unacclimated employees should not be required to work full time in the cold during the first days of employment until they become accustomed to the working conditions and required protective clothing.

4. The weight and bulkiness of clothing should be included in estimating the required work performance and weights to be lifted by the worker.

5. The work should be arranged in such a way that sitting still or standing still for long periods is minimized. Unprotected metal chair seats should not be used. The worker should be protected from drafts to the greatest extent possible.

B14.5.1.4.7 During decontamination procedures, the body cools suddenly when chemical protective equipment is removed if clothing underneath is soaked with perspiration. In cold extremes after decontamination procedures, site employees will proceed to a protected area.

B14.5.1.4.8 Monitoring at the site will be conducted in accordance with 1999 ACGIH guidelines; at the Field Supervisor's or site health and safety officer's discretion; when suspicion is aroused on changes in worker's performance or mental status; at worker's request; as a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 30°F); and as a screening measure whenever any worker on the site develops hypothermia. ANY PERSON DEVELOPING MODERATE HYPOTHERMIA MUST BE REMOVED IMMEDIATELY TO A FACILITY WITH HEAT AND CANNOT RETURN TO WORK FOR 48 HOURS.

TABLE B14.3 - COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS EQUIVALENT TEMPERATURE

Estimated Wind Speed (in mph)	Actual Temperature Reading (° F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (° F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Wind speeds greater than 40 mph have little additional effect	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security				INCREASING DANGER Danger from freezing of exposed flesh within one minute				GREAT DANGER Flesh may freeze within 30 seconds			
	Trench foot and immersion foot may occur at any point on this chart.											

TABLE B14.4 - TLV WORK/REST SCHEDULE FOR 4-HOUR WORK SHIFT *

Air Temp.	No Wind		5 MPH Wind		10 MPH Wind		15 MPH Win		20 MPH Wind	
°F Approx.	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-4° to -8°	Normal	1	Normal	1	Normal	1	Normal	1	Normal	1
-9° to -13°	Normal	1	Normal	1	Normal	1	Normal	1	75 min.	2
-14° to -18°	Normal	1	Normal	1	Normal	1	75 min.	2	55min.	3
-15° to -19°	Normal	1	Normal	1	75 min.	2	55 min.	3	40 min.	4
-20° to -24°	Normal	1	75 min.	2	55 min.	3	40 min.	4	30 min.	5
-25° to -29°	75 min.	2	55 min.	3	40 min.	4	0 min.	5	Non-emergency work should cease	
-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -44°	30 min.	5	Non-emergency work should cease							
-45° & Below	Non-emergency work should cease									

1. Schedule applies to any 4-hour work period with moderate to heavy work activity, with warm-up cycle in a warm location and with an extended break in a warm location (e.g. lunch) at the end of the 4-hours. For light-to-moderate work, apply the schedule one step lower.
2. The following is suggested as a guide for estimating wind velocity if other, more accurate means are not available: 5 mph - light flag moves; 10 mph - light flag fully extended; 15 mph - raises newspaper sheet; 20 mph - blowing and drifting snow.
3. This table applies only to acclimatized workers with appropriate dry clothing for winter work.

*Adapted from the "1993-1994 Threshold Limit Values and biological Exposure Indices, American Conference of Governmental Industrial Hygienist, Cincinnati, OH.

SECTION B15
STANDARD OPERATING PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

B15.1 STANDARD SAFE WORK PRACTICES

This section outlines the engineering controls and general safe work practices (SWP) which will be followed by all site personnel to eliminate or reduce the risk of exposure to the anticipated site hazards. These controls and SWP are presented as a guide for site personnel and do not cover all compliance issues. The UXOSO will utilize the project SSHP and SWP to ensure full compliance with applicable regulatory requirements. All personnel onsite shall immediately report to the UXOSO any conditions that do not comply with, or are not addressed by, this section. The following are considered standard safe work practices:

- Administrative hazard control will be practiced for the entire site.
- All wastes generated during activities on-site should be disposed of as directed by the USAESCH.
- Protective equipment as specified in Section B6 will be used by workers during the initial site reconnaissance and follow-on geophysical activities. Wearing PPE can result in an impairment of the ability to operate site equipment. All field crew members should pay specific attention to decreased performance capabilities resulting from the use of PPE.
- Buddy system procedures will be enforced during site operations (see Subsection B15.).
- Site personnel will perform only those tasks that they are qualified to perform.
- Site visitors are to be escorted by UXO qualified USA personnel at all times.
- Running and horseplay are prohibited in all areas of the site.
- Smoking only permitted in designated areas.
- The number of personnel in the work zones will be the minimum number necessary to perform work tasks in a safe and efficient manner.
- Heat/cold stress monitoring will be conducted as discussed in Section B14.
- Anyone reporting to work under the influence of alcohol and/or illegal drugs shall be subject to disciplinary action. Any employee under a physician's care and/or taking prescribed medication must notify the PM and SM.

- Daily safety inspections will be conducted. Changes in work practices or work rules shall be implemented only after a written safety plan amendment has been prepared and authorized. Changes will be communicated to all site personnel.
- Personnel must report all injuries and/or illnesses to their supervisor. This includes minor injuries and "near misses."
- All walkways and walking surfaces will be kept clean, dry, and free of hazards (e.g., loose boards, protruding nails, holes, etc.). Where conditions are wet, drainage and dry standing places will be provided as necessary. All floor openings will be guarded.
- Free access shall be maintained to fire extinguishers, sprinkler valves, power panels, emergency exits, exit doors, first aid kits, safety showers, and eyewash stations.
- Personnel shall be aware of prevailing weather conditions. When there is a threat of lightning, all work involving heavy equipment shall cease.
- Avoid contact with potential UXO, unidentified metal objects, or contaminated substances.
- All field crew members should be alert to all potentially dangerous situations (e.g., presence of UXO or OE related items).
- Field crew members shall be familiar with the physical characteristics of the investigation, including:

  a. accessibility to associates, equipment, vehicles, communication; and
  b. site access;

- Wearing of jewelry, such as rings and loose bracelets and necklaces, is prohibited.
- Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers. Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

B15.2 ELECTRICAL POWER

Various machinery are operated by electrical current. However, only essential circuits will be kept live; e.g., lighting, outlets for tools. All equipment must be approved for the class of hazard as listed in OSHA standards for electrical power (29 CFR 1926, Subpart K). Electrical wiring and apparatus safety procedures shall be conducted in accordance with OSHA Standard 29 CFR 1910.137(2), and EM 385-1-1, Section 11. These requirements include, but are not limited to:

- All electrical wiring and equipment shall be of a type listed by Underwriters Laboratories (UL) or Factory Mutual Engineering Corp. (FM) for the specific application.
- All installations shall comply with the National Electrical Safety Code (NESC) or the NEC regulations.
- Personnel familiar with and qualified for the class of work to be performed shall accomplish all work.
- Live parts of wiring or equipment shall be guarded to protect all individuals or objects from harm.
- Electric wire or flexible cord passing through work areas shall be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, or pinching.
- Temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment shall be marked to indicate the maximum operating voltage.
- Patched, oil-soaked, worn, or frayed electric cords or cables will not be used.
- Portable hand lamps shall be of the molded composition or other type approved for the purpose, and hand lamps shall be equipped with a handle and a substantial guard over the bulb that is attached to the lamp holder or the handle.
- Extension cords or cables shall not be fastened with staples, hung from nails, or suspended by wire.
- All electrical circuits shall be grounded in accordance with the NEC and the NESC unless otherwise noted in the reference manuals.
- A multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle shall ground portable and semi-portable electrical tools and equipment.
- Semi-portable equipment, floodlights, and work lights shall be grounded, and the protective ground shall be maintained during moving unless supply circuits are de-energized.
- Tools protected by an approved system of double insulation, or its equivalent, need not be grounded.
- UL listed ground fault circuit interrupters (GFCIs), calibrated to trip within the threshold values of 5 ma + 1 ma, are required on all circuits used for portable electric tools.
- In instances where the GFCI is sensitive to equipment vibration, the UXOSO shall ensure proper equipment grounding prior to the equipment being used.
- Flexible cord sets shall be UL listed, contain the number of conductors required for the service, including an equipment ground wire, and shall be

classified as hard usage or extra hard usage (identified by "outdoor" or "WA" printed on the jacket).

- Wire guards or equivalent shall protect bulbs attached to festoon lighting strings and extension cords unless deeply recessed in a reflector.
- Temporary wiring shall be guarded, buried, or isolated by elevation to prevent accidental contact by workers or equipment.
- Work activity adjacent to overhead lines shall not be initiated until a survey has been made to ascertain the safe clearance form energized lines (see Table 11-3 of EM 385-1-1).
- Any overhead line shall be considered to be energized unless and until the person owning such line assures that it is not energized and it has been visibly grounded.
- Operations adjacent to overhead lines are prohibited unless the power to the line has been shut off and positive means taken to prevent it from being accidentally energized, or the required clearances can be met and the minimum clearance distance has been posted at the operator's position.

B15.3 Material Lifting

B15.3.1 Many types of objects are handled in normal day to day operations. Care shall be taken in lifting and handling heavy or bulky items because they are the cause of many joint and back injuries. The following fundamentals address the proper lifting of materials to avoid joint and back injuries:

1. The size, shape and weight of the object to be lifted must be considered. Site personnel will not lift more than they can handle comfortably.
2. A firm grip on the object is essential, therefore the hands and object shall be free of oil, grease and water, which might prevent a firm grip.
3. The hands, and especially the fingers shall be kept away from any points that cause them to be pinched or crushed, especially when setting the object down.
4. The item shall be inspected for metal slivers, jagged edges, burrs, rough or slippery surfaces and pinch points, and gloves shall be used, if necessary, to protect the hands.
5. The feet shall be placed far enough apart for good balance and stability.
6. Personnel will ensure that solid footing is available prior to lifting the object.
7. When lifting, get as close to the load as possible, bend the legs at the knees, making sure that the back is kept as straight as possible.
8. To lift the object, the legs are straightened from their bending position.

9. Never carry a load that cannot be seen over or around.
10. When placing an object down, the stance and position are identical to that for lifting, with the back kept straight, the legs bent at the knees and the object lowered.
11. If the item to be lifted is large, bulky, or heavy:
    a. Evaluate handling needs in terms of weight, size, distance, and path of movement;
    b. Ask co-worker for assistance;
    c. Use material handling equipment/devices (mechanical or manual handling aids) instead of trying to lift it yourself; and
    d. Do not move over or suspend materials above personnel unless precautions have been taken to protect personnel from falling objects.

B15.3.2 When two or more people are required to handle an object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each person, if possible, shall face the direction in which the object is being carried.

B15.4 VIBRATION

B15.4.1 Project employees may operate different types of vibrating equipment, such as chain saws, weed wackers, and power tools during UXO/OE removal activities. Prolonged use of vibrating equipment has the potential to produce a condition known as vibration syndrome. Vibration syndrome has adverse circulatory and neural effects on the fingers. Signs and symptoms include numbness, pain, and blanching of the fingers which are of particular concern since they are evidence of advanced stages of vibration syndrome after exposures as short as one year. In general, National Institute of Occupational Safety and Health (NIOSH) recommendations will be followed to prevent the occurrence of vibration syndrome:

- Where tasks cannot be redesigned to eliminate vibrating tools such as chain saws, weed wackers, and power tools, a combination of engineering controls, work practices, and administrative controls will be employed to minimize exposure to vibrating equipment.
- Employees using vibrating tools will be informed of the symptoms of vibration syndrome.
- Vibrating tools and equipment will be maintained according to manufacturer's recommendations.
- Work schedules with a 10-minute break after each hour of continuous exposure will be utilized.

B15.4.2 Employees using vibrating tools will be advised to:

- Wear adequate clothing (gloves) to keep the body temperature stable and normal, since low body temperature reduces blood flow to the extremities and therefore may trigger an attack of vibration syndrome. In addition, employees will be advised to keep their hands warm and dry on the job.
- Let the tool do the work, grasping it as lightly as possible while working safely and maintaining tool control. The tool should rest on the workpiece or support as much as possible. The tighter the tool is held the greater the vibration transmitted to the employee.

B15.5 HAND AND POWER TOOLS

Hand and power tools will be utilized on the project. The following is a list of safety tips and recommendations for the safe use of hand and power tools:

- Power tools shall be of a manufacture listed by a nationally recognized testing laboratory for the specific application for which they are to be used.
- Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations, and shall be used only for the purpose for which designed. A copy of the manufacturer's instructions and recommendations shall be maintained with the tools.
- Hand and power tools shall be inspected, tested, and determined to be in safe operating condition prior to use. Continued periodic inspections shall be made to assure safe operating condition and proper maintenance.
- Hand and power tools shall be in good repair and with all required safety devices installed and properly adjusted. Tools having defects that will impair their strength or render them unsafe shall be removed from service.
- Power tools designed to accommodate guards shall be equipped with such guards when in use.
- When work is being performed overhead, tools not in use shall be secured or placed in holders.
- Throwing tools or materials from one location to another or from one person to another, or dropping them to lower levels, shall not be permitted.
- Only nonsparking tools shall be used in locations where sources of ignition may cause a fire or explosion.
- GFCI must be used.

B15.6 FACILITIES

B15.6.1 Washing Facilities

Washing facilities will be provided, convenient to the work area, including potable washing water and soap. All washing facilities will be supplied with liquid soap, paper towels, and trash receptacles. All washing facilities or areas will be kept clean and free of trash.

B15.6.2 Potable Water Supply

An adequate supply of potable (drinkable) water shall be provided onsite at all times, and shall be supplied IAW the following provisions:

- Containers used for potable water shall be capable of being tightly closed, equipped with a tap and maintained in a clean sanitary condition.
- A container used for distribution of drinking water shall be clearly labeled as to its contents and not used for any other purpose.
- Water shall not be dipped from the container and use of a common cup shall not be allowed.
- Where single service cups are provided, separate sanitary containers shall be provided for the storage of the unused cups and for the disposal of the used cups.

B15.6.3 Toilet Facilities

Under field conditions where a hazardous waste site is not provided with a sanitary sewer system, temporary toilet facilities shall be located at the site, unless toilet facilities are readily available nearby. Chemical, recirculating, combustion or flush toilets may be used to fulfill this requirement. There will be at least one unit for each 15 workers. Each temporary toilet shall be naturally lighted, have ventilation, be lockable from the inside, and shall be serviced weekly. The minimum requirements for toilet facilities can be found in the OSHA standard 29 CFR 1910.120(n) and EM-385-1-1.

B15.7 UXO HAZARDS

B15.7.1 UXO may be present and located during site activities. UXO qualified personnel shall follow the requirements of USAESCH's *Safety and Health Requirements,* EM 385-1-1 (September 1996) which outlines the safety and health precautions to be taken if UXO are encountered. All non-UXO qualified personnel shall follow the safe work practices listed below:

- Non-UXO qualified personnel shall receive site specific UXO recognition training prior to participation in site activities.
- No soil penetrating activities shall be allowed without the area first being cleared by UXO qualified personnel.
- Non-UXO qualified personnel shall be escorted onsite by UXO qualified personnel, until such time as the area is cleared.
- Once an area has been cleared and flagged, non-UXO qualified personnel may perform duties in the area unescorted, but shall not leave the cleared area unescorted.

- Non-UXO qualified personnel shall not touch or disturb any object which could potentially be UXO related, and shall immediately notify the nearest UXO qualified person of the presence of the object.

B15.7.2 Employees will also be instructed in the use of the buddy system, which is a method of organizing work groups so that there is someone that is always available to:

- Provide his or her partner with assistance in an emergency.
- Observe his or her partner for signs of chemical or physical exposure.
- Periodically check the integrity of his or her partner's PPE.
- Notify the emergency response personnel when an emergency occurs.

The buddy system will be used at all times when employees are within an EZ.

B15.8 HAZARD COMMUNICATION PROGRAM

B15.8.1 The OSHA Hazard Communications Standard (29 CFR 1910.1200) was promulgated to ensure that all chemicals would be evaluated and information regarding the hazards associated with these chemicals would be communicated to employers and employees. The goal of the standard is to reduce the number of chemically related occupational illnesses and injuries.

B15.8.2 In order to comply with the OSHA Hazard Communication Standard, Parsons has established this written program for work at Camp Hero, Suffolk County, New York. All Parsons and subcontractor personnel working at Camp Hero are included in this program. Copies of this written program will be available for review by any employee at the onsite office trailer for Camp Hero, by contacting the Site Safety and Health Officer, or from the following person:

Edward Grunwald, CIH

Parsons Engineering Science, Inc.

5390 Triangle Parkway

Norcross, GA 30092

678/969-2394

B15.8.1 Hazardous Chemical Inventory List

No historical documentation identifies the use of hazardous chemicals at the former Camp Hero.

B15.8.2 Material Safety Data Sheets (MSDS)

B15.8.2.1 MSDSs are prepared by manufacturers or producers to provide specific information on the safety precautions and health effects of a particular chemical or mixture. The MSDS contains at a minimum the following information:

- Chemical and common names

- Physical and chemical characteristics
- Physical hazards
- Health hazards
- Primary routes of entry
- Exposure limits
- Carcinogenic potential
- Handling and protective precautions
- Control measures
- Emergency and first aid procedures
- Date of MSDS preparation
- Name and address of manufacturer

B15.8.2.2 If chemicals are ordered, the Site Manager or his designee will specify on the purchase order that chemicals are not to be shipped without corresponding MSDSs. When chemicals and MSDS arrive, they will be reviewed for completeness by the Site Safety and Health Officer or his designee. Should any MSDS be incomplete, a letter or FAX will be sent immediately to the manufacturer requesting the additional information, Parsons or its subcontractors will not accept at former Camp Hero sites any shipped chemical materials without an MSDS.

B15.8.2.3 A complete file of MSDSs for all hazardous chemicals to which an employee of Parsons may be exposed will be kept in labeled files in the main office and on-site. In the event that a MSDS is missing the employee should immediately contact the Site or Project Safety and Health Officer.

B15.8.3 Labels and Other Forms of Warning

B15.8.3.1 The Hazard Communication Standard requires that hazardous chemicals be labeled by manufacturers. The label must contain the following:

- Chemical identity
- Appropriate warnings
- Name and address of manufacturer, importer, or other responsible party.

B15.8.3.2 If the labels are incomplete or missing, Parsons personnel will refuse the shipment.

B15.8.3.3 When chemicals are transferred from the manufacturer's container's to secondary containers, the Site Manager or UXOSO will ensure that the containers are labeled with the identity of the chemicals and appropriate hazard warnings. Labels for secondary containers can be obtained from the UXOSO.

B15.8.3.4 The entire labeling procedure will be reviewed at least annually and changed as necessary.

SECTION B16
LOGS, REPORTS AND RECORD KEEPING

B16.1 LOGS

The UXOSO will keep a log recording the following aspects related to safety at the site:

- Training (initial site specific training, tailgate meetings, etc).
- Site visitors.
- Issues or Problems Encountered.
- Accidents.
- Emergencies.

B16.1.1 Safety Log

The UXOSO will maintain a daily safety log of all safety-related activities. The following information will be maintained in the Safety Log:

- Date and recorder of log;
- Tailgate safety briefing (time conducted, material discussed, etc.);
- Weather conditions;
- Significant site events relating to safety;
- Accidents;
- Stop work events related to safety;
- Safety audits; and
- Signature of the Site Manager indicating concurrence.

B16.1.2 Training Log

The UXOSO will maintain a training log documenting the following information:

- Date and recorder of log;
- Nature of training (personnel will complete the appropriate documentation of training form);
- Visitor training; and
- Signature of both the PM and SUXOS indicating concurrence.

B16.1.3 Equipment Maintenance Log

The SUXOS will document all information related to safety equipment maintenance, calibration, and standardization in his Daily Journal.

B16.2 REPORTS

B16.2.1 If an injury occurs on-site, the UXOSO is responsible for completing a Parsons accident report form (Attachment B-2). The UXOSO will coordinate preparation of the respective forms to ensure accuracy and consistency. The UXOSO must submit a copy of this form to the CIH within 24-hours of the injury. All accidents/incidents must be investigated by the UXOSO. The purpose of the investigation is to determine the causal factors that lead to the accident/incident and to establish corrective actions to prevent a recurrence. A completed Parsons Accident Report Follow-Up Form (Attachment B-2) must be forwarded to the CIH within 7 days after the incident.

B16.2.1 ENG Form 3394

All accidents will be reported and investigated to determine the cause of the accident and develop controls to prevent recurrence. Notification and reporting will be in accordance with AR 385-40, Accident Reporting and Records, and USACE Supplement 1 to AR 385-40. The ENG Form 3394, included as Attachment B-5, shall be completed in accordance with EM 385-1-1 and submitted to the Contracting Officer within 24 hours of an accident.

B16.3 RECORD KEEPING

B16.3.1 The UXOSO will establish and maintain a filing system on-site for Health and Safety records, reports, and information concerning individual training, medical surveillance, etc. Sections in this filing system will include:

- Training Records -- Certificates for training required by 29 CFR1910.120 (40-hour initial HAZWOPER, 8-hr refresher, and supervisory training) will be maintained at the site. Additionally, documentation of CPR and First Aid training will be available at the site.
- Medical Monitoring -- Documentation of current enrollment (within last 12 months) in a medical monitoring program will be available for each employee working at the site. Documentation will consist of the employee's Health Status Report that is written and signed by the examining physician.
- Accident Reports -- Copies of any accident/incident reports and follow-up reports.
- Plan Acceptance Forms -- Copies of the Plan Acceptance Forms documenting that employees have read and understand the SSHP will be maintained at the site.

B16.3.2 Documentation of personnel credentials, site activities, and environmental monitoring will be maintained on-site. The UXOSO will maintain and update these records. Documentation, at a minimum, shall include:

- Certificates for the following:
  - Initial 40-hour Hazardous Waste Operations and Emergency Response Training.
  - Applicable annual 8-hour refresher health and safety training.
  - Applicable 8-hour supervisory Hazardous Waste Operations and Emergency Response Training.
  - Applicable 12-hour Site-Specific Operations and Emergency Response Training for Laborers.
  - On-the-job training, 3-day.
  - First Aid and CPR.
- OSHA Job Safety and Health Protection Poster: A copy of this poster shall be hung in the field office or in an area where employees routinely congregate.
- The OSHA 200 log: This log contains the required information for recording on-site injuries and illnesses, and must be generated by each company safety contact. A copy shall be maintained on-site and posted during the month of February.
- Site sign-in sheet: This record shall contain the date, name of each individual on-site, the employer, and the time entering and leaving the site. All personnel will sign this form.
- Accident/incident/near miss reports: All accidents, safety/health incidents, and near misses shall be investigated, and investigation reports shall be maintained at the site.
- A Site Safety Plan Acknowledgment form containing the date, names of the individuals, the employer, and the individuals' signature.
- The initial site-specific health and safety training record containing the date, the individuals' names and signatures, and the company they are representing.
- The daily "Tailgate" Safety Meeting Record containing the date, topic discussed, individuals' names and signatures, and the company they are representing.
- Safety problem/observations: These records: 1) document unsafe behavior and initiate disciplinary action, and 2) document exemplary safety behavior.
- The health and safety inspection log completed daily to verify that site conditions and activities are in compliance with the SSHP. Deficiencies will be noted and changes made immediately.
- The safety and health program plan required under 29 CFR 1910.120(b).

SECTION B17
RADIOLOGICAL AND CHEMICAL WARFARE MATERIAL (CWM)

Studies of the former Camp Hero have not identified any radiological or chemical warfare hazards on the site. Should suspected radiological or chemical warfare munitions (CWM) be encountered, personnel will immediately evacuate the work area to an upwind location and notify USAESCH for guidance.

PLAN ACCEPTANCE FORM

I, the undersigned, have read and have been verbally briefed on the topics noted above and in the SSHP; I understand the SSHP and agree to comply with all the indicated safety and health requirements:

PRINTED NAME	ORGANIZATION	SIGNATURE	DATE

UXOSO	Signature	Date

Site Manager	Signature	Date

EMPLOYER

1. Name: ______________________________

2. Mail Address: ______________________________
(No. and Street) (City or Town) (State and Zip)

3. Location : ______________________________
(if different from mail address)

INJURED OR ILL EMPLOYEE

4. Name: ______________________________ Social Sec. No.: ______________
(first) (middle) (last) Employee No: ______________

5. Home Address: ______________________________
(No. and Street) (City or Town) (State and Zip)

6. Age: ________ 7. Sex: male ( ) female ( )

8. Date of injury or illness: ______________ Time of accident: ______________

9. Occupation: ______________________________
(specific job title, not the specific activity employee was performing at time of injury)

10. Department: ______________________________
(enter name of department in which injured person is employed, even though they may have been temporarily working in another department at the time of injury)

THE ACCIDENT OR OCCUPATIONAL ILLNESS

11. Place of accident of exposure: ______________________________
(No. and Street) (City or Town) (State and Zip)

12. Project: ______________________________

13. Was place of accident or exposure on employer's premises? Yes ( ) No ( )

14 How did the accident occur? ______________________________
(describe fully the events that resulted in the injury or occupational illness.

____

Tell what happened and how. Name objects and substances involved. Give details on all factors that led to

____

accident. Use separate sheet for additional space).

15. What was the employee doing when injured?______________________________
(be specific--was employee using tools or equipment
____
or handling material?)
____

16 WITNESS TO ACCIDENT
____
(Name) (Affiliation) (Phone No.)
____
(Name) (Affiliation) (Phone No.)

17 Name the object or substance that directly injured the employee. ________________
(for example, object that struck
____
employee; the vapor or poison inhaled or swallowed; the chemical or radiation that irritated the skin; or in
____
cases of strains, hernias, etc., the object the employee was lifting, pulling, etc.)

18. Did the accident result in employee fatality? Yes ( ) No ( )

19. Number of lost days ____/restricted workdays ____ resulting from injury or illness?

OTHER

20. Name and address of physician:____
(No. and Street) (City or Town) (State and Zip)

21. If hospitalized, name and address:______________________________________
(No. and Street) (City or Town) (State and Zip)

22. Initial diagnosis of injury/occupational illness: ____________________________

Date of report: _____________ Prepared by:___________________________________

Official position:____________________________

23. Treatment rendered: ( ) first aid ( ) medical treatment
____

PARSONS
PARSONS, INC.

ACCIDENT REPORT FOLLOW-UP

Employee: ______________________ Date of injury or illness: ___________________

ANALYSIS - What caused the accident. Why did it happen:

Primary cause:

____
____
____
____
____

Contributing factors:

____
____
____
____
____

PREVENTIVE/CORRECTIVE ACTION - State what will be done to prevent re-occurrence.

Immediate action:

____
____
____
____
____

Who is responsible _______________ Completion date(s):____________________

Long-term action:

____
____
____
____
____

Who is responsible _______________ Completion date(s):____________________

Closed by ____

Project Health and Safety Officer date

ATTACHMENT B-3
OSHA JOB HEALTH AND SAFETY PROTECTION POSTER

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.

The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at **www.osha.gov**. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA

www.osha.gov

U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3165

PARSONS
PARSONS, INC.

FORMER CAMP HERO
DAILY SAFETY MEETING LOG

Date: ______________________ **Client:** ______________________

Specific Location: ______________________ **Job No.:** ______________________

SAFETY TOPICS PRESENTED:

Protective Clothing/Equipment: ______________________

____

Chemical Hazards: ______________________

____

Physical Hazards: ______________________

____

Emergency Procedures: ______________________

____

Hospital/Clinic: ______________________ **Phone:** ______________________

Hospital Address: ______________________

EMS Phone: ______________________

Special Equipment: ______________________

Other: ______________________

____

ATTENDEES:

Name Printed:	Signature:

______________________ ______________________

UXOSO Signature

______________________ ______________________

FORMER CAMP HERO
DAILY SAFETY MEETING LOG
(CONTINUATION PAGE)

Field Operations Manager Signature

Date: ______________________ **Client:** ______________________

Specific Location: ______________________ **Job No.:** ______________________

SAFETY TOPICS PRESENTED:

ATTENDEES:

Name Printed:	Signature:

(For Safety Staff only) | REPORT NO. | EROC CODE

UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT

(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)

REQUIREMENT CONTROL SYMBOL CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. NAME *(Last,First,MI)*

b. AGE

c. SEX ☐ MALE ☐ FEMALE

d. SOCIAL SECURITY NUMBER

e. GRADE

f. JOB SERIES/TITLE

g. DUTY STATUS AT TIME OF ACCIDENT
☐ ON DUTY ☐ TDY ☐ OFF DUTY

h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER
☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL
☐ TEMPORARY ☐ STUDENT
☐ OTHER *(Specify)* ______

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)* / /

b. TIME OF ACCIDENT *(Military time)*

c. EXACT LOCATION OF ACCIDENT

d. CONTRACTOR'S NAME
(1) PRIME:
(2) SUBCONTRACTOR:

e. CONTRACT NUMBER ______
☐ CIVIL WORKS ☐ MILITARY
☐ OTHER *(Specify)* ______

f. TYPE OF CONTRACT
☐ CONSTRUCTION ☐ SERVICE
☐ A/E ☐ DREDGE
☐ OTHER *(Specify)* ______

g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ SUPERFUND ☐ DERP
☐ IRP ☐ OTHER *(Specify)* ______

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see instructions)*

a. CONSTRUCTION ACTIVITY ______ (CODE) #

b. TYPE OF CONSTRUCTION EQUIPMENT ______ (CODE) #

5. INJURY / ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see instructions)*

a. SEVERITY OF ILLNESS / INJURY ______ (CODE) #

b. ESTIMATED DAYS LOST

c. ESTIMATED DAYS HOSPITALIZED

d. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED
PRIMARY ______ (CODE) #
SECONDARY ______ (CODE) #

f. NATURE OF ILLNESS / INJURY ______ (CODE) #

g. TYPE AND SOURCE OF INJURY/ILLNESS
TYPE ______ (CODE) #
SOURCE ______ (CODE) #

6. PUBLIC FATALITY *(Fill in line and corresponding code number in box - see instructions)*

a. ACTIVITY AT TIME OF ACCIDENT ______ (CODE) #

b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE
☐ PICKUP/VAN ☐ AUTOMOBILE
☐ TRUCK ☐ OTHER *(Specify)* ______

b. TYPE OF COLLISION
☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END
☐ BROADSIDE ☐ ROLL OVER ☐ BACKING
☐ OTHER *(Specify)* ______

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b. OWNERSHIP	c. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL / FLOATING PLANT ACCIDENT *(Fill in line and corresponding code number in box from list - see instructions)*

a. TYPE OF VESSEL/FLOATING PLANT ______ (CODE) #

b. TYPE OF COLLISION/MISHAP ______ (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

11. CAUSAL FACTOR(S) *(Read instruction before completing)*

a. *(Explain YES answers in item 13)*

	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. (CONTINUED)

	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident?	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO

b. TYPE OF TRAINING. ☐ CLASSROOM ☐ ON JOB

c. DATE OF MOST RECENT FORMAL TRAINING. / / *(Month) (Day) (Year)*

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper if necessary)*

a. DIRECT CAUSE

b. INDIRECT CAUSE(S)

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING *(Month/Day/Year)* / /

b. ANTICIPATED COMPLETION *(Month/Day/Year)* / /

c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT
CORPS ____________
CONTRACTOR ____________

d. DATE *(Mo/Da/Yr)* __ / __ / __ ; __ / __ / __

e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*

f. OFFICE SYMBOL

16. MANAGEMENT REVIEW (1st).

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS:

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

U.S.G.P.O. 1989- 526-113

ATTACHMENT B6
USA ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES FOR DISPOSAL/DEMOLITION OPERATIONS

USA ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES
DISPOSAL/DEMOLITION OPERATIONS

1.0 GENERAL

The following USA policies are not all inclusive nor are they applicable in all situations. This Standard Operating Procedure (SOP) is not a stand-alone document and is to be used together with the Work Plan (WP), Site Specific Safety and Health Plan (SSHP), applicable Federal, State, local regulations and, contract restrictions and guidance.

1.1 REFERENCES

- CEHNC Safety Considerations for UXOs;
- USA Safety and Health Program (SHP);
- OSHA, 29 CFR 1910, Occupational Safety and Health Standards;
- OSHA, 29 CFR 1926, Construction Standards;
- Applicable sections of EPA, 40 CFR Parts 260 to 299, Protection of Environment;
- Applicable sections of DOT, 49 CFR Parts 100 to 199, Transportation;
- USACE EM 385-1-1, Safety and Health Requirements Manual;
- USACE ER 3851-92, Safety and Occupational Health Document Requirements for Hazardous Waste Remedial Actions;
- DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards;
- DoD 4160.21-M, Defense Reutilization and Marketing Manual;
- DA PAM 385-64, Ammunition and Explosives Safety Standards;
- AR 385-64, Ammunition and Explosives Safety Standards;
- AR 200-1, Environmental Protection and Enhancement;
- AR 385-10, The Army Safety Program;
- AR 385-16, System Safety Engineering and Management;
- AR 385-40 w/USACE supplement, Accident Reporting and Records;
- TM 9-1300-200, Ammunition General;
- TM 9-1300-214, Military Explosives;
- TM 60 Series Publications.

2.0 DISPOSAL/DEMOLITION OPERATIONS

The following demolition procedures are not all inclusive. Additional safety and procedures information are found in the references cited in paragraph 1.1.

2.1 GENERAL DISPOSAL OPERATIONS

The following is a general guide for disposal operations:

- Analyze explosive operations with a view towards reducing the number of personnel and quantity of explosive material subject to an accident. However, never allow one person to work alone;
- Prohibit tasks not necessary to the explosive operation in the fragmentation zone of such operations;
- Use sufficient warning signals and maintain a restricted/exclusion area when explosive operations are conducted. Cease operations when non-UXO personnel are present;
- Comply with the authorized explosive limits and safe separation distances;
- Discontinue explosive operations when unforeseen hazard conditions develop and do not resume until the condition is corrected;
- Smoke only in designated areas;
- Plan for, provide for, and know the emergency procedures in the event of an accident;
- Use special care in handling and disposal of damaged or deteriorated explosives, munitions items, and other hazardous materials;
- Disperse explosives awaiting destruction, in small quantities at safe distances, and protect them from unintentional initiation;
- Protect explosives and munitions items from the elements and static electricity;
- Provide an emergency vehicle outside the fragmentation zone for response in the event of an accident;
- Perform disposal operations only during daylight hours;
- Carry blasting caps in an approved container and handle them carefully;
- Do not use UXOs for donor charges in demolition operations. They may be in an extremely sensitive and hazardous condition;
- Use caution when investigating post demolition shots. Search the area after each shot for any remaining explosives or explosive components.

2.2 DEMOLITION PROCEDURES

USA personnel will perform demolition operations in a manner consistent with industry standards and safety practices. The following procedures and safety precautions will be adhered to at all times.

2.3 OE/UXO BASIC AND GENERAL SAFETY PRECAUTIONS

These basic safety precautions are the minimum OE safety requirements required of all personnel on site. Other precautions and requirements are in other applicable OE manuals.

2.3.1 Basic Considerations

The following should be taken into consideration when planning or conducting UXO operations:

- SAFETY IS PARAMOUNT;
- The preferred method of disposal is Blow (detonate) in Place (BIP), however, items that are safe to move may be consolidated to reduce the number of shots;
- Do not move or disturb unidentified items;
- All UXOs will be identified, independently, by two (2) UXO technicians;
- Do not collect souvenirs;
- Do not smoke except in designated areas;
- Do not carry fire or spark producing devices into the site;
- All UXO operations will use the "Buddy" system;
- Prohibit unnecessary personnel from visiting the site;
- Demolition operations will be IAW TM 60A-1-1-31.

2.3.2 Basic Safety Precautions

The following safety precautions are applicable to all UXOs:

- Suspend all operations immediately upon approach of an electrical storm;
- Observe the hazards of electromagnetic radiation (EMR) precautions and grounding procedures when working with, or on, electrically initiated or susceptible OE;
- Do not dismantle, strip, or handle any UXO unnecessarily;
- Avoid inhalation and skin contact with smoke, fumes, dust, and vapors of detonations and OE residue;
- Do not attempt to extinguish burning explosives or any fire which might involve explosive materials;

- Do not manipulate external features of ordnance items;
- Incorporate appropriate property and personnel protective measures for shock and fragmentation when conducting OE operations;
- Do not subject OE to rough handling or transportation. Sand bag, chock, and block appropriately;
- Carry explosives in an appropriate container;
- Hand carry no more than two items (one in each hand) at a time and then only as required by the operation being performed;
- Destroy shaped charge munitions by counter charging the cone to prevent formation of the explosive jet;
- The preferred method for disposing of white phosphorous (WP) is to blow the munitions in a manner that disperses the WP into the air versus down into the ground;
- Do not transport damaged WP munitions unless fully submerged in water;
- Avoid unnecessary movement of armed or damaged UXOs;
- Avoid the forward portions of munitions employing proximity fuzing;
- Assume unknown fuzes contain cocked strikers or anti-disturbance features.

2.3.3 General Safety Precautions

The following sub-paragraphs describe safety precautions for various types of munitions/disposal operations:

2.3.3.1 Bombs

- Ensure fuze wells do not contain fuze components;
- Exercise caution when packing fuze wells of bombs or projectiles with explosives as there may be components of the fuze remaining.

2.3.3.2 Clusters, Dispensers, Launchers

- Approach and work from the sides of a dispenser;
- Consider an intact dispenser as fully or partially loaded;
- Consider any payloads outside the container or dislodged inside as armed;
- Take precautions for the most hazardous payloads until positively identified.

2.3.3.3 Projectiles

- Determine if the projectile has been fired and if so consider it armed;
- Check for the presence of unburned tracers;

- Avoid the rear and front of rocket assisted projectiles;
- Handle projectile components such as powder increments, cartridges, and primers with caution;
- Seal the open ends of projectiles or sheared projectile components with tape or other suitable material before transporting.

2.3.3.4 Grenades

- Do not attempt to re-install safety pins on a dud fired grenade;
- Do not attempt to withdraw impinged firing pins from the fuze of a dud fired grenade;
- Do not dispose of grenades by functioning them as designed.

2.3.3.5 Rockets

- Approach and work on rockets from the side;
- Do not dismantle or strip dud fired rockets or rocket motors;
- Do not expose electrically fired munitions to radio transmissions within 25 feet;
- Do not transport an unfired rocket motor until having shielded the motor igniter from EMR;
- Dispose of unfired rocket motors, with or without warheads, in such a manner as to prevent them becoming propulsive.

2.3.3.6 Guided missiles

- When found, restrict vehicular movement in the area of a guided missile;
- Avoid entanglement with guidance wires of wire guided missiles;
- Restrict radio communications in the vicinity of a dud fired missile;
- Approach and work on missiles from the side and rear quarter;
- Do not dismantle or strip dud fired missiles or missile motors;
- Do not transport an unfired missile motor until having shielded the motor igniter from EMR;
- Dispose of unfired missile motors, with or without warheads, in such a manner as to prevent them becoming propulsive.

2.4 DEMOLITION PROCEDURES

The following sub-paragraphs outline the procedures USA personnel will use to perform both electric and non-electric demolition operations.

2.4.1 Basic Procedures:

- The method that provides the most positive control over the specific time of detonation is electric. However, situations may occur, such as an area with a high EMR hazard, when non-electric firing may be the only option;
- Cut fuse long enough when initiating a non-electric charge to reach a safe distance by walking at a normal pace. Use a minimum of five (5) minutes safe separation time on all shots;
- A minimum of 30 seconds separation time will be observed between multiple non-electric shots initiated simultaneously;
- A mandatory 60 minute, plus the burn time of the fuse, wait will be observed on non-electric mis-fires;
- For all buried charges use a dual priming system and Detonating Cord, DO NOT BURY CAPS ;
- The demolition UXO Technician III will investigate mis-fires;
- A "fire in the hole" warning will be sounded three times, verbally and on the radio prior to firing a shot.

2.4.2 Non-Electric Demolition Procedures

The following safety and operating procedures will be used to assemble and detonate explosive charges using non-electric firing trains.

2.4.2.1 Safety Considerations

Do all demolition cap preparation procedures a safe distance (minimum 50 feet downwind) from the item(s) to be destroyed and demolition charges. Observe the following safety considerations:

- Do not strike, roughly handle, tamper with or attempt to remove or investigate the contents of a blasting cap;
- Handle caps only by their open end except during attachment to time fuse or detonating cord;
- Maintain positive control of caps;
- Do not force time fuse or detonating cord into caps;
- Always point explosive end of caps away from body and other personnel during handling and crimping;
- Handle primed safety fuse and sensitized detonating cord with care. Avoid contact between caps and/or between caps and other hard objects;
- Do not allow time fuse to coil up and contact itself, other time fuse, or explosives.

2.4.2.2 Procedures

Assemble all equipment and explosives. Keep blasting caps away from explosives until priming the shot.

- Test burn time fuse:
  - Cut, and dispose of on the shot, the first 6 inches of fuse. This will preclude an inaccurate burn rate or misfire due to moisture.
  - Cut and test burn an appropriate length of fuse(no less than 3 feet) to determine burn rate.

These procedures will be accomplished at least 50 feet downwind from explosives.

  - Compute and cut time fuse to length (minimum 5 minutes) required for safe separation time;

- Inspect cap for foreign matter. Do not blow into cap to clear. Holding cap by the open end, lightly tap wrists together. If the foreign matter remains dispose of the cap on the shot and use a new cap;
- Crimp cap on time fuse, 1/8 to 1/4 inch from the base of the cap and attach fuse lighter.
- Lay out and weight down time fuse;
- Prime explosive charge, sound the warning, initiate the fuse, and return to the safe area.

2.4.2.3 Non-Electric Misfire Procedures:

NOTE

WAIT A MINIMUM OF 60 MINUTES, PLUS BURNING TIME OF THE FUSE, AFTER MAXIMUM DELAY COMPUTED FOR ANY PART OF THE DISPOSAL SHOT TO ELAPSE BEFORE PROCEEDING DOWN RANGE.

- Up range, prepare a new non-electric firing system to include a new donor charge;
- After the required wait time has elapsed proceed down range. Place a new charge close enough to the original charge to ensure detonation of both charges. When employing a detonating cord firing system: after the wait time, proceed down range, cut the detonating cord between the cap and the charge, and attach a new firing system to the end of the detonating cord going to the original charge. Destroy the cut detonating cord and cap with the newly primed shot;
- Sound the warning, initiate the new firing system and return to the safe area.

2.4.3 Electric Demolition Procedures

Personnel performing electrically initiated demolition operations will strictly adhere to the following safety and operating procedures.

2.4.3.1 Safety Considerations

Do all demolition preparation procedures a safe distance (minimum 50 feet downwind) from the item(s) to be destroyed. Observe the following safety considerations:

- Never hook up caps to un-shunted wire;
- Never leave caps un-shunted unless actually testing or hooking to firing wire;
- Observe explosive safety (i.e., do not strike, handle roughly, tamper with or attempt to investigate the contents of the blasting cap;

2.4.3.2 Procedures

The following procedures will be used to assemble, test, and function electric firing trains:

- Prior to going down range, gather all equipment and explosives;
- Lay out (from the site to the safe area) and test firing wire;
- Ground yourself prior to breaking out caps. Keep explosive end of cap pointed away from the body and other personnel;
- Grip the cap lead wires 3" to 6" behind the base of the cap, pull an initial arm's length of wire off the wire coil;
- Barricade the cap, at least 50 feet downwind from other explosives;
- Un-shunt and test blasting cap(s);
- Splice the cap leads to the firing wire in a parallel circuit and insulate connections;
- Prime the shot;
- Return to the safe area and test the circuit for continuity;
- Hook up the firing machine, sound the warning, and fire the shot.

2.4.3.3 Electric Misfires:

In order to prevent misfires, insure that:

- All blasting caps are included in firing circuit;
- All connections between blasting cap wires, connecting wires, and firing wires are properly made.
- Short circuits are avoided;

- Grounds are avoided;
- Number of blasting caps in any circuit does not exceed rated capacity of power source on hand.

2.4.3.4 Causes of Electric Misfires

Common specific causes of electric misfires include:

NOTE

WAIT A MINIMUM OF 30 MINUTES AFTER THE LAST ATTEMPT TO FIRE BEFORE PROCEEDING DOWN RANGE

- Inoperative or weak blasting machine or power source;
- Improperly operated blasting machine or power source;
- Defective and damaged connections, causing either a short circuit, a break in the circuit, or high resistance with resulting low current;
- Faulty blasting caps;
- The use in the same circuit of blasting caps made by different manufacturers or of different design;
- The use of more blasting caps than power source rating permits.

2.4.3.5 Clearing Electric Misfires

If charge is primed electrically, proceed as follows:

- Make several successive attempts to fire;
- Check firing wire connections to blasting machine terminals to be sure that contacts are good;
- Make two or three more attempts to fire charge;
- Disconnect blasting machine and short firing wire;
- A mandatory 30-minute wait will be observed on mis-fires.
- Test firing circuit with circuit tester for breaks and short circuits, and correct any defects discovered;
- Remove and disconnect old blasting cap(s) and short wires;
- Connect wires of new blasting caps(s) to firing circuit and re-prime charge;
- Reconnect firing wire ends to blasting machine, sound the warning, and fire charge(s).

- 2.2.3.6 Multiple Sensitive UXOs Destruction Trunk and Branch Line Procedure
- Personnel will use the following procedures to explosively link multiple shots, using detonating cord:
- Lay out detonation (Det) cord trunk line from the initiation point to the farthest UXO, being careful not to contact the UXOs with the Det cord, and weighing down (securing) the Det cord as you go;
- Working from the farthest UXO to the initiation point, cut Det cord branch lines of sufficient length, to include additional length for knots and overlap, to reach from the trunk line to the UXO;
- Prepare one end of the branch line, (i.e., sensitize with a knot);
- Attach the bare end of the branch line to the trunk line;
- Utilizing the sensitized end of the branch line, prime a charge and place it as close as possible to, but not touching, the UXO;
- Inspect the trunk and branch lines to make sure none of the primed charges have moved and that no branch line is less than a 90 angle with the trunk line from the direction of initiation;
- Proceed to the initiation point and prepare a firing system, either electric or non-electric, sound the warning and initiate the shot.

2.3 SUMMARY

USA uses proven procedures and methods to assemble and function both electric and non-electric explosive demolition shots. Only UXO Trained personnel will perform tasks associated with the assembly and functioning of demolition charges. The procedures outlined in this SOP are based on industry standards and ensure that operations are safely and efficiently performed.

APPENDIX C

KENNETH J. STOCKWELL
Environmental Engineer/QA Technical Review

Experience Summary

Mr. Stockwell provides a senior management role in the development and execution of programs and projects addressing hazardous waste management and site remediations under both CERCLA and RCRA requirements, for a wide variety of industrial and government clients. Program development experience includes multi-project clients in manufacturing and service industries as well as Department of Defense programs in restoration of hazardous waste, unexploded ordnance and chemical warfare materiel sites. Technical direction and project management experience includes engineering evaluation and cost analyses, remedial investigations, feasibility studies, and remedial designs under CERCLA and facility investigations and corrective measure studies under RCRA. Mr. Stockwell provides advice and support to clients on regulatory compliance issues and technology reviews.

Years of Experience

24

Years with Parsons

15

Education

B.S., 1976, United States Naval Academy, Annapolis, Maryland
M.E., Environmental Engineering, 1983, Old Dominion University, Norfolk, Virginia

Registrations

Registered Professional Engineer (Georgia 1987, No. 16705)

Experience Record

1985-Date. Parsons Engineering Science, Inc. **Senior Manager, Hazardous Waste Engineering** (1988-Date). Responsibilities include technical direction, program management, project management, and staff development. Provides program management for large, multitask programs in both the government and private sector. Responsibilities include overall quality assurance, consistency in performance, technical guidance, administrative coordination and cost management. Provides senior project management and technical review, support and guidance to staff engineers and scientists involved in remedial designs and investigations and assessments of environmental impacts from hazardous waste management practices. Responsibilities also include review and familiarity with current evolving regulations applicable to hazardous waste management, particularly in determining regulations and requirements applicable to hazardous waste remediation. Specific program and project experience (1985-Date) has included the following:

Program Manager for over twelve years addressing six separate, multi-year, multi-project contracts for the Department of Defense and three for industry. These programs have encompassed services for PA/SI/RI/FS/RD/RA under CERCLA, RFA,RFI,CMS and CMI under RCRA, and EE/CAs addressing ordnance and chemical warfare materiel issues on Formerly Used Defense Sites.

Technical Director for hazardous waste site characterizations and remedial alternative assessments under both CERCLA and RCRA as well as ordnance and explosives projects. Activities include support to project managers in project scoping, planning and implementation and review of project deliverables. Provides technical support to project managers and clients for project regulatory reviews and meetings.

Project Manager for an engineering evaluation/cost analysis project addressing multiple sites potentially contaminated with chemical warfare materiel and ordnance at a formerly used defense site. This project involved the development of detailed plans and safety requirements for assessment of mustard gas and other related contaminants at historic sites. Geophysical surveys and intrusive investigations were included for confirmation of the presence of ordnance and chemical waste materials. Development of a GIS was used for data management and presentation of results.

Project Manager for a remedial design and remedial action at a National Priorities List site in Florida. The remedial action involved biological treatment of PCP and PNA contaminated soils and sludges using aerated static piles. Project activities included preparation of the remedial design plans and specifications, plans for interim site maintenance and additional site characterization, remedial action reports, and long term maintenance and monitoring. Activities also included preparation of contractor solicitation documents, bid review and contractor selection. This project was conducted for an industrial potentially responsible party (PRP) group.

Project Manager for a remedial design at a National Priorities List site in Ohio. This remediation involved on-site incineration of RCRA, TSCA, and hazardous wastes under CERCLA/SARA regulations and procedures. The site also included dioxin contamination as well as asbestos. Unique aspects included handling all the various type wastes, addressing land disposal delisting requirements for ash, and destruction and decontamination of dioxin and asbestos contaminated structures, including boilers and a brick stack. Plans for sampling, quality assurance, health and safety, contingencies, operations, security, and regulatory compliance were prepared, as well as performance specifications and drawings. This project was conducted for an industrial potentially responsible party (PRP) group.

Project Manager for remedial investigations and feasibility studies at four hazardous waste sites on the National Priorities List. Clients have included both potentially responsible party (PRP) groups and federal agencies (DoD).

Support responsibilities included liaison between the client, the USEPA and applicable state agencies during preparation of remedial investigation plans, implementation of the studies and selection of remediation under the requirements of CERCLA and SARA. Directly responsible for staffing, coordinating and conducting field investigations and preparing remedial investigation reports and feasibility studies. Site evaluations included hydrogeologic site assessments and preparation of public health risk assessments and contaminant transport evaluations. Media investigated have included groundwater, soils, sludges and surface water.

Project Manager for numerous site investigations and remedial action plan developments (feasibility studies) for non-NPL hazardous waste sites. Responsibilities included support through preparation of plans and implementation of field investigations. Data evaluation and evaluation of potentially-applicable remedial alternatives was conducted.

Project Manager for construction oversight and start-up of a groundwater recovery and treatment system for the removal of jet fuel from an aquifer on a U.S. Air Force base. Project activities included oversight of the installation of 16 recovery wells according to specifications prepared by Engineering-Science and preparation of an operations and maintenance manual for start-up and system operation.

Technical Support to industrial clients for evaluation of potential liabilities from acquisition or divestiture of real property and facilities. Support included assessment of potential environmental liabilities from past waste management practices, applicability of U.S. federal and state regulations to potential site problems and assessment of costs associated with possible environmental liabilities.

1983-1985. Applied Biology, Incorporated, Decatur, Georgia. **Staff Environmental Engineer.** Responsible for providing engineering evaluation in the preparation of NEPA related studies such as environmental impact statements and assessments.

1981-1983. Old Dominion University, Norfolk, Virginia - **Graduate School Research Assistant.** Served as graduate assistant in charge of water chemistry laboratory and conducted research on chemical treatment of surface potable water source.

1976-1981. U.S. Navy, **Commissioned Officer.**

Papers and Publications

"A Comparison of the Effectiveness of Emerging In-Situ Technologies and Traditional Ex-Situ Treatment of Solvent Contaminated Soils", *American Chemical Society*, I & EC Division Symposium, October 1991 (coauthor S. Just)

EDWARD L. GRUNWALD, C.I.H.
Toxicologist/Health and Safety Specialist

Experience Summary

Extensive experience in the development and management of safety and quality assurance programs. Project Manager for several industrial hygiene investigations.

Years of Experience

21

Years with Parsons

14

Education

M.S., Public Health (Toxicology Specialization), 1982, University of Massachusetts, Amherst, Massachusetts

B.S., Bacteriology, 1978, Ohio Wesleyan University, Delaware, Ohio

Experience record

Corporate Health and Safety Manager (1985-present). Responsible for the development, standardization, and implementation of health, safety, and training programs throughout Parsons Infrastructure and Technology (Parsons I&T). Authored the Parsons I&T Health and Safety Policies and Procedures Manual, the Health and Safety Training Manual for Hazardous Waste Operations, the Construction Safety Training Manual, the Laboratory Safety Training Manual, and the Health and Safety Training Manual for Supervisors.

Specific duties include:

- Revise, as needed, the Parsons I&T Health and Safety Manual to comply with new regulations or policies.
- Develop and implement safety training programs for employees.
- Manage the occupational medical monitoring program.
- Perform audits of Parsons I&T facilities and projects to verify compliance with established policies, procedures, and plans.
- Investigate accidents and incidents and develop corrective actions.
- Establish procedures to evaluate the safety programs of subcontractors prior to hiring.
- Supervise facility health and safety representatives.
- Publish monthly safety newsletter to notify personnel of new OSHA regulations or corporate requirements.
- Develop health and safety plans for projects.

Project Manager (1999-present). Contracted by Public Works Department of Atlanta, Georgia to provide operations and maintenance employees at five wastewater treatment plants with hazard communication training. The course is designed to provide plant employees with information on the hazards associated with the chemicals in their workplace and the protective measures they can implement when handling these chemicals. Training involves both "hands-on" exercises and multi-media lectures (involving slides, VHS tapes and overheads) to enhance the retention of information. To date, the training has received excellent reviews from Public Works personnel.

Technical Manager (1997-present). Retained by BellSouth to: 1) Identify and classify confined spaces located on BellSouth properties and 2) develop a confine space database that provides safety information for each space. To date, over 1,400 confined spaces at 500 BellSouth facilities have been identified. Approximately, a third of these spaces have been classified as a permit-required confined space indicating that the space contains a safety or health hazard.

The confined space database provides hazard and logistic information on each space (space classification, atmospheric measurements, types of safety hazards inside space, location of space on property, space ID number, interior dimensions of the space, and proper entry procedures). When employees or contractors anticipate entry into a permit-required confined space they are required to call BellSouth's Facilities Management Department prior to entry. The Facilities Management Department accesses the database and informs the entrants of the specific hazards associated with the space and the proper procedures to use for entry. This process ensures that workers are informed of the hazards so entry is performed safely.

Project Manager (1998). Retained by the Paulding Country Public Works Department to provide construction safety training. Training topics included:

- Excavation and trenching safety
- Electrical safety
- Personal protective equipment
- Heavy equipment safety
- Fall protection
- OSHA overview

The Director of Public Works praised the training program and recommended it to the County Department of Transportation.

Project Manager (1996 - 1997). Retained by the Metropolitan Atlanta Rapid Transit Authority (MARTA) to oversee lead paint abatement operations inside 23 box girders on the MARTA rail-lines. Responsibilities included:

- Review abatement contractor's submittals for compliance with project specifications.
- Oversee field operations. Document deviations from specifications.
- Perform OSHA compliance sampling to evaluate workers' exposure to lead dust.
- Conduct ambient air monitoring to evaluate lead dust emissions during abatement operations.
- Perform wipe sampling to ascertain the presence of residual lead on the surfaces of the box girders after abatement.
- Verify proper disposal of lead waste.

Task Manager (1996). Provided air monitoring services for a petroleum pipeline company. The purpose of the monitoring was to identify and quantify the concentrations of petroleum hydrocarbons vapors inside a cave system located adjacent to a diesel fuel spill site. Quarterly air samples were collected from 31 caves and vents in an effort to determine the exposure potential of recreational spelunkers. Sample results were compared to occupational exposure limits (OSHA PELs and ACGIH TLVs)-- the levels considered safe by the Tennessee Environmental Protection Division.

Technical Manager (1994-1995). Designed exposure monitoring study for Johnson Controls. The national contract with Johnson Controls involved the assessment of employee exposure to the refrigerant 2,2-dichloro-1,1,1-trifluoroethane during scheduled and emergency repair of chiller units. Additionally, the study evaluated mechanical room ventilation systems for adherence to American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Standards.

Task Manager (1994). Conducted indoor air quality (IAQ) assessment of newly constructed office building. The assessment involved:

- Ventilation system inspection.

- Collection and evaluation of air samples.
- Development and distribution of employee questionnaire.

From collected data, recommendations were made to eliminate employee IAQ complaints.

Task Manager (1994). Conducted 40-hour hazardous waste operations safety training for Mobil Oil employees.

Project Manager (1993). Responsible for design and implementation of Industrial Hygiene Air Survey for a petroleum pipeline company in Georgia. The study investigated employee exposure to lead and zinc oxide fumes associated with arc welding and oxyacetylene cutting during construction of a drum storage facility.

Project Manager (1993). Managed several asbestos abatement projects for Metropolitan Atlanta Rapid Transit Authority (MARTA). Responsibilities included:

- Bulk sampling to confirm asbestos containing materials.
- Review abatement contractors qualifications and develop removal specifications.
- Perform oversight of abatement activities
- Conduct background, work area, clearance and OSHA compliance air sampling.

Project Manager (1992). Developed and performed occupational health and training for construction service and engineering personnel employed by MARTA.

Project Manager (1991 - 1992). Responsible for evaluating health and safety risk and recommending measures to control employee exposure at an automotive manufacturing facility located in Georgia.

Task Manager (1991). Developed and provided construction safety training for design and construction service personnel contracted by the Chinese Petroleum Company to manage the building of the Kaohsiung refinery's wastewater treatment system.

Project Quality Assurance Manager (1985-1990). Two industrial site investigations and contamination assessment projects and two remedial investigation and feasibility study (RI/FS) IRP projects for the U.S. Air Force. Responsibilities included the development of quality assurance project plans, the auditing of field and laboratory procedures, issuance of audit findings, and validation of laboratory and field data.

Toxicologist (1985 - 1990). Authored public health risk evaluations for several multi-site RI/FS projects.

1983 - 1985. NUS Corporation, Atlanta, Georgia. **Regional Safety Manager** (1983 - 1985). Worked as a member of multidisciplinary field investigation team (FIT) under contract with the U.S. Environmental Protection Agency (USEPA). Duties as a safety officer included the instruction of USEPA, FIT, and State Emergency Response Personnel in hazardous waste operations. Topics of the training included the following areas: protective clothing, respiratory protection, air monitoring instrumentation/OSHA regulations, site control, and site characterization. Developed the Health and Safety Standard Operating Procedures for the USEPA Region IV FIT.

As a **Quality Assurance Manager** (1983 - 1985) for the Region IV FIT, developed quality assurance/control standard operating procedures. Performed audits on several RI/FS projects to insure compliance with USEPAs, NEICs, and FITs quality assurance procedures. Coauthored the Quality Assurance Manual for Remedial Response Activities at Uncontrolled Hazardous Substance Facilities, Zone 1. Selected topics from this manual include: the development and control of work plans, document control, remedial design control, data acquisition, field data collection, subcontractor quality assurance requirements, identification and control of laboratory samples, auditing, etc. These procedures were adopted by USEPA and Zone 1 FIT.

Project Manager (1983 - 1985). Site investigations at eight Superfund sites, under contract with USEPA Region IV. The activities performed at these CERCLA sites included the installation of monitoring wells and the sampling of soils, sediments, groundwater, and surface waters. One site involved the excavation, sampling, and removal of drums containing corrosive materials (mineral acids). The level of protection utilized by personnel for this included the use of fully encapsulating suits and self-contained breathing apparatuses. Ranked all sites utilizing the Hazardous Ranking System (HRS).

Professional Affiliations

Certified Industrial Hygienist, Comprehensive Practice, No. 5133

Society of Occupational and Environmental Health

American Board of Industrial Hygienists

American Academy of Industrial Hygienists (Diplomat)

American Industrial Hygiene Association

Hazardous Waste Action Coalition, Health and Safety Subcommittee (Member)

Georgia AIHA Government Affairs Committee (Officer)

OSHA outreach instructor

Papers and Publications

"Exploding Trailer Incident Investigation," presented at American Industrial Hygiene Conference and Exposition, May 1995.

"Safety Considerations of Underground Storage Tank Investigations," presentation to the Arizona Society of Safety Engineers, 1985.

"Health and Safety Considerations for Hazardous Waste Operations," presented at the USEPA Region IV sponsored Symposium on the Progress of Regional and State Superfund Programs, July 1984.

"Protection by Ascorbate Against Acetylphenylhydrazine Induced Heinz Body Formation in Normal Human and Sheep Erythrocytes," *The Journal of Environmental Science and Health*, Volume 6, pp. 897-902, 1982.

"Ozone-Induced Decrease of Erythrocyte Survival in Adult Rabbits," *Advances in Modern Environmental Toxicology*, Volume 5, 1982.

"Ozone-Induced Decrease of Erythrocyte Survival in Adult Rabbits," presented at the USEPA-sponsored International Symposium on Ozone Toxicology, March 1982.

"The Salmonella/Mammilian-Microsome Mutagenicity Test," presented before the Honor Society of Ohio Wesleyan University, June 1978.

DON M. SILKEBAKKEN
Senior Project Manager

Experience Summary

Mr. Silkebakken has extensive and diverse hazardous waste project management (PM) and technical expertise developed through years of direct hands on experience and client interaction. He continues to successfully manage and provide technical direction for large-scale, complex projects and exceed client expectations. Utilizing the applicable procedures and guidelines of CERCLA, RCRA, USEPA, USACE and local regulatory agencies Mr. Silkebakken is proficient in the management and implementation of preliminary assessments (PA), site investigations (SI), feasibility studies (FS), remedial actions, unexploded ordnance (UXO) investigations, site closures, storm water pollution prevention, contaminant assessments, RCRA facility investigations (RFI), and corrective measure studies (CMS). Mr. Silkebakken's diverse experience includes low temperature thermal desorption (LTTD) operations, risk assessment, bioventing, and landfill degradation chemistry.

Years of Experience

11

Years with Parsons

10

Education

B.S., Industrial and Systems Engineering, 1986, Georgia Institute of Technology, Atlanta, Georgia

M.S., Environmental Engineering, 1990, University of South Florida, Tampa, Florida

Registrations

Registered Professional Engineer (Georgia, No. 22173, Nebraska, No. E-9589)

Experience Record

1990-Date. Parsons Engineering Science, Inc.

Group Lead – UXO/Chemical Warfare Materiel (CWM) Services Group. Supervise diverse team of project managers, project engineers and geologists, and geophysicists with primary business focus of servicing UXO/CWM characterization and remediation projects. Responsibilities include business development and marketing, staff recruitment and development, contract negotiation, assuring technical quality and consistency, mentoring, resource allocation, and annual reviews.

Base Coordinator for Charleston AFB (CAFB) in South Carolina. Responsible for continuing and enhancing existing relationships with Base contacts, identifying potential projects and tasks at the Base, and coordinating all Parsons ES marketing activities at the Base.

UXO Projects:

The project below were conducted for USACE Engineering and Support Center, Huntsville (USAESCH) and local Corps Districts under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS).

Technical Director for $1.3 million Engineering Evaluation/Cost Analysis (EE/CA) investigation effort at the 40,428-acre Former Camp Swift site in Austin, Texas. Coordinated personnel from multiple offices, provided technical expertise and review, and evaluated field logistics. The ongoing project includes both towed multi-arrays and single pedestrian-towed geophysical instruments using the "meandering path" survey technique for assessment of the presence of residual conventional UXO within the 11 areas of interest (AOIs). Involved USACE, Fort Worth District.

Project Manager for ongoing $850K EE/CA effort at the 13,398-acre Former Camp Ibis Desert Training Center in San Bernardino, California. The site was utilized by General Patton and includes a variety of historical, cultural, and environmental concerns. Coordinated UXO subcontractor procurement, technical project planning (TPP), and Work Plan preparation and characterization approach. An environmental assessment and the EE/CA field effort are pending. Involves USACE, Los Angeles District.

Project Manager for ongoing $1.4 million EE/CA effort at the 40,384-acre Former Camp Butner infantry training site in Butner, North Carolina. Coordinated UXO subcontractor procurement, TPP, and Work Plan preparation and characterization approach. The EE/CA field effort is pending and will include both meandering path and grid-based geophysical techniques. Involves USACE, Wilmington District.

Project Manager for $1.2 million EE/CA effort at the 159,348-acre Former Camp Gordon Johnston amphibious and infantry training site in Carabelle, Florida. In addition to review of the Archives Search Report (ASR); site visits, historical aerial photographic interpretation, interviews, and library research was conducted to refine portions of the site requiring EE/CA investigation. The EE/CA field effort was conducted in early 2000 and utilized meandering path geophysical survey techniques. Recommendations derived from the risk assessment ranged from institutional controls to clearance to depth, depending on the AOI. Implementation of OE Response Actions are pending. Involved USACE, Jacksonville District.

Project Manager for $1.3 million EE/CA at the 48,753-acre former Blaine Naval Ammunition Depot in Hastings, Nebraska. The project was conducted for USAESCH and USACE, Kansas City District. Strategically selected in excess of 400 sample grid locations for geophysical survey based on interpretation of historical aerial photographs and personal interviews. Subdivided the facility into 14 Sectors based on past and future land use, past ordnance activities, population, and terrain. Geophysical surveys included implementation of both manual and towed-array systems using EM-61 time domain metal detectors. A proposed "alternating lanes" innovative methodology for identifying potential UXO caches was approved by USACE following onsite Prove-Out and was subsequently implemented allowing a significant increase in the amount of acreage geophysically investigated over conventional survey techniques. Coordinated/managed UXO subcontractor's investigation of selected anomalies, documentation of findings, and handling and disposal of recovered UXO. A Sector-specific risk assessment was conducted on the field data using OE*Cert* and the results and risk management alternatives were presented in the EE/CA Report with detailed GIS maps. Project included extensive interaction with the public, private landowners, the national guard, and various governmental agencies.

Site Manager/Deputy Project Manager for EE/CA effort at the 10,200-acre former Brooksville Turret Gunnery Range site in Brooksville, Florida. Coordinated meandering path geophysical effort. Subdivided the facility based on past and future land use, past ordnance activities, population, and terrain. Field effort included brush clearance and initial OE surface clearance efforts, use of both EM-61 TDMD and Schonstedt magnetometer, a combination of "mag and flag" and recorded data anomaly identification, archaeological and flora and fauna survey, intrusive investigation efforts, and demolition/demilitarization of recovered UXO items. A Sector-specific risk assessment was conducted on the field data using OE*Cert* and the results and risk management alternatives were presented in the EE/CA Report with detailed GIS maps. Involved USACE, Jacksonville District.

Site Manager/Deputy Project Manager for EE/CA effort at a 7,265-acre DERP for FUDS site at the former Camp McCain in Grenada, Mississippi.. Coordinated establishment of 176 10,000 ft^2 randomly selected sampling grids using SiteStats/GridStats as well as 40 residential sampling grids. Field effort included grid establishment using GPS and use of both EM-61 TDMD and G-858 gradiometer for recording of geophysical data. Data was subsequently evaluated and anomalies identified for intrusive investigation and incorporation into a risk assessment using the OE*Cert* model. Involved USACE, Mobile District.

Site Manager/Project Engineer for OE statistical sampling effort and design at a 400-acre former Camp Croft Army Training Facility in Spartanburg, South Carolina. Coordinated establishment of 252 50'x50' randomly selected sampling grids on the site using GPS, brush clearance and initial OE surface clearance efforts, geophysical efforts employing EM-61 TDMD for "mag and flag" anomaly identification, intrusive investigation efforts, and demolition/demilitarization of recovered UXO items. Project involved data collection for estimate of type and density of OE contamination, GIS mapping, and risk assessment using OE*Cert* model. Prepared Engineering Design Report detailing site activities and remedial alternative evaluation. Involved USACE, Charleston District.

Field Engineer for EE/CA at Motlow Range, Tullahoma, Tennessee. Coordinated intrusive investigation of selected EM-61 TDMD-identified anomalies within sampling grids via SiteStats/GridStats.

<u>**Other Projects:**</u>

Technical Director for SI project at 13 Defense National Stockpile Center (DNSC) Depots following completion of the PA phase. Provided review of approach and subsequent interpretation of data.

Technical Director for ongoing PAs at 14 DNSC remote sites to determine the potential environmental concerns from bulk material storage and evaluate the need for SI. Provide technical oversight and review of approach and documentation.

Technical Director for ongoing RFI/CMS effort for a landfill at CAFB under an AFCEE Contract. Reviewed Work Plans and negotiated with SC Department of Health and Environmental Control (SCDHEC) and USEPA Region IV regarding investigation approach. Project activities include landfill cap analysis, monitoring well installation, environmental sampling, and risk assessment.

Project Manager for multi-year RFI/CMS effort for a landfill at CAFB under an Air Mobility Command (AMC) Contract. Coordinated preparation of scoping documents with SCDHEC and USEPA Region IV. Project activities included geophysical landfill delineation, soil boring confirmation and sampling, monitoring well installation, aquifer testing, environmental sampling, contaminant migration modeling, and risk assessment. Prepared RFI/CMS Report and submitted to regulators. Received rating of 4.0 out of 4.0 from Base on Parsons Evaluation of Service Quality request.

Resident/Project Engineer for Remedial Action of Beaunit Lagoon National Priorities List (NPL) Site in Fountain Inn, South Carolina under Consent Decree with USEPA Region IV. Conducted oversight to ensure remedial action was in compliance with the Performance Standards Verification Plan and the USEPA Record of Decision. Project included pumping, handling, and sampling of lagoon water; hot spot soil and IDW sampling, removal, and disposal; lagoon backfilling and compaction; site grading; geosynthetic clay liner (GCL) cap installation; and groundwater and air sampling. Conducted weekly project status meetings onsite with EPA, subcontractors, and client. Site contaminants of concern in soil included arsenic and zinc and in water included benzene, PAHs, and metals. Project field work was completed on time and under budget.

Site Manager for LTTD Remedial Action of approximately 2,200 yds^3 of herbicide and chlorinated pesticide-contaminated soil at a publically visible former pesticide formulating plant in downtown Phoenix, Arizona. Supervised and directed field team and subcontractor activities. Provided briefings to onsite client representative, Arizona Department of Environmental Quality, and local media. All operations conducted in Level C personal protection. Material feed rate to the LTTD unit ranged from 15 to 30 tons per hour with a retention time of 10 to 15 minutes. In excess of 90% of the soil was remediated to below state cleanup levels in one pass (1500°F - 2000°F).

Resident/Project Engineer for multimillion dollar Installation Restoration Program (IRP) LTTD treatability study of approximately 60,000 tons of PAH and petroleum-contaminated soils from 14 underground storage tank (UST) CERCLA sites at Chanute AFB, Illinois. The project involved mobilization of one of the largest direct-fired LTTD units in operation with a feed rate of 80 to 120 tons of soil per hour. Responsible for coordinating field activities involving multiple subcontractors to maintain efficiency and minimize down time, providing guidance and oversight to the field sampling team, conducting daily briefings for the Air Force Base Conversion Agency (AFBCA) staff, and communication with the analytical laboratory. Other project activities included ambient air monitoring, innovative sample collection techniques, and Level C personal protection. **Task Manager** for coordination and preparation of a Treatability Study Evaluation Report (TSER) detailing site activities, describing the effectiveness of the process, and evaluating the feasibility of remediation by this technique at other Air Force sites.

Resident/Project Engineer for Remedial Design/Remedial Action (RD/RA) of contaminated soil/waste at the Mathis Brothers/South Marble Top Road Landfill Superfund site in Walker County, Georgia. Supervised and coordinated an 8 month field effort including oversight of excavation contractor, surveying, waste type documentation, Level C personal protection, waste segregation and sampling, and interaction with EPA Region IV on-scene coordinator. Contaminants of concern included dicamba, benzonitrile, and TCE. Prepared Remedial Action Report (RAR) to comply with the Unilateral Administrative Order following site restoration.

Project Manager for soil investigation at a battery distribution facility in Georgia. Elevated lead concentrations previously identified by the Georgia Environmental Protection Department (EPD) were confirmed and a Release Notification was issued. Multiple soil sampling efforts were conducted to delineate extent of contamination based on Hazardous Site Response Act (HSRA) requirements and prepared Compliance Status Report (CSR).

Project Manager for facility closure of five hazardous waste storage areas located within large manufacturing facility in Atlanta, Georgia. Supervised decontamination and confirmatory sampling activities per Georgia EPD approved closure plan. Prepared closure reports and certified decontamination at each site. Closures were approved by the State.

Project Manager for a Remedial Investigation and focused FS for an industrial site within a former manufacturing plant displaying elevated mercury concentrations in soil resulting from leaking mercury-filled manometers affixed to above ground chemical storage tanks. The impact of the residual mercury in the soil was assessed via a public health evaluation based on data collected from a mercury vapor survey, environmental sampling (soil, sediment, and surface water), and air monitoring along the site perimeter. Coordinated sampling locations and activities with the Tennessee Department of Environment and Conservation, Division of Superfund under the Voluntary Cleanup Oversight and Assistance Program. Negotiated State approval for FS recommendation of No Further Action.

Task Manager/Project Engineer for preparation of FS's for a rubble fill, burn pit, 2 blowdown lagoons, and a disposal area at Redstone Arsenal, Alabama. Recommended physical characteristic sampling (bulk density, BTU value, compression tests) to develop and evaluate feasibility of remedial alternatives such as capping, incineration, excavation, etc.

Resident/Project Engineer. Directed field activities for a hazardous waste removal action at the Shaver's Farm Site involving the excavation, management, disposal, and restoration of a CERCLA landfill site located in Walker County, Georgia. Interacted with EPA Region IV on-scene coordinator during the voluntary removal of over 66,000 cubic yards of contaminated soil and drummed chemical waste. The project also involved the removal of two USTs and numerous drums from the site. Contaminants of concern at the site included pesticides and a variety of chemical manufacturing by-products.

Project Manager for an IRP SI of an active industrial painting facility located within Eglin AFB, Florida and designated as a solid waste management unit (SWMU) under Part II of the Base's RCRA/HSWA Permit. Directed and supervised iterative field efforts involving extensive area reconnaissance, monitoring well installations, and environmental sampling of soils, groundwater, surface water, and sediments. Low-flow groundwater sampling techniques were utilized to provide representative inorganic concentrations (elevated by excessive turbidity) following approval of USEPA Region IV and Florida Department of Environmental Protection (FDEP). Developed, negotiated, and prepared subcontractor documents for laboratory, surveyor, and driller. Following evaluation of the analytical data, inclusive of contaminant fate and transport models and identification of applicable or relevant and appropriate requirements (ARARs), a qualitative ecological survey/evaluation and a quantitative public health evaluation were conducted. A technical document to support No Further Action was submitted and approved by EPA and FDEP.

Project Manager for large IRP site investigation consisting of multiple monitoring well installations, advancement of confirmatory soil borings, and environmental sampling of various media at seven landfills and two industrial shops within Eglin AFB. Directed the field efforts, selected and coordinated subcontractors, and interpreted analytical data. Prepared a comprehensive SI Report and five technical documents to support No Further Action. Remedial actions were developed for sites where contaminant migration posed a threat to human or environmental receptors. Supervised preparation of an electronic data deliverable (IRPIMS).

Project Engineer for installation of a pilot-scale bioventing system to remediate petroleum-contaminated soils at a former gasoline station site at Maxwell AFB in Alabama using oxygen to stimulate the growth of indigenous microbes. Supervised installation of air injection and monitoring point wells, performed permeability tests to assess radius of influence, and conducted respiration tests to evaluate biological activity.

Project Engineer for the development of a SWPPP for Robins AFB, Georgia. Conducted tracer dye tests to map storm water routes, identified industrial waste discharges, collected discharge samples during rain events, and assisted in preparation of the final plan. The SWPPP was prepared in conformance with the regulatory compliance requirements of the State of Georgia's general permit for authorization to discharge storm water associated with industrial activity under the NPDES program.

Project Engineer. Coordinated preparation of a Herbicide Orange (HO) SI Report detailing the status of eight known sites where herbicide orange was either handled or disseminated at Eglin AFB, Florida. Responsible for data evaluation and interpretation as well as development of recommendations consistent with requirements for CERCLA sites. Conducted field sampling activities (including biota sampling) and identified and removed HO drums submerged in Base surface waters.

Project Engineer. Responsible for development of Petroleum Contamination Assessment Report (PCAR) for seven former UST sites and an RFI Report documenting the investigation of a RCRA permitted SWMU consisting of a closed landfill at Eglin AFB, Florida. Contaminants of concern included fuels pesticides, herbicides, and PCBs.

Project Engineer. Comprehensive project involvement in preparation of a multimillion dollar PA Report to evaluate 200 potential hazardous waste sites ranging from drum disposal areas, landfills, industrial shops, HO sites, fire training areas, and bombing ranges at Eglin AFB, Florida. Provided technical and Base specific support to the field team. Developed recommendations for elimination of sites from further investigations or continuation to the site investigation phase based on site reconnaissance efforts, review of pertinent reports and Base records, personnel interviews, and interpretation of archival aerial photographs.

Project Engineer. Responsible for preparation of a SAP, associated scoping documents, and RI/FS report for USEPA Region VI Superfund site in Arkansas consisting of a sludge pit containing metal plating waste. Established criteria for selection of monitoring well locations, developed guidelines for data quality objectives, and performed subcontractor negotiations. Conducted environmental sampling and aquifer pump testing to characterize hydrologic conditions at the site. Researched and prepared a detailed FS Report for remediation of both soils and groundwater at the site.

Project Engineer responsible for coordination of an RI Report for six IRP sites including four landfills and two fire training areas at Chanute AFB, Illinois. Tasks included validation of analytical data based on HAZWRAP guidelines, evaluation of the data based on ARARs, and development of recommendations for remedial actions. Prepared an FS for the four landfills detailing the selection of a capping alternative.

1989-1990. University of South Florida, Tampa, Florida. **Research Assistant** in environmental engineering. Emphasis on landfill degradation parameters and recycling technologies. Operated pilot scale landfill leachate recirculation cells for the State of Florida to evaluate waste degradation potential. Diversified course studies included urban water and industrial wastewater treatment, physiochemical processes, hazardous waste treatment and management, fate of contaminants, and air pollution.

Selected to represent new environmental engineering graduates at the "Municipal Solid Waste Landfills: Problems and Issues" workshop presented by the Center for Solid and Hazardous Waste Management. Actively participated in brainstorming sessions with regulators, consultants, landfill operators, and academia. Results published in conference proceedings.

Papers and Publications

"Method for Screening Right of Way for Hazardous Materials" Field Handbook on property and easement acquisitions for the State of Florida Department of Transportation and interactive computer database, November 1989 (coauthors R. J. Murphy, and R. I. Stessel).

"Paper Waste: Reduction/Recycle/Incineration", M.S. Thesis/Project, University of South Florida, July 1990.

"Waste Reduction/Recycle of Plastic and Paper

Waste" Florida Center of Solid and Hazardous Waste, July 1990 (coauthors R. J. Murphy, and T. Chatchupong).

"Reduction of Polycyclic Aromatic Hydrocarbons (PAHs) from Petroleum - Contaminated Soil using Thermal Desorption Technology," presented at Hazardous Materials Control Resources Institute Superfund XVI Conference, Published in Proceedings November 1995 (coauthor H. Allen Davis).

"Large Scale Soil Remediation Using Low Temperature Thermal Volatilization Technology at the Chanute Air Force Base." Published in Proceedings of Hazardous Materials Control Resources Institute Superfund XVI Conference, November 1995 (coauthor H. Allen Davis).

" Implementation of a Geophysical and Confirmatory Intrusive Sampling Approach for a Complex Site: A Case Study of the Former Blaine Naval Ammunition Depot Engineering Evaluation/Cost Analysis." Presented at the 1999 UXO Forum in Atlanta, Georgia, May 1999.

" A Case Study of the Former Camp McCain Army Training Facility: Evaluation of Risk Posed by the Potential Presence of UXO Given no UXO Findings During the EE/CA Investigation." Presented at the 1999 UXO Forum in Atlanta, Georgia, May 1999 (coauthor Talal Sadaka).

ANDREW B. SCHWARTZ
Geophysicist/Database Administrator

Experience Summary

Mr. Schwartz has over 12 years of experience in planning and overseeing geophysical investigations for ordnance detection, engineering and construction projects, mineral exploration, and environmental studies. Mr. Schwartz is responsible for the quality assurance and quality control of geophysical data collection and he is responsible for interpreting and reporting the findings of geophysical investigations. He develops project specific data reduction and data interpretation applications that are used in DOS, Windows and Oracle environments. Mr. Schwartz is also responsible for designing and maintaining relational databases for use in Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial investigations of hazardous waste and radioactive mixed waste sites. He is also a database administrator.

Years of Experience

12

Years with Parsons

7

Education

B.S., Physics, 1988, Dalhousie University, Halifax, Nova Scotia

Experience Record

1993-Present, Parsons Engineering Science, Inc. **Geophysicist.** Involved in expanded site inspections, remedial investigation/feasibility studies, and engineering evaluation/cost analysis investigations of military, industrial, and mixed waste facilities in the eastern United States. Field team leader responsible for planning, supervising, and training personnel for electromagnetic surveys, ground penetrating radar surveys and magnetometer surveys at unexploded ordnance sites. Developed standard operating procedures for conducting geophysical investigations, for verifying and maintaining survey quality control, and for reducing and manipulating geophysical data. Directs invasive explorations of hazardous and radioactive mixed waste disposal sites.

Field Team Leader. Responsible for planning EM-61 geophysical field work and supervising and training field personnel at various unexploded ordnance (UXO) site investigations. Developed standard operating procedures for EM-61 UXO investigations, survey quality control, and EM-61 data reduction and interpretation.

Task Manager. Responsible for writing and implementing a multi-million dollar Remedial Investigation and Radiological Final Status Survey workplan at the Seneca Army Depot Activity in Romulus, New York. Negotiated the level of effort that will be required to meet US Army, New York State and USEPA requirements for site release. Trained field personnel to use differential global positioning system instruments, geophysical survey instruments, and radiological screening instruments. Designed the data collection and data handling strategies that are used to record and document all on-site activities needed to satisfy project requirements.

Database Administrator/Computer Programmer. Designs and builds relational database models within Oracle that are used to store, organize and present data collected during environmental site investigations. Aids database users by troubleshooting their database queries and providing database design solutions to specialized, information specific problems. Designs applications and database objects to facilitate linking Oracle databases to various off-the-shelf Windows based software packages. Designs and writes Visual Basic applications to validate, present, and interpret environmental sample data and to use that data in risk assessments of hazardous waste and radioactive mixed waste sites. Analyses data that is to be stored in Oracle and designs database models to accept that data and verify its integrity. Directs information up-loads.

Skilled in many software systems, including Oracle, Visual Basic, AutoCad, ArcView, Geosoft, RADAN, MagMap 96, and SIPT 2.

1988-1993 Geophysics GPR International, Montreal, Canada. **Field Operations Manager.** Served as field operations manager for various engineering feasibility studies and mineral exploration projects conducted in Canada, the United States, and East Africa. Responsible for planning, executing, and preparing final reports on various waterborne projects, which included side-scan sonar surveys, sub-bottom profiling surveys, bathymetric surveys, marine positioning, and shallow benthic coring. Served as senior geophysicist on a technology demonstration project to identify and characterize structural deterioration of submerged dam structures in the La Grande Hydroelectric complex. Served as senior geophysicist for environmental assessments of contaminated sediments in rivers, harbors, and canals.

Project Geophysicist. Responsible for the field testing and operational use of a prototype micro-computer controlled marine induced polarization system developed by the Hardy BBT Corporation and the Canadian government. Worked on waterborne projects where side scan sonar, seismic reflection, seismic refraction, magnetic, and hydrographic survey methods were used to evaluate river flow characteristics and physical properties of sub-marine sediments and bedrock. Performed marine magnetic surveys to search for UXO over the Nicolet Artillery Testing Range. Served as resident geophysicist for a harbor enlargement project.

Computer Programmer. Developed interfacing hardware and software to link various geophysical and positioning instruments together and record data from each simultaneously (both in hard copy and electronically). Designed applications to analyze geophysical and positioning data. Wrote computer routines to automate the reduction and processing of raw field data.

Special Training

40-hour health and safety training for work at hazardous waste sites in compliance with OSHA regulations 29 CFR 1910.120(e)(3), 1990.

Course and Certification, " Theory of Operation and Interpretive Techniques of Side Scan Sonar," Klein Associates, Inc., 1991.

Course and Certification, " Theory and Practice of Applying Subsurface Interface Radar Technology in Engineering and Geophysical Investigations, SIR-System 3," Geophysical Survey Systems, Inc., 1993.

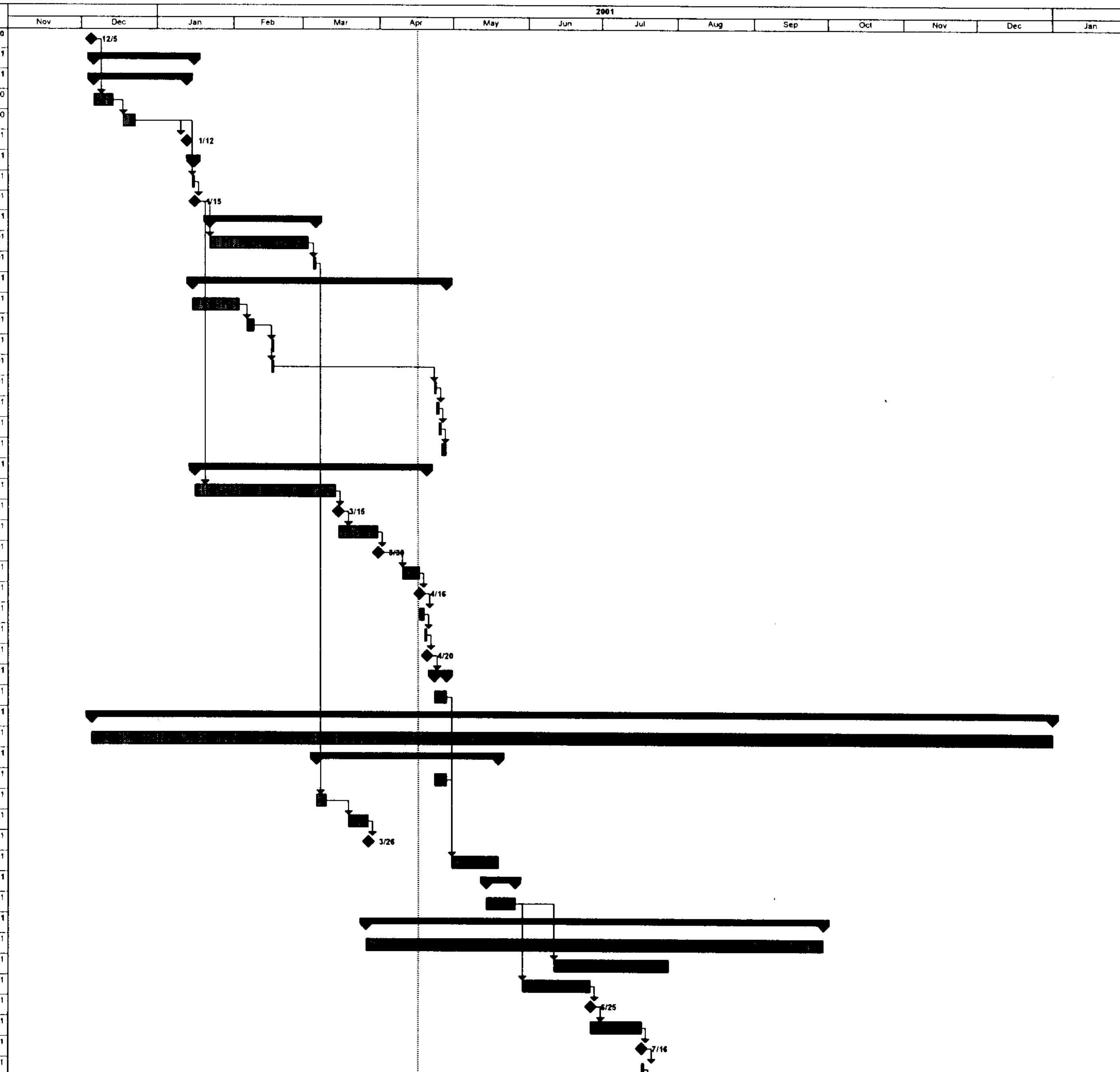
8-hour Supervisory Training for work at hazardous waste sites in compliance with OSHA regulations 29 CFR 1910.120(e)(8), 1995.

Course and Certification, "Oracle 7 Database Administration", Oracle Education Center, 1997.

APPENDIX D

Former Camp Hero EE/CA

Task Name	Duration	Start	Finish
Notice to Proceed	**0 days**	**Tue 12/5/00**	**Tue 12/5/00**
Task 1 - Project Planning, Site Visi	**29 days**	**Wed 12/6/00**	**Mon 1/15/01**
Task 1a - Site Visit and Recor	**28 days**	**Wed 12/6/00**	**Fri 1/12/01**
Prepare ABSSHP	6 days	Wed 12/6/00	Wed 12/13/00
Site Visit	5 days	Mon 12/18/00	Fri 12/22/00
Submit Site Visit Report	0 days	Fri 1/12/01	Fri 1/12/01
Task 1b - Work Task Proposa	**1 day**	**Mon 1/15/01**	**Mon 1/15/01**
Prepare WTP	1 day	Mon 1/15/01	Mon 1/15/01
Submit Site Visit Report	0 days	Mon 1/15/01	Mon 1/15/01
Task 2 - Geophysical Test Plot	**31 days**	**Mon 1/22/01**	**Mon 3/5/01**
Test Plot WP/Prep & Review	30 days	Mon 1/22/01	Fri 3/2/01
Test Plot Preparation	1 day	Mon 3/5/01	Mon 3/5/01
Task 3 - Technical Project Plannin	**75 days**	**Mon 1/15/01**	**Fri 4/27/01**
Technical Project Planning	15 days	Mon 1/15/01	Fri 2/2/01
Phase I&II Partnering Meeting	3 days	Tue 2/6/01	Thu 2/8/01
Phase I Worksheet Submittal	1 day	Fri 2/16/01	Fri 2/16/01
Phase II Worksheet Submittal	1 day	Fri 2/16/01	Fri 2/16/01
Phase III&IV Partnering Meetin	1 day	Mon 4/23/01	Mon 4/23/01
Submit Phase III Summary Tabl	1 day	Tue 4/24/01	Tue 4/24/01
Submittal of Phase IV Data Coll	1 day	Wed 4/25/01	Wed 4/25/01
Final TPP Meeting	2 days	Thu 4/26/01	Fri 4/27/01
Task 4 - EE/CA Work Plan	**68 days**	**Tue 1/16/01**	**Fri 4/20/01**
Prepare Draft Work Plan	41 days	Tue 1/16/01	Tue 3/13/01
Submit Draft Work Plan	0 days	Thu 3/15/01	Thu 3/15/01
Government Review	12 days	Thu 3/15/01	Fri 3/30/01
Receive Govt Comments	0 days	Fri 3/30/01	Fri 3/30/01
Prepare Draft Final Work Plan	5 days	Tue 4/10/01	Mon 4/16/01
Submit Draft Final Work Plan	0 days	Mon 4/16/01	Mon 4/16/01
Gov Backcheck	2 days	Tue 4/17/01	Wed 4/18/01
Submit Final Slip Pages	1 day	Thu 4/19/01	Thu 4/19/01
NTP for Field Work	0 days	Fri 4/20/01	Fri 4/20/01
Task 5 - Location Surveys & Mapp	**5 days**	**Mon 4/23/01**	**Fri 4/27/01**
Location Surveys & Mapping	5 days	Mon 4/23/01	Fri 4/27/01
Task 6 - Establishment & Manage	**280 days**	**Tue 12/5/00**	**Mon 12/31/01**
Establishment & Management o	280 days	Tue 12/5/00	Mon 12/31/01
Task 7 - Site Characterization	**54 days**	**Tue 3/6/01**	**Fri 5/18/01**
Surface Prep/OE ID/Removal	5 days	Mon 4/23/01	Fri 4/27/01
Geophysical Equipment Test	4 days	Tue 3/6/01	Fri 3/9/01
Prove-Out Report	6 days	Mon 3/19/01	Mon 3/26/01
Submit Prove-Out Report	0 days	Mon 3/26/01	Mon 3/26/01
Investigation	15 days	Mon 4/30/01	Fri 5/18/01
Task 8 - Intrusive Investigation	**10 days**	**Mon 5/14/01**	**Fri 5/25/01**
Intrusive Investigation	10 days	Mon 5/14/01	Fri 5/25/01
Task 9 - Institutional & Impact Ana	**135 days**	**Mon 3/26/01**	**Fri 9/28/01**
Institutional Analysis	135 days	Mon 3/26/01	Fri 9/28/01
Impact Analysis	35 days	Mon 6/11/01	Fri 7/27/01
Prepare Draft EE/CA	20 days	Tue 5/29/01	Mon 6/25/01
Submit Draft EE/CA	0 days	Mon 6/25/01	Mon 6/25/01
Government Review	15 days	Tue 6/26/01	Mon 7/16/01
Receive Government Comment	0 days	Mon 7/16/01	Mon 7/16/01
Draft EE/CA Meeting	1 day	Tue 7/17/01	Tue 7/17/01



Project Former Camp Hero EE/CA
Date Mon 4/16/01

Task — Progress — Milestone — Summary — Rolled Up Task — Rolled Up Milestone — Rolled Up Progress — External Tasks — Project Summary — Split — Rolled Up Split

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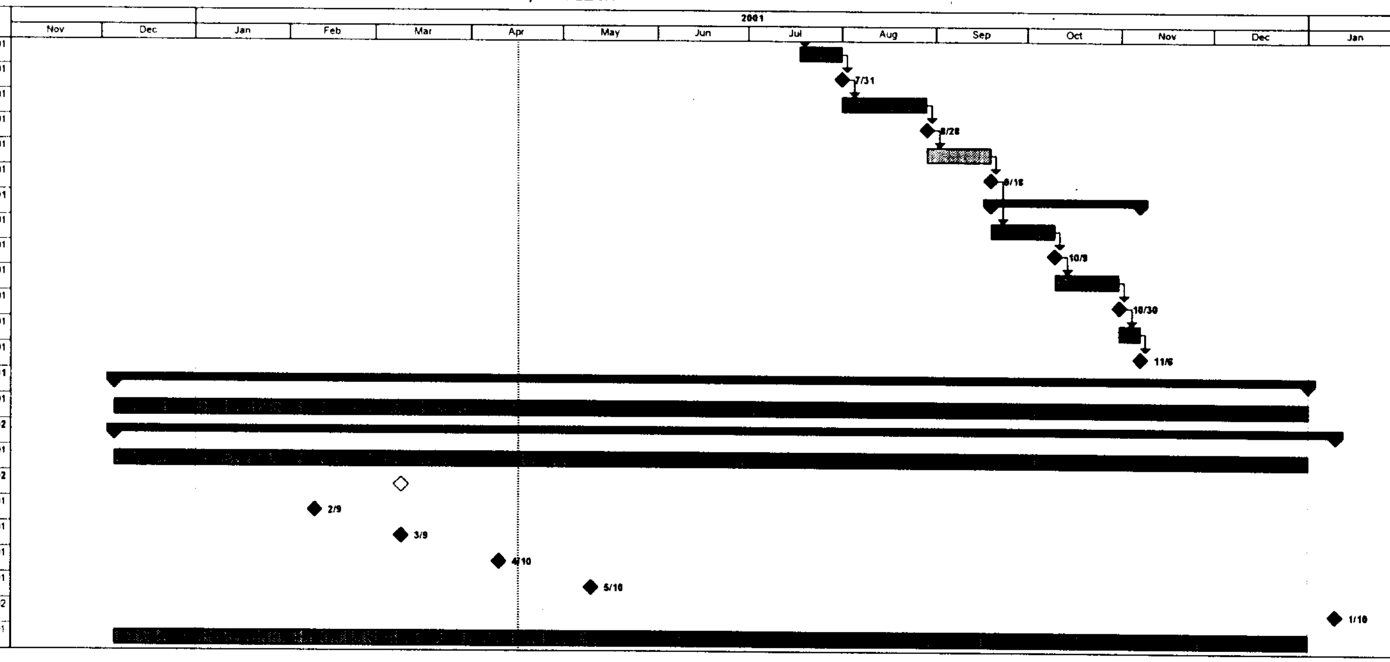
Former Camp Hero EE/CA

Task Name	Duration	Start	Finish
Prepare Draft Final EE/CA	10 days	Wed 7/18/01	Tue 7/31/01
Submit Draft Final EE/CA	0 days	Tue 7/31/01	Tue 7/31/01
Public Review	20 days	Wed 8/1/01	Tue 8/28/01
Receive Public Comments	0 days	Tue 8/28/01	Tue 8/28/01
Prepare Final EE/CA	15 days	Wed 8/29/01	Tue 9/18/01
Submit Final EE/CA	0 days	Tue 9/18/01	Tue 9/18/01
Task 10 - Action Memorandum	**35 days**	**Wed 9/19/01**	**Tue 11/6/01**
Prepare Draft Action Memorand	15 days	Wed 9/19/01	Tue 10/9/01
Submit Draft Action Memo	0 days	Tue 10/9/01	Tue 10/9/01
Government Review	15 days	Wed 10/10/01	Tue 10/30/01
Receive Govt Comments	0 days	Tue 10/30/01	Tue 10/30/01
Prepare Final Action Memorand	5 days	Wed 10/31/01	Tue 11/6/01
Submit Final Action Memorandu	0 days	Tue 11/6/01	Tue 11/6/01
Task 11 - Community Relations	**280 days**	**Tue 12/5/00**	**Mon 12/31/01**
Community Relations	280 days	Tue 12/5/00	Mon 12/31/01
Task 12 - PM/PD/Meetings	**287 days**	**Tue 12/5/00**	**Thu 1/10/02**
Project Management	280 days	Tue 12/5/00	Mon 12/31/01
Monthly Report	**239 days**	**Fri 2/9/01**	**Thu 1/10/02**
Monthly Report	0 days	Fri 2/9/01	Fri 2/9/01
Monthly Report 2/	0 days	Fri 3/9/01	Fri 3/9/01
Monthly Report 3/CD	0 days	Tue 4/10/01	Tue 4/10/01
Montlly Report 4/CD	0 days	Thu 5/10/01	Thu 5/10/01
Final Monthly Report	0 days	Thu 1/10/02	Thu 1/10/02
Task 13 -Project Documentationt	280 days	Tue 12/5/00	Mon 12/31/01



Project: Former Camp Hero EE/CA
Date: Mon 4/16/01

Task		Milestone	◆	Rolled Up Task		Rolled Up Progress		Project Summary		Rolled Up Split	
Progress		Summary		Rolled Up Milestone	◇	External Tasks		Split			

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APPENDIX E
MINIMUM SEPARATION DISTANCES

PARSONS ENGINEERING SCIENCE, INC.

March 15, 2001

U.S. Army Engineering & Support Center
ATTN: CEHNC-OE-DC (Roland Belew)
4820 University Square
Huntsville, AL 35816-1822
256-895-1553

Subject: Contract DACA87-00-D-0038, Delivery Order 0002
Request for Minimum Separation Distances for EE/CA at the
Former Camp Hero, Montauk, New York

Dear Mr. Belew:

In order to develop the Work Plan for the former Camp Hero EE/CA project, the Minimum Separation Distance (MSD) is requested for the following OE items:

- 3.5-inch Rocket
- 37mm & 40mm projectiles
- 90mm projectiles
- Hand grenades (M201, M204, smoke)

Additionally, the standard information regarding the maximum fragmentation distance, K30 overpressure, K50 overpressure, K328 overpressure, and the sandbag thickness/throw distance is requested.

If you have any questions regarding this letter or need additional information, please contact me at (678) 969-2384 or (404) 606-0346 (cell).

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Don Silkebakken, P.E.
Project Manager

cc: Greg Hedrick, (Parsons)
Project File (739306)

Table E.1
Minimum Separations Distances (MSD)
Former Camp Hero, Montauk, New York

Area	MPM	MSD[1]/MSD[2] (feet)	Other Potential OE Contamination
Area A – Fire Control/37mm AAA Station	40mm projectiles	1095/1095	37mm projectiles
Area H – Ordnance Destruction Range	90mm projectile	1955/1955	3.5-inch rockets, grenades, unknown vintage ordnance
Area K – Near Shore Ordnance Area	90mm projectile	1955/1955	3.5-inch rockets, grenades, unknown vintage ordnance

AAA = Antiaircraft Artillery

MSD[1] = Minimum Separation Distance required for all non-essential/non-UXO personnel and the general public during intrusive operations.

MSD[2] = Minimum Separation Distance required for all personnel during intentional detonation if no engineering controls applied.

Note: MSDs may be reduced to distances based on 1 hazardous fragment/600 square feet if approved by CEHNC-OE-S.

APPENDIX F

U. S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS PROJECT Camp Hero, NY SD 5 April 01

☐ SITE DEV & GEO ☐ MECHANICAL ☐ SAFETY ☐ SYSTEMS ENG
☒ ENVIR PROT& UTIL ☐ MFG TECHNOLOGY ☐ ADV TECH ☐ VALUE ENG
☐ ARCHITECTURAL ☐ ELECTRICAL ☐ ESTIMATING ☐ OTHER
☐ STRUCTURAL ☐ INST & CONTROLS ☐ SPECIFICATIONS

REVIEW Draft Work Plan 3-347-01
DATE 16 April 2001
NAME GOODING, MICHAEL/ED-CS-P/5-1635

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	The Environmental Branch reviewed the Draft Work Plan and generated the following comments	A – Comment noted.
2.	Title Page	The title page needs the address of the contractor added and the project number added to be in accordance with DID OE-001 par. 10.1.3.	A – Title page revised as requested.
2.	Pg. xi	Please spell material with an e (materiel) after the CWM acronym.	A – Typographical error corrected.
4.	Pg. 2-6 Par. 2.5.4.7	In the second line chemical warfare training does not define (CWM), please delete "(CWM)" from this sentence.	A – Sentence modified as requested.
5.	Pg. 2-6 Par. 2.5.5.2	Please give some more details about the "limited geophysical screening". Please tell who performed the screening, what equipment was used and how it was determined that there was magnetic rock in the area. Also there is a statement about further discussion on vegetation removal. This discussion should have already occurred. The results of these discussions need to be in the Work Plan, whether or not there will be vegetation removal and if so how much. Please clarify this. This must be resolved before going to the field.	A – The paragraph was revised to provide more detail regarding the Site Visit limited nonintrusive geophysical activities. Vegetation clearing has been a dynamic subject with the Parks. Reference in this paragraph was deleted. The WP text was revised to indicate the most recent decision in subsequent sections.
6	Pg. 3-2	I assume that the QC manage for Parsons will be determined before the final version of this Work Plan. Please check with Roland Belew for name of the CHENC Technical Manager.	A – The USAESCH TM was updated to reflect Debra L. Edwards in Figure 3.1 and Table 3.1. The Parsons QC Manager will be Michael Short supported by Dave Hurtle.
7.	Pg. 4-3 Par. 4.2.2.4	Please see comment 5 above on vegetation removal. There is a contingency of for doing half the area if complete vegetation removal is not allowed. This assumes they will allow partial removal of vegetation. Again this needs to be resolved before going to the field. I agree that 100% mapping should be performed.	A – The paragraph was modified to indicate that 100% mapping will be conducted in this area following brush removal.
8.	Pg. 5-7 Par. 5.1.8.7	I not so sure that ordnance too close to valuable property is a criteria for being moved. Please delete the term "valuable property" and reword sentence Safety is the driver on all ordnance demolition (BIPs or moving).	A – The sentence was modified to indicate that typically even unfuzed, safe to move ordnance will likely be BIP.
9.	Maps	I like the MSD overlays, nice job, please continue this and use it on other	A – Comment noted. We have modified the project

ACTION CODES W - WITHDRAWN
A - ACCEPTED/CONCUR N - NON-CONCUR
D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS PROJECT

☐ SITE DEV & GEO ☐ MECHANICAL ☐ SAFETY ☐ SYSTEMS ENG
☒ ENVIR PROT& UTIL ☐ MFG TECHNOLOGY ☐ ADV TECH ☐ VALUE ENG
☐ ARCHITECTURAL ☐ ELECTRICAL ☐ ESTIMATING ☐ OTHER
☐ STRUCTURAL ☐ INST & CONTROLS ☐ SPECIFICATIONS

REVIEW: Draft Work Plan 3-347-01
DATE: 16 April 2001
NAME:

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		projects.	scales on the figures to ensure that the overlays fit on 8.5"x11" pages so they can be held in the report better.
10.	Pg. 7-5 and 7-6 Par. 7.7.1	The last sentence on this page (paragraph) does not make sense with the continuation on the next page (7-6). Also, past experience as shown that ordering explosives on an as needed basis poses many problems with delivery and other things. This has caused the need for guarding and OE item overnight due to non delivery of explosives. Please be sure that this approach will work and that your vendor can deliver explosives when needed.	A – We have checked with the UXO Subcontractor and their experience is that the explosives vendor can deliver with just a few hours notice. In the event a UXO item is encountered late in the day a guard will be posted. It is not aniticipated that a large number of UXO items will be recovered from the site, thus establishment of onsite magazines would likely not be cost effective. If conditions change or a delivery problem is identified, onsite magazines will be reevaluated. The WP text was revised for clarification.
11.	Pg. 7-8 Par. 7.8.3.6	Par. 7.7.1 states that explosives will be delivered as need and no explosives will be stored on site but this paragraph states that you will remove only what's needed from the magazine. Please clarify.	A – The paragraph was modified to indicate only explosives delivery is anticipated.
12	Chapter 8	This is the place for the SSHP not in the Appendix.	N – Placing the large volume of text associated with the SSHP in Section 8 makes the WP document difficult to follow. I have discussed this with USAESCH Safety personnel and have received approval on numerous reports with the SSHP referenced from Section 8 but still an Appendix. At this time no changes were made to the document. Parsons will revise if USAESCH has changed its stance.
13	Pg. 10-3 Par. 10.6	Please change progress to status. These are monthly status reports according to DID OE-080.	A – The change was made as requested.
14.	Pg. 11-11	Please see section 3.8.5.1 in the SOW for correct certification and change as	A – The WP was modified to match the SOW

ACTION CODES
A - ACCEPTED/CONCUR
D - ACTION DEFERRED
W - WITHDRAWN
N - NON-CONCUR
VE - VE POTENTIAL/VEP ATTACHED

U. S. ARMY ENGINEER DIVISION HUNTSVILLE

CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT

☐ SITE DEV & GEO
☒ ENVIR PROT& UTIL
☐ ARCHITECTURAL
☐ STRUCTURAL
☐ MECHANICAL
☐ MFG TECHNOLOGY
☐ ELECTRICAL
☐ INST & CONTROLS
☐ SAFETY
☐ ADV TECH
☐ ESTIMATING
☐ SPECIFICATIONS
☐ SYSTEMS ENG
☐ VALUE ENG
☐ OTHER

REVIEW: Draft Work Plan 3-347-01

DATE: 16 April 2001

NAME:

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Par. 11.10.4.2	appropriate.	requirement.
15	General	There are not other comments at this time.	A – Comment noted.

ACTION CODES
A - ACCEPTED/CONCUR
D - ACTION DEFERRED
W - WITHDRAWN
N - NON-CONCUR
VE - VE POTENTIAL/VEP ATTACHED

CEHND FORM 7 (Revised)
15 Apr 8'

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

U. S. ARMY ENGINEER DIVISION HUNTSVILLE

CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT Former Camp Hero, Montauk New York DACA87-00-D-0038 DO# 0002

☐ SITE DEV & GEO ☐ MECHANICAL ☒ OE SAFETY ☐ SYSTEMS ENG
☐ ENVIR PROT& UTIL ☐ MFG TECHNOLOGY ☐ ADV TECH ☐ VALUE ENG
☐ ARCHITECTURAL ☐ ELECTRICAL ☐ ESTIMATING ☐ OTHER
☐ STRUCTURAL ☐ INST & CONTROLS ☐ SPECIFICATIONS

REVIEW Draft Work Plan EECA
DATE 21 March 2001
NAME John Younghans, 5-1883

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Page 2-2 paragraph 2.3.3	Fifth (5) sentence "Battery 113 (also known as Battery Dunn) consisted ...)" correct the date to read June 5 or 6 not June 56.	A - The date was corrected to read "June 5."
2.	Page 5-2 paragraph 5.1.2	Last sentence: insert a space in "wasprepared"	A - A space was inserted between "was and "prepared."
3.	Page 5-2 paragraph 5.1.1.1.1	First (1) sentence Change "pn" to "on"	A - The typo "pn" was corrected to read "on."
4.	Page 7-15 paragraph 7.10.2	Third (3) sentence change "EOC" to "EOD"	A - "EOC" was changed to "EOD."
5.	Page 7-5 paragraph 7.7.1	Paragraph states that Explosives will be delivered as need. Need to specify the vendor and his lead-time for delivering the explosives items. Need to specify what security procedures will be utilized if an item is located near the close of the business day.	A - The text has been revised to indicate commercial vendor Austin Powder will supply the explosives with a lead time of approximately three hours. Late-day items will be guarded by a USA Employee until explosives arrive.
6.	Page 7-8 paragraph 7.8.3.7	Second (2nd) sentence states that only the amount will be drawn from the magazine. But paragraph 7.7.1 states the explosives will be delivered from a vendor as needed. Clarify.	A - The document has been revised to indicate That establishment of onsite magazines Is unlikely at the site.
7.	Page 11-12 paragraph	Replace "HFA Project Manager Responsibilities" with "USA Project Manager Responsibilities"	A - Heading now reads "USA Project Manager Responsibilities."

ACTION CODES
A - ACCEPTED/CONCUR
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VE - VE POTENTIAL/VEP ATTACHED

U. S. ARMY ENGINEER DIVISION HUNTSVILLE

CORPS OF ENGINEERS

PROJECT

DESIGN REVIEW COMMENTS

☐ SITE DEV & GEO ☐ MECHANICAL ☒ OE SAFETY ☐ SYSTEMS ENG
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REVIEW

DATE

NAME John Younghans, 5-1883

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
8.	Appendix E	Insure that the MSD calculation worksheets are signed by Dr. Michelle Crull before intrusive activities commence.	~~A – Michelle verbally provided the MSD~~ Information. Hardcopy signed data sheets are forthcoming and will included in the final report via insert pages.
9.	Appendix C	Include Names and resume or UXO database number for UXO personnel	A – The UXO personnel will consist of Howard Steep and Ed McVey. Their UXO approval requests have been sent to OE Safety under separate cover.

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CEHND FORM 7 (Revised)
15 Apr 89

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: Camp Hero, N.Y. (Cntrl. No. 3-347-01) S: 5 April 2001

[X] SITE DEV & GEO [ ] ENVIR PROT& UTIL [ ] ARCHITECTURAL [ ] STRUCTURAL [ ] MECHANICAL [ ] MFG TECHNOLOGY [ ] ELECTRICAL [ ] INST & CONTROLS [ ] SAFETY [ ] ADV TECH [ ] ESTIMATING [ ] SPECIFICATIONS [ ] SYSTEMS ENG [ ] VALUE ENG [ ] OTHER

REVIEW: Draft Work Plan for EE/CA

DATE: 16 April 2001

NAME: Tommy Hunt/ED-CS-D/mp

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Par. 2.4.2	This paragraph states that there are 756,492 of offshore firing area. Offshore what? I would assume acres of offshore firing area?	A – The WP text was revised to include the units as "acres" in the sentence.
2.	Section 3	Several places in this section, and throughout the report, Camp Hero is refereed to as "the Camp" or "Camp EE/CA". I would prefer to see 'Camp Hero' used throughout the report to referee to the Project Name and Project Location.	A – Reviewers of other WPs have suggested using the short convention. For the Camp Hero WP, the full site name was used where appropriate as requested.
3.	Figure 6.1 thru Figure 6.3	Again, we are plotting drawing in non-scale-able unit. These are plotted to inappropriate (1"=333.33' for 1:4000, and 1"=58.33' for 1:700) units for a drawing created for English units of measure. If the grid system and ticks are for meter, then state so, and then 1:4000 would be appropriate. But since the grids are 100' x 100', and the grid ticks are in feet, then the plot scale should be 1" = 400' and 1" = 60' for these specific figures. This comment and similar ones have been generated for every EE/CA Work Plan and EE/CA Final Report that Parson has submitted over the last year or so. Why can't the GIS and Mapping personnel not understand the professionalism that we are trying to convey with these reports and generate appropriate plots and figures?	A – The project maps and figures were revised to standard scales. The GIS team was informed of the USAESCH concern on this and other projects and will provide a more professional product in future reports.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE

CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT Camp Hero, N.Y. (Cntrl. No. 3-347-01) S: 5 April 2001

☒ SITE DEV & GEO ☐ ENVIR PROT& UTIL ☐ ARCHITECTURAL ☐ STRUCTURAL ☐ MECHANICAL ☐ MFG TECHNOLOGY ☐ ELECTRICAL ☐ INST & CONTROLS ☐ SAFETY ☐ ADV TECH ☐ ESTIMATING ☐ SPECIFICATIONS ☐ SYSTEMS ENG ☐ VALUE ENG ☐ OTHER

REVIEW Draft Work Plan for EE/CA
DATE 16 April 2001
NAME Tommy Hunt/ED-CS-D/mp

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
4.	Figure 6.1	Are we really Geophysically mapping grids in the water, as is conveyed by this map? Why are we restricting ourselves to 100' x 100' grids in a beach or shoreline situation. Why not plan on using 50' x 200' or 25' x 400' grids for areas which run along the shore line. These configuration contain the same amount of square footage, but my be easier to orient on this type of property layout.	A – All proposed grid locations are on either the beach or on top of the bluff. The area is question has experienced extreme erosion in recent years and as such the topographic map is somewhat obsolete. The aerial photographic background shows the geophysical locations better and accurate. Thus the figure background was changed. The grids depicted may be modified in size and location in the field but for convention standard grids were depicted on WP maps.
5.	General	Known of the above comment should stop the report from being acceptable for field efforts. However, all comments should be addressed as part of any revision submitted as a Final Work Plan, and shall be considered before submittal of any future Work Plans or Final Reports.	A – Comment noted.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: Control No. 03-347-01 , Proj C02NY002404, S:

■ SITE DEV & GEO
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☐ SPECIFICATIONS
☐ SYSTEMS ENG
☐ VALUE ENG
☐ OTHER

REVIEW: Camp Hero EE/CA Work Plan
DATE: 12 April 01
NAME: **Debra Edwards/ED-CS-G**

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Sect 6.2.3.2 and Figure 2.2	Define/show how boundaries were refined. Are the refined boundaries the ones drawn on Figure 2.2?	A – The boundaries of Area H and K were modified from the ASR depiction based on site reconnaissance and input from the HTW contractor (Cashin Associates). The Figure 2.2 boundaries depict the revised boundaries (i.e. slightly different from the ASR). The WP text was expanded for clarification.
2.	Sect 11.4.3.1	As some items (fuzes) have been removed, additional fuzes or simulants will need to be provided.	A – If deemed appropriate by USAESCH then additional fuze and or simulant items will be replaced in the test grid. However, daily instrument checks generally rely on only a few known anomalies to confirm proper signal response. The remaining prove-out grid is more than adequate to accomplish that goal.
3.	Sect 5.1.11	Last sentence, change “on” to “one.”	A – Typographical error corrected.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: O E – EE/CA FORMER CAMP HERO, NY — C.N .3- 347--01

☐ SITE DEV & GEO ☐ ENVIR PROT& UTIL ☐ ARCHITECTURAL ☐ STRUCTURAL ☐ MECHANICAL ☐ MFG TECHNOLOGY ☐ ELECTRICAL ☐ INST & CONTROLS ■ SAFETY ☐ ADV TECH ☐ ESTIMATING ☐ SPECIFICATIONS ☐ SYSTEMS ENG ☐ VALUE ENG ☐ OTHER

REVIEW: REVIEW – Draft EE/CA Work Plan
DATE: ~~2 April 2001~~
NAME: Herbert Plyler/ED-SY-S/895-1849

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		The SAFETY OFFICE has reviewed the DRAFT Work Plan for the Engineering Evaluation/Cost Analysis (Parsons) for the Former Camp Hero, NY, dated March 2001. We have the following comments.	Comment clarifications and some responses were discussed via telephone conversation on 4/16/01 between Mr. Plyler and the Parsons Project Manager, Don Silkebakken.
1.	Plan Cover Sheet and Site Safety and Health Plan	The DRAFT Work Plan has the location as Montauk, NY while the Site Specific Safety and Health Plan (SSHP) has the location as Suffolk County, NY. Clarify.	A - The site location is in Suffolk County in Montauk, NY. For consistency, Montauk will be used for reference.
2.	Appendix B – Site Safety and Health Plan	Subcontractor's SSHP Acknowledgment, page B-ix, has the Site as Former Camp Butner and the Site Location as Durham, North Carolina. Clarify.	A - Page B-ix has been corrected to include the appropriate information for the Former Camp Hero Site in Montauk, NY.
3.	Appendix B – Site Safety and Health Plan	General comment. The sections is entitled Site Safety and Health Plan; however, details referring to the criteria used in developing the Site Safety and Health Plan (Found in Appendix B) refers on to OE and UXO items and issues. The Site Specific Safety and Health Plan (Accident Prevention Plan) are intended to address ALL occupational safety and health issues, not just the OE and UXO issues. Requirements for the plan and specific requirements for the elements contained in the plan can be found in EM 385-1-1, as well as OSHA 1910, Occupation Safety and Health Standards and 29 CFR 1926, Safety and Health Regulations for Construction.	A – The document was thoroughly reviewed to insure the necessary non-UXO H&S issues specific to the site were addressed. Furthermore, the requirements of EM 385-1-1 were also reviewed. Changes to the project SSHP were made for clarification.
4.	Appendix B – Site Safety and Health Plan	The Cover Sheet shall include the signature and title of the person that 1) prepared the document, 2) the approver of the plan, and 3) the company official concurring with the plan. See EM 385-1-1, Appendix A, paragraph 1.	A - The signature and title of the SSHP preparer has been added to the cover sheet.
5.	Appendix B – Site Safety and Health Plan	Section B2.2 details the Qualifications for the site personnel with the Project Manager described in B.2.2.1 and the UXO Safety Officer in the section B.2.2.4. The person who has the occupation health and safety responsibilities, on site, which are not OE and UXO, are not assigned. Clarify.	A – The "UXO Safety Officer" has responsibility for all safety items covered in the SSHP: both UXO/OE and non-UXO/OE site safety.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE

CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT O E – EE/CA FORMER CAMP HERO, NY C.N .3- 347--01

☐ SITE DEV & GEO ☐ MECHANICAL ■ SAFETY ☐ SYSTEMS ENG
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☐ STRUCTURAL ☐ INST & CONTROLS ☐ SPECIFICATIONS

REVIEW: REVIEW – Draft EE/CA Work Plan
DATE: ~~2 April 2001~~
NAME: Herbert Plyler/ED-SY-S/895-1849

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
6.	Appendix B – Site Safety and Health Plan	Section B5, Training, paragraph B5-1.2, Site Specific Training, second sentence states that the UXOSO will be responsible for the training of all Parson's employees. Does this list not need to include occupation safety and health as well as ordnance safety. Clarify. The person(s) and the subjects for all subcontractors shall also be identified and listed. See EM 385-1-1, Appendix A, paragraph 6.	A – The UXOSO is responsible for ordnance safety training as well as site-specific occupation safety and health training to all Parsons personnel and Parsons subcontractors under Parsons H&S supervision regarding items listed in the SSHP.
7.	Appendix B – Site Safety and Health Plan	Workplace Inspections of all work sites, equipment storage facilities, crew buildings/trailers, and equipment storage areas shall be inspected. This includes those areas of all subcontractors. The person(s) responsible for inspections shall be named, the method to be used in the recording the results of the inspections, a deficiency tracking system, an established time line for corrective measures, and follow-up inspections. See EM 385-1-1, Appendix A, paragraph 7.	A – Each day, the UXOSO shall conduct a safety inspection as described in B11.5.2 of the SSHP.
8.	Appendix B – Site Safety and Health Plan	Section B4.4, Activity Hazard Analysis. The Potential Safety Hazards and Recommended Controls sections are almost exclusively to employee uses and the operation of equipment. Equipment inspections shall include the employee's check prior to use and an equipment inspection for mechanical condition, broken or missing parts, and service according to manufacturers instruction. Additionally, provision for removing all damage or defective equipment shall be included in the procedures. Statements to "Be alert" do not detail measures to be taken to minimize or eliminate hazards. See EM 385-1-1, Sections 13.A.02 and 13.A.03.	A – Equipment safety precautions shall be implemented as described in Section B4.4 and outlined in EM 385-1-1 for all equipment utilized at the site.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: O E – EE/CA FORMER CAMP HERO, NY — C.N .3- 347--01

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REVIEW: REVIEW – Draft EE/CA Work Plan
DATE: ~~2 April 2001~~
NAME: Herbert Plyler/ED-SY-S/895-1849

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
9.	Appendix B – Site Safety and Plan	Section 16.2.1, ENG Form 3394. This section identifies the Accident Reporting for the U S Army Corps of Engineers, ENG Form 3394. This is a requirement as contained in the Safety and Health Requirements Manual. The procedure and the specific responsibilities should be included in the work plan and not just references to the corps and Army regulations. Specific requirements included the requirement to have the completed and signed form to the Government's designated authority (Contracting Officer) within 24-hours. See EM 385-1-1, Sections 01.D.02 and Appendix A (references).	A – The SSHP text was revised to include reference to EM 385-1-1 and the 24-hour time window.
10.	Appendix B – Site Safety and Plan	Appendix B-5, entitled ENG Form 3394. The form is NOT included in the section and should be added.	A – This form has been included as required.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: Control No. 03-347-01 , Proj C02NY002404, S:

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- ☐ OTHER

REVIEW: Camp Hero EE/CA Work Plan
DATE: 20 March 2001
NAME: Michelle Crull. PhD, PE (256) 895-1653

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Section 2.4.2	1st Sentence – Include the units on the 756,492. I believe this should be acres. As written, the sentence doesn't make sense.	A – The missing "acres" was added to the sentence.
2.	Section 2.4.2	Last sentence – This sentence states "Future land use is for unrestricted public use". Does this include camping or only beach access/fishing? This may make a difference in the final alternative selected.	A – Unrestricted from the Parks point of view is for many types of public uses (camping included) in addition to fishing. The WP text was revised for clarification.
3.	Section 2.6	There are two paragraphs numbered 2.6.1 and two numbered 2.6.2. Correct paragraph numbering.	A – One is a header number and one is a paragraph number. This apparent duplicate numbering is infrequent occurrence but is in compliance with the DID numbering system. A similar situation on another project involved extensive discussion before the decision to accept was reached. If you have a different preference, Parsons will modify as requested.
4.	Section 2.6	Areas B & C include the information that they are recommended for NDAI. Areas D, E, F, G, I, J & M should include this information as well.	A – WP text was revised as requested.
5.	Section 3.11.1.1	1st bullet, 3rd sentence – change "based" to "basis".	A – WP text was revised as requested.
6.	Section 6.2.2.1	The last sentence of this paragraph makes no sense. I have no idea what the intent of this sentence is. Re-write this sentence.	A – The sentence was revised for clarification.
7.	Section 6.2.3.2	3rd sentence states "The extent of Area H was revised to include the beach (as previous)…". The maps show that Area H is all above the bluff and does not include any beach. I think this sentence should refer to Area K. Verify and correct as necessary.	A – You are correct. The sentence was revised for clarification.
8	Section 6.4.4	Include information in this paragraph about the overlays. Suggested sentence "Overlays are provided with Figure 6.2 to show the MSDs associated with the 500ft and 1000 ft transects as well as individual grids for Area K." This will explain to the reader that they must use the overlays to see the MSDs for Area K.	A – Agree. Change made as requested.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT

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REVIEW
DATE
NAME Michelle Crull

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
9.	Section 7.8.1.5	Change last sentence to indicate that distances from Table C5.T1 of DoD 6055.9-STD will be used for the MSD until munition specific distances are calculated	A – Change made as requested.
10.	Section 7.8.1.6	This is a long run-on sentence. Correct.	A – Sentence revised for clarification.
11.	Section 7.8.3.4	Talks about preventing fires in crop fields. What crop fields? This is the first place crop fields are mentioned. Is any of land farmed? If so, it should be discussed in previous sections. Verify and correct as necessary.	A – Reference to crop fields was deleted from the WP text.
12.	Section 7.8.3.9	Indicates that explosive booster will be used for disposal of all OE/UXO. As stated in the report (HNC-ED-CS-S-98-7), the method (and associated MSDs) using sandbags is based on using 32 gram perforators for initiating the detonation. Calculation sheets I've provided are based on using these perforators for sandbagged shots. If explosive boosters are to be used, I need to know the net explosive weight and explosive type of the booster. A new calculation sheet based on this explosive booster for sandbagged shots will be required.	A – The text was revised for clarfication.
13.	Section 7.8.7	Somewhere in these sections you need to include information about completing form DD-1348-1A.	A – Discussion of this form is presented in subsection 11.10.4.
14.	Section 7.11.2.1, 7.11.2.2, 7.11.2.3	Change "No Used" to "Not Used".	A – Section 7 was extensively revised. As such, the typographical error notes has been eliminated.
15.	Appendix E	Include HNC MSD Calculations sheets in this appendix.	A – Agree. However, they have not yet been received from USAESCH. The worksheets will be distributed for inclusion in the document following receipt.
16.	General	Several places in this plan indicate that the bluff has a severe erosion problem. The instability of the bluff needs to be considered both when digging into the bluff and when disposing by BIP.	A – Agree. This concern has been identified previously by several Civil Engineers associated with the Montauk Lighthouse. Prior to any digging and/or BIP activities the stability of the bluff and subsequent impact will be assessed. Since the bluff

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DESIGN REVIEW COMMENTS PROJECT

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REVIEW
DATE
NAME Michelle Crull

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
			face has eroded significantly since the 1940s, any UXO is likely to be on the beach front or remain at the top of the bluff. If significant anomalies are located in the bluff face, additional safety precautions will be implemented.

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APPENDIX G
APPLICABLE DATA ITEM DESCRIPTIONS

DATA ITEM DESCRIPTION			FORM APPROVAL OMB NO 0704-0188
1. TITLE Type I Work Plan		2. IDENTIFICATION NUMBER OE-001	
3. DESCRIPTION / PURPOSE To provide the format, content, and preparation instructions for **Engineering Evaluation/Cost Analysis** (EE/CA) Work Plans for Ordnance and Explosives projects.			
4. APPROVAL DATE (YYMMDD) 000303	5. OFFICE OF PRIMARY RESPONSIBILITY CEHNC-ED-CS-G	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
7. APPLICATION / INTERRELATIONSHIP			
8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER	

10. PREPARATION INSTRUCTIONS

10.1 Format - This plan shall be printed on standard size (e.g. 8 ½ by 11 inch) white paper, with drawings folded, if necessary, to this size or to fit within pockets of this size. Pages shall be sequentially numbered. Drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features. When drawings are required, data may be combined to reduce the number of drawings. All attachments shall be identified and referenced in the text of the report. The plan shall be legible and suitable for reproduction.

10.1.1 Chapters shall be numbered sequentially. Within each chapter each page shall be numbered sequentially, starting with the specific chapter number. Within each chapter the paragraphs shall be numbered sequentially starting with the chapter number and using a decimal system, with each section and paragraph having a unique decimal designation. Within each chapter any figures, tables, and charts shall be numbered sequentially starting with the chapter number. Work plans shall be bound in a three-ring binder. Binders shall hold pages firmly while allowing easy removal, addition, or replacement of pages.

10.1.2 Appendices shall be lettered alphabetically. Within each appendix, each page shall be numbered sequentially starting with the appendix letter.

10.1.3 A title sheet will be provided on the front of the binder and also inside the binder which includes the the name of the project (site), contractor's name and address, the contract number, the task order number, the project number, the date of the plan, and the title of the plan. The title sheet shall identify the contracting agency and shall name the Geographical Corps District where the project is located. The title sheet shall be signed by a principle of the company or the person performing quality control on the document. Draft versions of the Work Plan shall be clearly identified as such on the title sheet.

10.1.4 Each page of the Work Plan shall contain a date footer and the contract/task order number. When revisionsto the Work Plan are required, a revision date, revision number, contract/task order and amendment/modification number (if applicable) shall be included in the date footer. A dated summary page listing all revised pages shall be submitted with each revision.

10.2 The contractor shall determine inapplicable requirements, or requirements in addition to those listed below, that shouldbe included in the Work Plan. When an issued Task Order does not require a specific chapter or sub plan, the chapter shall be included with a declaration that the information is not required by the Task Order. Chapters shall be organized as follows:

10.2.1 Chapter 1. Introduction. At a minimum the following information shall be included:

10.2.1.1 Project Authorization

10.2.1.2 Purpose and Scope

11. DISTRIBUTION STATEMENT

DD Form 1664, JUN 86 *PREVIOUS EDITIONS ARE OBSOLETE*

10.2.2 Chapter 2. Site Description.

10.2.2.1. Location

10.2.2.2. Physical Description

10.2.2.3. History

10.2.2.4. Previous Investigations

10.2.2.5. Initial Summary of OE Risk (summarize OE potentially on site, and characteristic hazard presented by those items.

10.2.3 Chapter 3. Project Management

10.2.3.1. Project Objectives

10.2.3.2. Project Organization

10.2.3.3. Project Personnel

10.2.3.4. Project Communication and Reporting

10.2.3.5. Project Deliverables

10.2.3.6. Project Schedule

10.2.3.7. Periodic Reporting

10.2.3.8. Costing and Billing

10.2.3.9. Project Public Relations Support

10.2.3.10. Subcontractor Management

10.2.3.11. Management of Field Operations

10.2.4. Chapter 4. Overall Approach to OE EE/CA

10.2.4.1. Preliminary Removal Action Goals

10.2.4.2. Identification of Data Quality Objectives

10.2.4.3. Required Data

10.2.4.4. Data Reduction and Evaluation

10.2.4.5. Data Incorporation into EE/CA Reports

10.2.4.6. OE Exposure Analysis

10.2.4.7. Alternatives Identification and Analysis, including:

10.2.4.7.1 No Action Options

10.2.4.7.2 Institutional Control Options

10.2.4.7.3 OE Removal Options

10.2.4.8 EE/CA Report (See DID OE-010)

10.2.4.9 EE/CA Approval Memorandum

10.2.4.10 EE/CA Completion and Close-out

10.2.4.11 Use of Time Critical Removal Actions During the EE/CA Process

10.2.4.12 Follow-on Activities

10.2.5 Chapter 5. Scope of Work by Task. The contractor shall describe each task contained in the scope of work and .escribe the approach to be taken to accomplish each task. Guidance, regulations, or other policy under which the work will bedone will be identified. Assumptions and procedures will be discussed. Tools and software to be used will be described.

Data Item Description OE-001 (Continued)

10.2.6 Chapter 6. Site Characterization Planning and Operations. The contractor shall describe how the site will be investigated. Potential investigation methods include, but are not limited to, evaluations of archival data, evaluations of historical aerial photographs provided by the Government or obtained by the contractor from public sources, geophysical investigations, and excavation of representative areas. The contractor shall propose and justify methods and procedures that are well suited to the anticipated site conditions and project objectives. The contractor shall consider technical requirements for site characterizations as well as safety and security regulations applicable to the site. The plan shall describe the goals, methods, procedures, and personnel used for field sampling and data gathering activities in accordance with the following outline:

10.2.6.1 Site Characterization Goals.

10.2.6.2 Site Characterization Procedural Overview

10.2.6.3 OE Sampling Locations

10.2.6.4 OE Sampling Procedures

10.2.6.5 Surveying and Site Layout and Control. The contractor shall provide a map, zone delineation, minimum separation distances, on/off-site communications, site access controls, and security (physical and procedural). If applicable, the contractor will determine three areas; exclusion, contamination reduction, and support, for each work site in accordance with the requirements of 29 CFR 1910. (See also DID OE-005-07)

10.2.6.6 Geophysical Investigations (See also DID OE-005-05)

10.2.6.7 Risk Characterization and Analysis

10.2.6.8 Institutional Analysis (See also DID OE-100)

10.2.6.9 Geographical Information System (GIS), if required (See also DID OE-005-14)

10.2.6.10 Others, as required

10.2.7 Chapter 7. OE Planning and Operations. The contractor shall describe how OE operations will be planned and implemented utilizing appropriately qualified personnel, equipment, and procedures. All OE operations must be performed utilizing qualified OE personnel, equipment, and procedures as defined in DID OE-025 and ETL 385-1-1, Safety Concepts and Basic Considerations for UXO Operations. No substitute experience or qualifications will be accepted. The Work Plan shall describe the following:

10.2.7.1 Operations in OE Areas

10.2.7.2 OE Accountability and Records Management

10.2.7.3 OE Identification

10.2.7.4 OE Removal

10.2.7.5 OE Transportation

10.2.7.6 OE Storage

10.2.7.7 OE Disposal Procedures

10.2.7.8 OE Disposal Range, if used

10.2.7.9 OE Personnel and Qualifications

10.2.7.10 Disposal Alternatives. If OE destruction cannot take place on site by detonation, include disposal alternatives and recommendation as described in DID OE-040.

10.2.7.11 Management and storage of demolition explosives

10.2.8 Chapter 8. Site Safety and Health Plan (See DID OE 005-06).

10.2.9 Chapter 9. Environmental Protection. (See also DID OE-005-12)

10.2.10 Chapter 10. Data Management Plan.

10.2.11 Chapter 11. Quality Control (See DID OE-005-11)

10.2.12 Chapter 12. References shall be listed.

10.2.13 Appendices

10.2.14 Resumes of Key Personnel Not Listed on USAESCH Database.

DATA ITEM DESCRIPTION			FORM APPROVAL OMB NO 0704-0188
1. TITLE Technical Management Plan		2. IDENTIFICATION NUMBER OE-005-02	
3. DESCRIPTION / PURPOSE To provide requirements for a plan describing the approach, methods, and operational procedures to be employed to perform Ordnance and Explosives (OE) and technical operations at a specific project site.			
4. APPROVAL DATE (YYMMDD) 000303	5. OFFICE OF PRIMARY RESPONSIBILITY CEHNC-OE-CX	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing technical management for OE projects.			
8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER	

10. PREPARATION INSTRUCTIONS A Technical Management Plan shall be prepared to document the approach and procedures to be used to execute the tasks required by a task order and shall include the following:

10.1 General.

10.1.1 Identification of guidance, regulations, or other policy under which the OE operations will be conducted.

10.1.2 Discussion, assumptions, and procedures to be followed relating to the discovery of CWM on a conventional ordnance site.

10.1.3. Procedures to be employed in the event that unexploded ordnance (UXO) cannot be destroyed on site, if planned; and if an unidentified UXO is located.

10.1.4. Technical scope of the project, grid sizes, grid layout, and software to be used in sampling or removals.

10.1.5. Expected number of excavations and procedures to be employed if changed site conditions occur.

10.2 Organizational chart specific to the project. Indicate assignment of functions, duties, and responsibilities and functional relationships among the organizational elements participating in the work. Address the composition and management of sweep teams.

10.3 Description of mobilization plans, office set-up details, and other preliminary activities.

10.4 Procedures for site preparation and activities such as brush cutting, geophysical test plots, and surface sweeps.

10.5 Procedures to be followed when performing statistical sampling, if applicable.

10.6 Detailed procedures for reporting and disposition of UXO, including responsibilities of personnel, overall safety precautions, UXO identification, transportation, safe holding areas, operations in populated/sensitive areas, and all demolition and post demolition operations and any required engineering controls for intrusive operations and intentional detonations.

10.7 Detailed procedures for managing, reporting, venting, and disposing of OE scrap and non-OE scrap.

10.8 Discussion of additional tasks and procedures to be followed in executing those tasks, if not addressed in subsequent chapters of the work plan (e.g., public affairs, community relations, dissemination of data, final report).

10.9 Reference to the appropriate work plan chapters for additional plans covering major activities of the planned work.

11. DISTRIBUTION STATEMENT

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DATA ITEM DESCRIPTION	*FORM APPROVAL OMB NO 0704-0188*

1. TITLE Explosives Management Plan	2. IDENTIFICATION NUMBER OE-005-03

3. DESCRIPTION / PURPOSE To provide details of the plan for management of explosives at a specific project site in accordance with applicable regulations.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-OE-CX		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains the instructions for preparing a work plan chapter to address explosives management for a specific Ordnance and Explosives (OE) project.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 Submission: If required by a specific task order, this plan shall be prepared and included in the appropriate chapter ofthe task order's work plan.

10.2 General: The contractor shall prepare a detailed plan for management of explosives in accordance with FAR 45.5, local and state laws and regulations, ATFP 5400.7, DOD 6055.9-STD, DOT regulations, and AR 190-11.

10.3 Licenses/Permits. At each project site, the contractor shall have and, upon request, make available to any local, state or federal authority a copy of any license/permit obtained authorizing the contractor to purchase, store, transport, and use explosives.

10.4 Content. The plan shall include:

10.4.1 Acquisition.

10.4.1.1 A description and estimated quantity of explosives to be used.

10.4.1.2 The acquisition source, and a statement addressing whether explosives will be government furnished or purchased from a commercial vendor.

10.4.1.3 If explosives are to be contractor acquired, each explosive item will be identified in the Equipment Plan. This requirement does not apply to firm fixed price (FFP) task orders.

10.4.2 Initial Receipt

10.4.2.1 Procedures for receipt of explosives from an installation ammunition supply activity, commercial vendor, or a previous contractor at a site.

10.4.2.2 Procedures for reconciling discrepancies in quantities shipped and quantities received.

10.4.3 Storage.

10.4.3.1 Establishment of explosive storage facilities.

10.4.3.2 Physical security of explosive storage facilities.

11. DISTRIBUTION STATEMENT

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10.4.4 Transportation.

10.4.4.1 Procedures for transportation from storage facility to disposal locations at the project site.

10.4.4.2 Requirements for vehicles transporting explosives at the project site.

10.4.5 Receipt Procedures.

10.4.5.1 The contractor shall establish receipt procedures accounting for each item of explosives from initial delivery to the site until the item is expended or the contractor is relieved from accountability by the Contracting Officer.

10.4.5.2 The contractor shall identify individuals authorized to receive, issue, transport, and use explosives by contract position title and those individuals shall assume accountability by signing the receipt documents.

10.4.5.3 The end user of explosives shall certify in writing that the explosives were used for their intended purpose.

10.4.5.4 Procedures for reconciling receipt documents, and proposed intervals.

10.4.6 Inventory.

10.4.6.1 Procedures for physical inventory of explosives in storage facilities.

10.4.6.2 Procedures for reconciling discrepancies resulting from inventories.

10.4.6.3 Inventories of explosives in stock shall be conducted weekly, at a minimum.

10.4.7 Procedures upon discovery of lost, stolen, or unauthorized use of explosives: Proper authorities shall be notified in writing within 24 hours of the event. Immediate telephonic notification to the Contracting Officer, followed up by a writtn report within 24 hours.

10.4.8 Procedures for return to storage of any daily issued explosives not expended.

10.4.9 Procedures for disposing of any remaining explosives at the end of the contractor's site activities.

10.4.10 The contractor shall perform an economic analysis for different alternatives and submit to the Contracting Officer for approval. This requirement does not apply to FFP task orders.

10.5 Forms. The contractor may use corporate designed forms or Department of the Army forms.

DATA ITEM DESCRIPTION

FORM APPROVAL
OMB NO 0704-0188

1. TITLE Explosives Siting Plan

2. IDENTIFICATION NUMBER OE-005-04

3. DESCRIPTION / PURPOSE To provide explosives safety criteria for planning and siting explosives operations at Ordnance and Explosives (OE) sites.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-OE-CX		

7. APPLICATION / INTERRELATIONSHIP: This Data Item Description contains instructions for preparing a work plan chapter to address explosives siting procedures.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS:

10.1 The contractor shall, when required by the government, submit an explosives siting plan which describes the safety criteria to be employed during OE operations.

10.2 The following explosives operations shall be described in the plan and sited on the Q-D map.

10.2.1 Ordnance and Explosives Areas

10.2.1.1 Minimum separation distances for nonessential personnel, during OE operations, at an OE site shall be determined using the following criteria: distances in Chapter 5, paragraph C5.5.4, DOD 6055.9 STD, if the type of OE is unknown; the maximum fragmentation distance for the Most Probable Munition (MPM), as calculated by Huntsville Center's Engineering Directorate, Structural Branch; or when conditions and OE hazards permit, the minimum separation distance may be reduced to fit the situation, but in no case shall the distance be less than 1/600 ft^2, 200 ft, or the K50 based on over pressure, whichever is greater. The information on which distance to be used will be furnished by the District Project Manager along with the calculation sheet determining the fragmentation distance. The distance shall be explained in text of the plan, and Quantity Distance Arcs drawnon the map. Q-D Arcs shall be drawn from the outermost edge of the OE area.

10.2.1.2 Planned or Established Demolition Areas. These areas shall be sited and shown on the map. Minimum separation distance for all personnel shall be established based on the following criteria: distances in Chapter 5, paragraphC5.5.4, DOD 6055.9-STD; or the maximum fragmentation distance for the MPM at the site calculated by Huntsville Center's Engineering Directorate, Structural Branch. The safe separation distance shall be explained in the plan and the distance arcs drawn on the map.

10.3 Foot Print Areas. The following footprint areas shall be addressed in the plan but do not have to be shown on the map.

10.3.1 Blow-in-Place. Minimum separation distance for all personnel shall be determined using the criteria for established demolition areas.

10.3.2 Collection Points. Collection points, if used, shall have the same minimum separation distance as the MPM for the site.

10.3.3 In-Grid Consolidated Shots. Minimum separation distance for all personnel shall be determined using the criteria for established demolition areas. The contractor shall use the USAESCH procedures, approved by DDESB, for consolidate shots. These procedures may be downloaded from the USAESCH OE Home Page.

11. DISTRIBUTION STATEMENT

0.4 Explosives Storage Magazines

10.4.1 Specify the type(s) of magazines used: commercial portable type, above ground, shed, earth-covered, etc.

10.4.2 State the Net Explosives Weight (NEW) and hazard division to be stored in each magazine. Generally, recovered OE is considered HD 1.1 unless there are obvious reasons it should not be.

10.4.3 Quantity Distance criteria specified in Chapter 9, Table 9-1, DOD 6055.9-STD shall be used to site the magazines at an Ordnance and Explosives site.

10.4.4 Specify design criteria for any engineering controls to be used to mitigate exposures to the public when required Quantity Distances cannot be met.

10.5 Site Map. The site map should be scaled at 1 inch equals 400 feet. A smaller scale is acceptable if distances can be accurately shown. If an unscaled map is used, the map must have labeled distances.

DATA ITEM DESCRIPTION	FORM APPROVAL OMB NO 0704-0188

1. TITLE Geophysical Investigation Plan	2. IDENTIFICATION NUMBER OE-005-05

3. DESCRIPTION / PURPOSE To provide details of the approach, methods, and operational procedures to be (1) documented as part of the Ordnance and Explosives (OE) project work plan and (2) employed to perform geophysical investigations at OE sites.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-CS-G		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing geophysical investigations.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

GEOPHYSICAL INVESTIGATION REQUIREMENTS

10.1 Unexploded Ordnance (UXO) Safety. During all initial fieldwork and all intrusive activities, the geophysical crew shall be accompanied by a UXO Technician II. The UXO Technician II shall conduct visual surveys for surface ordnance prior to the survey crew entering an area potentially containing UXO, and a magnetometer or electromagnetic survey of each intrusive activity site to ensure the site is anomaly free prior to the crew setting monuments of driving stakes. The UXO Technician II will notbe required on a full time basis for most of the project, for non-intrusive activities.

10.2. Personnel Qualifications. All geophysical investigations shall be managed by a qualified geophysicist meeting the qualification requirements listed in DID OE-025.

10.3 Geophysical Investigation Plan Outline. The Contractor shall prepare a geophysical investigation plan, in accordance wih the following outline:

10.3.1 Site Description

- Geophysical Investigation Program Objectives
- Specific Area(s) to be Investigated, including a map
- Past, current and future use
- Anticipated UXO type, composition and quantity
- Depth anticipated
- Topography
- Vegetation
- Geologic conditions (including bedrock type, mineralization and depth)
- Soil conditions (including soil type/composition, typical moisture content, and thickness)
- Shallow groundwater conditions (including depth, mineralization, existence of perched tables, and seasonal & tidal variations)
- Geophysical conditions, including background geophysical gradients
- Site Utilities
- Man-made features potentially affecting geophysical investigations
- Site-specific dynamic events such as tides, unusually strong winds, or other unusual factors affecting site operations
- Overall Site Accessibility and Impediments
- Potential Worker Hazards

11. DISTRIBUTION STATEMENT

DD Form 1664, JUN 86 *PREVIOUS EDITIONS ARE OBSOLETE*

Data Item Description OE-005-05 (Continued):

10.3.2 Geophysical Investigation Methods

- Equipment
- Procedures
- Personnel
- Production Rates
- Data Resolution, or line/grid width requirements
- Data density
- Data Processing

10.3.3 Location Surveying, Mapping & Navigation

- System Description
- If GPS systems are used, correlate satellite availability with work/rest periods

10.3.4 Instrument Standardization

- Instrument Drift (DC offset)
- Standardization Procedures
- Abbreviated Standardization Checks
- Instrument Response to a Known Standard

10.3.5 Data Processing, Correction and Analysis

- Instrument Drift Correction
- Diurnal Drift Correction
- Digital Filtering and Enhancement
- Correlation With Ground Truth

10.3.6 Quantitative Interpretation and Dig Sheet Development

10.3.7 Anomaly Reacquisition

10.3.8 Feed-Back Process (Comparison of dig-sheet predictions with ground-truth)

10.3.9 Quality Control

10.3.10 Corrective Measures

10.3.11 Records Management

10.3.12 Interim Reporting

10.3.13 Final Reports and Maps

10.4 Geophysical Investigation Performance Goals.

10.4.1 OE Detection. Function 1 shows criteria the Contractor must meet when using magnetometry. Function 2 shows criteria the Contractor must meet when using electromagnetic geophysical detection methods. The function used for determining acceptable performance depends upon the geophysical equipment selected and justified by the Contractor.

$$\log(d) = 1.354 \log(dia) - 2.655 \quad \text{(Function 1 – magnetometry)}$$
$$\log(d) = 1.002 \log(dia) - 1.961 \quad \text{(Function 2 – electromagnetics)}$$

dia = diameter of minor axis of UXO, in millimeters.
' = required depth of detection to top of buried UXO, in meters.

Data Item Description OE-005-05 (Continued):
[Note: To confirm the calculation is performed correctly, use "105 mm" as the diameter in Function 1. This will result in a required detection depth of 1.2 meters (4.0 ft) for a ferromagnetic projectile of that diameter.]

(inimum UXO "dia" (diameter) must be determined on a project-specific basis and will be specified in the Scope of Work.

10.4.1.1 The contractor shall detect and remove all UXO and UXO look-alikes located above the performance line. If the contractor believes these goals cannot be achieved at a particular site, then he/she shall propose and document alternative goals for the Contracting Officer's consideration. The contractor will not be held liable for technically unachievable goals, as determined during the initial phase of field work.

10.4.2 Horizontal Accuracy. Horizontally, 98% of all excavated items must lie within a 20 cm. radius of their mapped surface location as marked in the field after reacquisition.

10.4.3 False Positives. There shall be no more than 15% "false positives" where anomalies reacquired by the Contractor result in no detectable, metallic material during excavations.

10.5. Test Plot. The Contracting Officer may require that the Contractor demonstrate and document the capabilities of the proposed sensors, navigation equipment, data analysis, data management and associated equipment and personnel to operate as an integrated system capable of meeting project performance goals. When the Contracting Officer requires a site-specific geophysical prove-out, a Work Plan that includes test plot design shall be prepared and implemented.

10.6. Geophysical Mapping Data.

10.6.1 The Contractor shall correlate all sensor data with navigational data based upon a local first-order control point. If a suitable point is not available, the Contractor shall have a first-order point shot in. All sensor data shall be preprocessed for sensor offsets, diurnal magnetic variations, etc. and correlated with navigation data. Diurnal magnetic variations measured at a base-station must be collected at approximately the same frequency that readings are collected by instruments used by field crews. The approved geophysical mapping technology shall digitally capture the instrument readings into a file coincident with the state grid coordinates. This field data shall be checked, corrected and processed into ASCII files in the ADF file format. Corrections such as for navigation, instrument bias, and diurnal magnetic shift shall be applied but there shall be no filtering or normalization of the data. All corrections shall be documented. Grids geophysically mapped shall be exactly coincident with the grid system used by the UXO removal action contractor and shall use exactly the same datum and coordinate system. However the geophysical contractor may choose to provide geophysical data files in grids of up 200 ft. x 200 ft. square. The data shall be presented in delineated fields as x, y, z where x and y are local State Grid Plane Coordinates in East and North and z is the instrument reading. Each data field shall be separated by a space (not a comma). There shall be no header or other information included in the file. No individual file may be more than 4 megabytes in size and no more than 60,000 lines long. Each grid of data shall be logically and sequentially named so that the file name can be easily correlated with the grid name used by other project personnel. The formats specified in this paragraph are REQUIRED to be exactly followed, although the contractor may choose to submit the data in additional formats as well. No later than 36 hours after collection, the Contractor shall furnish each day's data to USAESCH, via internet using FTP or other approved method, for inspection. Such data is considered to be in draft form. The Contractor shall also provide a digital planimetric map, in Intergraph .DGN format, and coincident with the location of the geophysical survey, that each day's geophysical data set can be registered within. Within 14 days of completion of survey activity The Contractor shall provide USAESCH all final geophysical maps, dig-sheets and supporting geophysical interpretations. All geophysical data shall be accompanied by a Microsoft Word 6.0 file documenting the field activities associated with the data, and the processing performed. The Government will periodically load the geophysical data provided by the Contractor onto a USAESCH Intergraph Workstation for a validation check to assure positional accuracy, proper instrument calibration or other analysis.

10.6.2 Geophysical Data Analysis, Field Reacquisition and Reporting. The Contractor shall analyze the geophysical data and provide "dig-sheets" containing, as a minimum, the following information:
Project Site
Geophysical Contractor
Responsible Geophysicist
Grid Number
Anomaly Number
Predicted Easting & Northing
Predicted Depth to Top of Item

The dig sheets shall be provided to USAESCH as hard copy and digitally.

10.6.3 Anomaly Reacquisition and Marking. The Contractor shall use precision surveying methods of his/her choice to reacquire all geophysical anomalies identified on the dig sheets. The Contractor shall flag the actual field locationof ıch identified anomaly shown on the "dig-sheet" and paint the ground at the flag location with high-visibility paint. Such acquisition shall be carried out concurrently with other site activities and shall be completed no later than 14 days after feld investigations are completed. The Contractor shall record and report on all discrepancies between original mapped locations of anomalies as shown on the dig-sheet, and actual locations of the reacquired anomalies. The Contractor shall also report any anomalies that could not be reacquired.

10.6.4 Anomaly Excavation Reporting. The Contractor shall, in full accordance with the project work plan, excavate the anomalies identified on the dig-sheets, reacquired, and marked in the field. The disposition and final location details of each anomaly shall be recorded on the final dig sheets, which shall be submitted to USAESCH within 14 days of completed excavations and also submitted in the final report, according to DID OE-030.

DATA ITEM DESCRIPTION		FORM APPROVAL OMB NO 0704-0188	
1. TITLE Site Safety and Health Plan		2. IDENTIFICATION NUMBER OE-005-06	

3. DESCRIPTION / PURPOSE To provide requirements for (1) the contractor's Safety and Health Program and (2) the Site Safety and Health Plan for a specific Ordnance and Explosives (OE) project site.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-SY		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing site safety and health for OE projects.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 Safety and Health Program. The contractor shall be responsible for initiating and maintaining a safety and health program that complies with the requirements of the Occupational Safety and Health Administration (OSHA) and the U.S. Army Corps of Engineers (USACE). The Safety and Health Program shall include, as a minimum, the requirements listed below:

10.2 Site-specific Safety and Health Plan (SSHP). The contractor shall develop a Site-Specific Safety and Health Plan in accordance with the requirements of 29 CFR 1910/29 CFR 1926, ER 385-1-92, EM 385-1-1 and any other applicable Federal, State and Local safety and health requirements. The level of detail provided shall be tailored to the type of work, complexity of operations to be accomplished, and the hazards anticipated. The SSHP shall address all elements required by 29 CFR 1910.120(b)(4)(ii), 29 CFR 1926.65(b)(4)(ii), and ER 385-1-92, Appendix B. Where a specific element is not applicable, list the element in the plan, state that the element is not applicable with a brief justification for its omission. The SSHP may serveas the Accident Prevention Plan provided it addresses all content requirements of 29 CFR 1910.120 and EM 385-1-1, Table 1. Daily safety and health inspections shall be conducted to determine if site operations are conducted IAW the accepted plans and contract requirements.

10.2.1 General. The SSHP shall be developed, implemented, and overseen by a board-certified or board-eligible Industrial Hygienist (IH) with at least 2 years hazardous waste site experience. Board certification or eligibility shall be documented by submission of a copy of the certificate or letter of acceptance to sit for the exam by the American Board of Industrial Hygiene (ABIH) to the Contracting Officer. A fully trained and experienced UXO Safety Officer (meeting the qualifications specified in DID OE-025), responsible to the prime contractor, shall be delegated to implement the on-site elements of the SSHP. The SSHP shall be in a form usable by authorized U.S. Government representatives and other authorized visitors to the site during site operations.

10.2.2 Staff Organization, Qualifications, and Responsibilities. The operational and safety responsibilities of each key person shall be identified. The organizational structure, with lines of authority and overall responsibilities for the safetyand health of the contractor employees and all subcontractors, shall be discussed. An organizational chart showing the lines of authorityfor safety shall be provided. Each person assigned specific safety and health responsibilities shall be identified and his/her qualifications and experience documented by a resume in the SSHP.

10.2.3 Site Description and Contamination Characterization. Provide a description of the site based on results of previous studies, site history, and prior uses and activities. Compile a summary of hazardous substances and safety and health hazardslikely to be encountered onsite. Include ordnance and chemical/biological, concentration ranges, media in which found, locations onsite, and estimated quantities/volumes to be impacted by this work. The site descriptions shall be based on results of previous studies and the history of prior uses and activities conducted under Task 1 of the Scope of Work.

11. DISTRIBUTION STATEMENT

Data Item Description OE-005-06 (Continued):

10.2.4 Hazard Analysis and Risk Assessment. In the SSHP, the contractor shall provide a complete description of the work to be performed at each site. The contractor shall identify the chemical, physical, safety and biological hazards that are expected to be encountered for each task and/or site operation to be performed. Each task/operation is to be discussed separately. Routes and sources of exposure for chemical hazards anticipated onsite, along with chemical/biological names, concentration ranges, media in which found, locations onsite, estimated quantities/volumes, and the applicable regulatory standards (PELs) and recommended exposure limits (TLVs), shall be provided. Action levels shall be specified and justified for implementation of engineering controls and/or work practice controls, initial levels or changes in level of personal protective equipment, for emergency evacuation of onsite personnel, and for the prevention and/or minimization of public exposure to hazards created by onsite activities.

10.2.5 Training. All general site workers shall receive 40 hours of initial off-site safety and health training (24 hours for workers occasionally onsite and whose tasks are limited and are unlikely to be overexposed) which is relevant to hazardous waste site activities, plus three days of supervised field experience (one day for workers occasionally onsite), in compliance with 29 CFR 1910.120(e). In addition, site-specific, supervisory, refresher and visitor training IAW the aforementioned regulations shall be addressed. The content, duration, and frequency of all training shall be described.

10.2.6 Personal Protective Equipment. A Personal Protective Equipment (PPE) Program shall be included in the SSHP. The contractor shall describe in detail and provide appropriate PPE to ensure workers, official visitors and government employees are not exposed to levels greater than the action level for identified hazards for each operation and work zone. The program shall address all the elements of 29 CFR 1910.120(g)(5), 29 CFR 1910.134, and 29 CFR 1910.132. Minimum levels of protection necessary for each task/operation to be performed at each site based on probable site conditions, potential occupational exposure, and the hazard analysis/risk assessment required above. Include specific types and materials for protective clothing and respiratory protection. Establish and justify upgrade/downgrade criteria based upon the action levels established as required by paragraph 10.2.6 (as a minimum) and as appropriate. The following emergency and first aid equipment shall be immediately available for onsite use: () First aid equipment and supplies approved by the consulting physician; (2) Emergency eye-washes/showers which comply with ANSI Z-358.1; (3) Emergency use respirators (worst case appropriate and as identified by the hazards analysis); (4) Spill control materials and equipment as appropriate; and (5) Fire extinguishers (specify type, size and locations).

10.2.7 Medical Surveillance. All personnel performing onsite activities shall participate in an ongoing medical surveillance program meeting with the requirements of 29 CFR 1910.120. If chemical agent is a suspect site contaminant the requirements in DA PAM 40-8 and/or 40-173 shall apply. The medical examination protocols and results shall be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine, or who by necessary training and experience is board eligible. Minimum specific exam content and frequency based on probable site conditions, potential occupational exposure, and required protective equipment shall be specified. A written medical opinion from the examining physician as to fitness to perform the required work shall be made available to the Contracting Officer upon request for any site employee.

10.2.8 Environmental and Personal Monitoring. Where it has been determined that there may be employee exposures to and/or off site migration potential of hazardous airborne concentrations of hazardous substances, appropriate direct reading (real-time) air monitoring and integrated (time weighted average) air sampling shall be conducted IAW applicable federal, state, and local requirements. Air monitoring/sampling must accurately represent concentrations of air contaminants encountered onsite and leaving the site. The types and frequency of air monitoring/sampling to be performed shall be specified for onsite and perimeter locations, where applicable. Where perimeter monitoring is not deemed necessary, provide suitable justification for its exclusion. When applicable, NIOSH and/or EPA sampling and analytical methods shall be used. Personal samples, where necessary, shall be analyzed by laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's (AIHA) Proficiency Analytical Testing (PAT) or Laboratory Accreditation Program. Include, as appropriate, real time (direct-reading) monitoring and integrated Time Weighted Average (TWA) sampling for specific contaminants of concern, Meteorological, noise and radiation monitoring shall be conducted as needed depending upon the site hazard assessment. All monitoring and sampling protocol shall be specified to include instrumentation to be used and calibration of instruments. All monitoring results shall be compared to action levels to determine the need for corrective actions.

10.2.9 Site Control. The contractor shall describe site control measures which include site maps, the work zone delineation and access points, the on/off site communication system, general site access controls, and security procedures (physical and procedural).

10.2.10 Personnel and Equipment Decontamination. The contractor shall develop and specify decontamination procedures with 29 CFR 1910.120 for personnel, personal protective equipment, monitoring instruments, sampling equipment, and other equipment used onsite. Decontamination procedures shall address specific measures to ensure that contamination is confined to the work site. Necessary facilities and their locations, detailed standard operating procedures, frequencies, supplies, and materials to accomplish decontamination of site personnel and to determine adequacy of equipment decontamination shall be discussed.

10.2.11 Emergency Response and Contingency Procedures (Onsite and Off-site). An Emergency Response Plan, as required by 29 CFR 1910.120 shall be developed and implemented. As a minimum, it shall address the following elements: (1) Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposure, personal injuries, fire/explosions, environmental spills and releases, discovery of radioactive materials; (2) Personnel roles, lines of authority communications; (3) Posted instructions and list of emergency contacts: physician, notified nearby medical facility, fire and plice departments, ambulance service, state/local/federal agencies, CIH, and Contracting Officer; (4) Emergency recognition and prevention; (5) Site topography, layout and prevailing weather conditions; (6) Criteria and procedures for site evacuation, emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distance, place of refuge, evacuation routes, site security and control; (7) Specific procedures for decontamination and medical treatment of injured personnel; (8) Route maps to nearest pre-notified medical facility; (9) Criteria for initiating community alert program, contacts and follow-up. Material Safety Data Sheets (MSDS) for each hazardous substance anticipated to be encountered on site shall be made accessible to site personnel at all times and shall be submitted in an appendix to the SSHP.

10.2.12 Confined Space Entry. The contractor shall develop procedures for confined space entry in IAW 29 CFR 1910.146. If no confined spaces exist onsite and there is no planned excavations which could result in a confined space, this section maybe omitted.

10.2.13 Spill Containment. Where major spills may occur, a spill containment program shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred or stored. The program will be designed IAW 29 CFR 1910.120(j) and will be required for hazardous substances on the site as well as hazardous materials brought on to the site for use during the work process.

10.2.14 Heat/Cold Stress Monitoring. Heat and cold stress monitoring protocols, as appropriate, shall be described in detail. Work/rest schedules shall be determined based upon ambient temperature, humidity, wind speed (wind chill), solar radiation intensity, duration and intensity of work, and protective equipment ensembles. Minimum required physiological monitoring protocols which will affect work schedules shall be developed. In cases where impervious clothing is worn, the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" protocol for prevention of heat stress shall be followed and heat stress monitoring shall commence at temperatures of 70 degrees Fahrenheit and above. Where impervious clothing is not worn, the American Conference of Governmental Industrial Hygienists (ACGIH) heat stress standard (TLV) shall be used. For cold stress monitoring to help prevent frostbite and hypothermia, the ACGIH cold stress standard shall be referenced and followed, as a minimum.

10.2.15 Standing Operating Procedures, Engineering Controls, and Work Practices. The contractor shall develop Standing Operating Procedures (SOPs) to protect field personnel, prevent accidents, minimize hazards, and to take action to correct hazards where necessary. Site rules and prohibitions for safe work practices shall be discussed and shall include such topics as use of the buddy system, smoking restrictions, material handling procedures, confined space entry, excavation safety, physiological and meteorological monitoring for heat/cold stress, illumination, sanitation, daily safety inspections, etc. This list of topics is not intended to be all-inclusive.

10.2.16 Logs, Reports and Record Keeping. Record keeping procedures for training logs, daily safety inspection logs, employee/visitor registers, medical surveillance records and certifications, air monitoring results, and personal exposure records shall be specified. All personal exposure and medical monitoring records shall be maintained IAW applicable OSHA standards, CFR 1904, 1910, and 1926. The contractor shall develop, retain, and submit, as part of the final report, all visitor registration logs, training logs, and daily safety inspection logs (as part of the daily QC Reports). The contractor shall maintain copies of the required training and medical certificates onsite and shall make them available for government inspection upon request. All recordable accidents/injuries/illnesses shall be telephonically reported to the Contracting Officer immediately. Lost workday accidents require a completed ENG Form 3394, Accident Investigation Report, be submitted within 30 calendar days in accordance with AR 385-40 and USACE Supplement 1 to that regulation. The Safety Exposure Report, a tabulation of field labor hours, lost workday accidents, and number of lost workdays shall be submitted monthly in accordance with DID OE-080.

10.2.17 Radiological and Chemical Warfare Material (CWM). CWM sites have requirements above the SSHP requirements on an HTRW site. Guidance for these requirements are found in ER 385-1-92, Appendix C and other applicable Army regulations. When response activities are required on CWM sites, the contractor shall coordinate with the Contracting Officer and the Commander, Chemical and Biological Defense Command (CBDCOM) to determine the assistance to be provided by the Army Technical Escort Unit (TEU) and/or Edgewood Research, Development and Engineering Center (ERDEC).

DATA ITEM DESCRIPTION	FORM APPROVAL OMB NO 0704-0188

1. TITLE Location Surveys and Mapping Plan	2. IDENTIFICATION NUMBER OE-005-07

3. DESCRIPTION / PURPOSE To describe methods, equipment and accuracy required for location surveys and mapping of Ordnance and Explosives (OE) sites and to provide requirements for the Location Surveys and Mapping Plan at a specific project site.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-CS-D		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing location surveys and mapping for OE projects.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 General. The site-specific Location Surveys and Mapping Plan for each project will document the site specific survey, mapping, and aerial photography requirements tailored to the needs of that project. The specific task orders will specify the appropriate mix required for implementing each OE project and the methodology to accomplish the tasks. Some projects may not require any of these capabilities but others may require comprehensive capabilities. Surveying and Mapping products will be required in either metric or English units depending upon the needs of the individual projects. English is the standard unit,unless otherwise specified by the specific task order. All required services will be accurately specified in the individual project Scope of Work (SOW) tasks.

10.1.1 Unexploded Ordnance (UXO) Safety Provision. During all initial fieldwork and all intrusive activities, the contractor shall provide a UXO Technician II to accompany the survey crew. The UXO Technician II shall conduct visual surveys for surface ordnance prior to the survey crew entering a suspected area, and a magnetometer survey of each intrusive activity site to ensure the site is anomaly free prior to the surveying crew setting monuments or driving stakes. The UXO Technician II shall not be assigned additional survey tasks which would interfere with the OE safety aspects of area clearance for driving stakes, ironpins, monumentation or other survey control, which will penetrate the surface in a potentially OE contaminated area. The UXO Technician II may not be required on a fulltime basis for most of the project, for non-intrusive activities.

10.1.2 Control Points. Plastic or wooden hubs shall be used for all basic control points. A minimum number (to be specified in the task order for each project) of concrete monuments with 3-1/4 to 3-1/2 inch domed brass, bronze or aluminum alloy survey markers (caps) with witness posts shall be established at each site. The concrete monuments shall be located within the project limits, set 10 meters (m) from the edge of any existing road in the interior of the project limits, and a minimum of 30 meters apart. The top shall be set flush with the ground and the bottom a minimum of 0.6 meters below frost depth. NOTE: Revised specifications may be included in each task order.

10.1.2.1 Accuracy. Horizontal and vertical control of "Class I, Third Order" or better shall be established for the network of monuments. Horizontal control shall be based on either the English or metric system and referenced to the North American Datum of 1983 (NAD83) and the State Plane Coordinate Grid System. Vertical control, if required, shall also be based on either the English or metric system and referenced to the North American Datum of 1988 (NAVD88). If aerial photographs or orthophotography are used to provide this survey, the aerial targets used for control points shall meet the same horizontal and vertical accuracy and requirements detailed above.

11. DISTRIBUTION STATEMENT

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10.1.2.2 Monument Caps. The caps for the new monuments shall be stamped in a consecutively numbered sequence and the identification shall be provided with each task order as follows:

PROJ.NAME-1-2000 USAESCH	PROJ.NAME-2-2000 USAESCH	PROJ. NAME-3-2000 USAESCH

Note: The name to be stamped on the caps shall be provided with each task order.

The dies for stamping the numbers and letters into these caps shall be 1/8-inch to 3/16-inch in size. All coordinates and elevations shall be shown to the closest one-thousandth of a meter (0.001 m) and one-hundredth of a foot (0.01 ft).

10.1.2.3 Plotting. All of the control points (monuments, aerial targets, and property corners) recovered and/or established at this site shall be plotted at the appropriate coordinate point on a reproducible (Mylar) planimetric or topographic map at scales appropriate for the parcel size being described. Parcels less than 10 acres shall be plotted at 1"=30' (1:360). Parcels 10 – 100 acres shall be plotted at 1"=50' (1:600). Parcels larger than 100 acres will be plotted at 1"=200' (1:2,400). Area maps shall be provided for parcels of 100 acres, and shall show sheet breakdown for subsequent sheets required for the set.

10.1.2.4 Description Cards. A tabulated list and a "Description Card" of all control points (monuments and aerial targets) established or used for this project shall be submitted. The Description Card shall show a north arrow; a sketch of each monument and its location relative to reference marks, buildings, roads, railroads, towers, trees, etc.; a typed description telling how to locate the monument from a well known and easily identifiable point; the monument's name or number; and the final adjusted coordinates and elevations in meters and feet (to the closest 0.001m and 0.01 ft.) The Description Cards shall be 5 by 8 inches describing one monument per card, or an 8-1/2 by 11 inch sheet of bond paper may be used for describing two monuments.

10.1.3 Mapping. The location, identification, coordinates, and elevations of all the control points recovered and/or established at the site shall be plotted on reproducible (Mylar) planimetric or topographic maps at the scale specified in the task order. Each control point shall be identified on the map by its name and number and the final adjusted coordinates and elevations (to the closest 0.001m and 0.01 ft.). Each map shall include a grid north, a true north and a magnetic north arrow with the differences between them in minutes and seconds shown. Grid lines or tic marks at systematic intervals with their grid values shall be shown on the edges of the map. Also, a legend showing the standard symbols used for the mapping and a map index showing the site in relationship to all other sites within the boundary lines of the project area shall be shown. In addition, the state plane coordinates shall be established for the corners of each grid area investigated (100' by 100'; 100' by 200'; etc.; size and accuracy requirements to be determined when the SOW for the task order is prepared). The coordinates for the grid corners shall be shown to the closest one-foot (1.0 ft.). The locations of individual recovered OE items shall be tape measured or the X and Y distance estimated, to obtain a horizontal accuracy of plus or minus one foot within the grid, and plotted and identified on the map. The use of a total station, global positioning system (GPS) or other precision survey method used to locate recovered munition items is not required. NOTE: Accuracies for the location of anomalies and suspected UXO may be greater for the geophysical mapping requirements. The lesser of the two will be the driving accuracy required for the location of recovered munitions with each grid.

10.2 DIGITAL DATA

10.2.1 General Design File Requirements. An overall planimetric design file shall be created and shall be digitized into a Microstation ". dgn" file at an elevation of zero. If contours and spot elevations are required, all data shall be digitized into a second Microstation 3D design file with each element (contours and spot elevations) at their correct elevation, and topologically triangulated network (ttn) files shall be created to model the topographic surface. The ttn file shall be created using the elements of the topographic file, and all spot elevations, contours, and breaklines necessary to create the ttn file shall be used. The ttn file shall be created so that it can be used in an Intergraph software product INROADS to recreate the contours at their exact locations. Cut sheet plots and views into the project data shall be created by referencing the planimetric and contour files from additional Microstation work files

10.2.1.1 Each sheet shall be standard metric A-1 size drawing, which is 841 mm by 594 mm (33.1 inches by 23.4 inches). Each sheet shall also have a standard border; revision block; title block; complete index sheet layout; bar scale; legend; grid lines or grid tic layout in feet or meters; a True North, a Magnetic North and a Grid North arrow, with their differences shown in minutes and seconds; and shall be plotted at the horizontal scales required.

10.2.1.2 The cell library used shall be attached and provided with the digital data set along with all other supporting files or data. All production and work files shall be fully documented into a concise data manual. This manual shall include all specific information required for an outsider to be able to recreate all products and determine the location, names, structures, and association of the data such as layer description, weights, colors, symbology, referencing of files etc. This manual shall be included as an ASCII file titled READ.ME that is included with all distributed digital data.

10.2.1.3 No digital data will be acceptable until proven compatible with the USAESCH Graphics System. All revisions required to obtain compatibility with the USAESCH Graphics System shall be done at the contractor's own expense.

10.3 DIGITAL FORMAT FOR INTERGRAPH SURVEY / MAPPING DATA

10.3.1 All data shall conform to the Tri-Service Spatial Data Standards (TSSDS) and as outlined in the specific task order.

10.3.2 Sources and Standard: The TSSDS have been developed and produced by the Tri-Service CADD/GIS Technology Center. They are designed for computer assisted mapping methods that must interface with other surveying firms, Government contractors, and customers so that the final product will be usable with consistent CADD documents.

10.3.3 Electronic Submittal: All data shall be submitted electronically on either eight millimeter NT 10 Gigabyte tape, PC 3.5" floppies or PC CD-ROM. The PC CD-ROM is the preferred format, supplemented with 10 Gigabyte tape for the extremely large data sets.

10.4 ITEMS AND DATA. The following items and data shall be submitted to USAESCH (submittal dates will be specified for each task order):

10.4.1 Field survey. The original copies of all field books, layout sheets, computation sheets, abstracts, and computer printouts. All of these items shall be suitably bound, and clearly marked and identified.

10.4.2 A tabulated list of all control points (monuments, aerial targets and corners) showing the adjusted coordinates and elevations (in meters and feet) established and/or used for this survey.

10.4.3 The negatives and three sets of prints of the aerial photographs taken for the project, if aerial photography is required in the SOW.

10.4.4 A tabulated list of all UXO items with location information, or specific anomalies, as identified in the individual project SOW that were located in the field.

10.4.5 A "Report on Establishment of Survey Mark" (Description Card) on each permanent control monument established and/or used for the survey. In addition to the name or ID number of the monument, the cards shall show the adjusted coordinate, the adjusted elevations, a typed description for locating the monument, and a sketch showing how to locate the monument.

10.4.6 All unique items created and/or used to create the end products and the narrative and description required by the SOW.

10.4.7 Drawings and Digital Data. All maps shall be drawn on 841mm by 594mm (standard metric A-1 size drawing) reproducible (Mylar) drawings generated by the CADD system. One original Mylar and three blueline prints of each final map and two copies of the digital data shall be delivered to USAESCH.

DATA ITEM DESCRIPTION		FORM APPROVAL OMB NO 0704-0188
1. TITLE Work, Data, and Cost Management Plan	2 IDENTIFICATION NUMBER OE-005-08	

3. DESCRIPTION / PURPOSE To provide requirements for a plan describing procedures for the management and control of work and costs for a specific task order.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-OE-CX		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing work, data and cost management for Ordnance and Explosives (OE) projects.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 Work, Data, and Cost Management Plan. This part of the Work Plan shall describe how the work will be managed and accomplished, and how costs will be controlled.

10.2 Describe the project management approach to all tasks required under the task order. Describe the controls that will be used to ensure that work is performed in a timely manner and that all established procedures and plans are being followed. Desribe the manner in which subcontractors' work will be managed and integrated into the overall effort.

10.3 A schedule shall be presented using MS Project or similar software which shall contain milestones for task deliverables and associated costs, show the task components in their relative chronological positions, and state the intervals between milestons in terms of working days following the previous events.

10.4 Describe the cost control and tracking methodology to be used.

10.5 List the recurring deliverables to be submitted which relate to work, data, and cost management.

11. DISTRIBUTION STATEMENT

DATA ITEM DESCRIPTION

FORM APPROVAL
OMB NO 0704-0188

1. TITLE Property Management Plan	2. IDENTIFICATION NUMBER OE-005-09

3. DESCRIPTION / PURPOSE To provide requirements for a plan describing how property management will be performed at a specific Ordnance and Explosives (OE) project site.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-CT-S		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing property management for OE projects. This DID does not apply to firm fixed price (FFP) task orders.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1. General. The Contractor shall prepare a detailed plan for management of Government property in accordance with FAR, Part 45.5, and its supplements.

10.2 Content. The plan shall separate field equipment, office equipment, and consumable supplies and include:

10.2.1 A description and quantity of materials to be used.

10.2.2 The source and estimated rental/acquisition costs of all materials.

10.2.3 Documentation of the contractor's process to acquire 3 quotes for each item and a comparison of rental versus purchase cost for each item, when reimbursement for actual costs is claimed by the Contractor

10.2.4 Basis of selection to be used by the contractor to recommend the source for leased vehicles, when reimbursement for actual costs is claimed by the Contractor. The selection process will include an analysis of rates for leasing vehicles using the quotes obtained from 3 commercial vendors as described above and GSA (GSA only if the lease period is greater than 3 months). The following guidelines should be considered when selecting the number and kind of vehicles:

10.2.4.1 The maximum number of vehicles allowable, such as 1 vehicle for approximately each 4 employees working on site or larger carrying capacity vehicles such as vans to replace several vehicles.

10.2.4.2 The type/kind of vehicle required to perform the function on site; considering the physical conditions at the site (i.e., terrain, weather conditions, distance from living quarters to site office area, distance from site office areato field work area, etc.).

10.2.4.3 Exceptions to the above must be justified by the contractor and approved by the Contracting Officer.

10.2.5 A list of consumable supplies and personal property that are included in the Contractor's overhead rate.

10.2.6 A proposed storage plan, including the method of separation of Government property from Contractor property.

10.2.7 Ultimate disposal plan covering salvage, turnover to the Government, or other disposition of material upon contract termination.

10.2.8 A plan for submitting, on a quarterly basis, or at project's end if the project duration is less than 3 months, a property tracking log report. The report will list all contractor-acquired property that is directly charged to the project.

10.2.9 Procedures for notifying the Contracting Officer of loss, damage, or destruction of accountable government property.

11. DISTRIBUTION STATEMENT

DATA ITEM DESCRIPTION

FORM APPROVAL
OMB NO 0704-0188

1. TITLE Sampling and Analysis Plan	2. IDENTIFICATION NUMBER OE-005-10

DESCRIPTION / PURPOSE To provide requirements for a plan describing sampling and analysis, quality assurance/quality control, laboratory qualification, data acquisition/data reporting, and chain-of-custody when samples are required for Ordnance and Explosives (OE) projects.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-CS-P/G		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters for OE projects when soil, sludge, sediment, ash, and/or water samples are required.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 The Sampling and Analysis Plan shall be a site-specific plan that shall describe the contractor's procedures, equipment, and methods to collect and preserve samples.

10.2 The Sampling and Analysis Plan shall be a site-specific plan that shall describe the contractor's procedures, equipment, and methods to analyze collected samples, both in the field and laboratory.

10.3 The Sampling and Analysis Plan shall be a site-specific plan that shall describe the contractor's procedures, equipment, and methods to ship the collected samples.

10.4 The Sampling and Analysis Plan shall be a site-specific plan that shall describe the contractor's procedures, equipment, and methods to perform quality assurance/quality control for the project.

10.5 The Sampling and Analysis Plan shall be a site-specific plan that shall describe the contractor's procedures for data reporting.

10.6 The Sampling and Analysis Plan shall identify the laboratory that will perform analytical work.

10.6.1 For analysis of hazardous and toxic waste (HTW), the proposed laboratory must be validated by the Corps of Engineers. The proposed laboratory shall also be an EPA contract laboratory or be familiar with the Contract Laboratory Program (CLP) requirements and can perform CLP work. A copy of the validation shall be included as Appendix to the Sampling and Analysis Plan.

10.6.2 For analysis of samples suspected of chemical agent contamination, the contractor shall use a certified DoD Chemical Surety Material (CSM) laboratory. In addition, at the discretion of the Contracting Officer, a certified mobile labontory may be required. Certification shall be obtained through the Contracting Officer from the following:

Director, U.S. Army Edgewood Chemical
& Biological Center
ATTN: ECBC-COR-C (Kelly McGuire)
Aberdeen Proving Ground, MD 21010-5423
Phone: 410-436-8428

11. DISTRIBUTION STATEMENT

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Data Item Description OE-005-10 (Continued):

10.7 The Sampling and Analysis Plan shall identify the number and locations of samples to be collected, including QA/QC samples. When sampling for chemical agent contamination, the methodology for deciding when a sample should be collected should also be 'escribed. The Sampling and Analysis Plan shall identify the EPA approved methods to be used. If the methods are not the EPA :pproved methods, the certified agencies of the methods shall be identified.

10.8 The Sampling and Analysis Plan shall identify all of the contaminants of concern and the associated detection limits.

DATA ITEM DESCRIPTION

FORM APPROVAL
OMB NO 0704-0188

1. TITLE Quality Control Plan	2. IDENTIFICATION NUMBER OE-005-11

3. DESCRIPTION / PURPOSE To provide details of the approach, methods, and operational procedures to be employed to perform quality control at a specific Ordnance and Explosives (OE) project site.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-OE-CX		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing quality control for OE projects.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS:

10.1 A quality control plan shall be prepared to document the approach and procedures to be used to ensure quality throughoutthe execution of the tasks required by the individual task order.

10.1.1 The contractor is solely responsible for the control of product quality and for offering to the Government for acceptance only those products/services that conform to contractual requirements.

10.1.2 Personnel performing quality functions shall have well-defined responsibilities, to include stop-work authority, and the organizational freedom to identify, evaluate, initiate, recommend or provide solutions, and approve corrective actions to ensure all work complies with stipulated contractual requirements.

10.2 The QC Plan shall document processes affecting quality and will include the following:

10.2.1 Audit procedures, corrective/preventive action procedures, data management, anomaly acquisition and reacquisition, field operations, equipment calibration/maintenance requirements (geophysical instruments, radios/cell phones, vehicles/machinery, air monitoring equipment and personal protective equipment etc.), pass/fail criteria for all quality auditsand records generated (daily logs, meeting minutes, inventory forms, inspection forms etc.).

10.2.2 The QC plan shall also describe how lessons learned are captured, documented, and submitted to the government.

10.2.3 The QC plan shall describe the procedure used to ensure contract submittal (reports, work plans, etc.) are reviewed/processed to ensure they meet contractual requirements and how changes to existing documents are processed and communicated to appropriate personnel.

10.2.4 The QC Plan shall include a process/training plan for all on-site personnel that ensures each employee meets the qualifications requirements (education, training, and/or experience), as defined for this contract to perform the duties of thejob for which they were hired. The QC plan will also address all site specific and routine training requirements for contractor personnel and site visitors.

10.2.5 If applicable, the QC Plan shall contain a Chemical Data Quality Management sub plan in accordance with Engineering Regulation (ER) 1110-1-263.

10.3 All QC documentation will be submitted as part of or as supporting documentation for the final report.

10.4 All QC records and documentation will be kept on site and made available for government inspection upon request

11. DISTRIBUTION STATEMENT

DD FORM 1664, JUN 86 *PREVIOUS EDITIONS ARE OBSOLETE*

DATA ITEM DESCRIPTION	FORM APPROVAL OMB NO 0704-0188

1. TITLE Environmental Protection Plan	2. IDENTIFICATION NUMBER OE-005-12

3. DESCRIPTION / PURPOSE To provide requirements for a plan describing the approach, methods, and operational procedures to be employed to protect the natural environment during performance of all tasks at specific Ordnance and Explosives (OE) projects.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-CS-P		

7. APPLICATION / INTERRELATIONSHIP This Data Item Description contains instructions for preparing Work Plan chapters addressing environmental protection for OE projects.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 The Environmental Protection Plan (EPP) shall be a site-specific plan that shall describe the contractor's procedures and methods during site activities to minimize pollution, protect and conserve natural resources, restore damage, and control noiseand dust within reasonable limits. The site specific EPP shall be approved, as part of the Work Plan, prior to the start of any on-site activities.

10.2 Prior to the start of any on-site activities, the Contractor and the Contracting Officer's Representative (or other on-site Government inspection personnel) shall make a joint existing condition survey. During this survey, any wetlands, endangered species, special habitat areas, cultural and natural resources shall be identified and marked. The report of the existing environmental conditions and identification/compliance with potential applicable or relevant and appropriate requirements (ARARs) shall be submitted by the Contractor.

10.3 The site specific EPP shall detail the identification and location of all known:

- 10.3.1 Endangered/threatened species within the project site.
- 10.3.2 Wetlands within the project site.
- 10.3.3 Cultural and archaeological resources within the project site.
- 10.3.4 Water resources within the project site.
- 10.3.5 Coastal zones within the project site.
- 10.3.6 Trees and shrubs that will be removed within the project site.
- 10.3.7 Existing waste disposal sites within the project site.
- 10.3.8 Compliance with ARARs.

10.4 The site specific EPP shall detail procedures and methods to protect and/or mitigate the resources/sites identified in Section 10.3 above.

10.5 The site specific EPP shall detail mitigation procedures for the following:

- 10.5.1 All waste disposal.
- 10.5.2 All burning activities.
- 10.5.3 Dust and emission control.
- 10.5.4 Spill control and prevention.
- 10.5.5 All storage areas.
- 10.5.6 Access routes

11. DISTRIBUTION STATEMENT

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Data Item Description OE-005-12 (Continued):

10.5.7 Trees and shrubs protection and restoration.
10.5.8 Control of water run-on and run-off.
10.5.9 Manifesting and transportation of wastes.
10.5.10 Temporary facilities.
10.5.11 Decontamination and disposal of equipment.
10.5.12 Minimizing areas of disturbance.

10.6 The site specific EPP shall include the procedures for post-activity clean-up to be accomplished.

10.7 The site-specific EPP shall include the Environmental Documentation under the National Environmental Policy Act for the proposed activities as an Appendix. The Contractor may be required to prepare environmental documentation prior to any fieldwork for non-time critical removals. The Contracting Officer will determine the type of environmental documentation required at eah site.

10.8 The site specific EPP shall reference the air monitoring plan prepared as part of the Site Safety and Health Plan (DID ŒE-005-06).

DATA ITEM DESCRIPTION	FORM APPROVAL OMB NO 0704-0188

1. TITLE Accident/Incident Reports	2. IDENTIFICATION NUMBER OE-015

3. DESCRIPTION / PURPOSE This Data Item Description contains instructions for reporting accidents/incidents which occur on the work site or in connection with the stated work of this contract.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-ED-SY-S		

7. APPLICATION / INTERRELATIONSHIP Required by AR 385-40, USACE Supplement 1 to AR 385-40, EM 385-1-1 (Corps of Engineers Safety and Health Requirements Manual) and CEHNCR 385-1-1 (Safety and Occupational Health Program Management).

8 APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS

10.1 The following categories of accidents/incidents shall be reported to the Contracting Officer by telephone or written report.

10.1.1 Accidents/Incidents which result in a fatality, injury of employees, lost workdays, and/or property damage assessed at a cost of $10,000 or more shall be reported telephonically to the Contracting Officer as soon as possible after learning of the incident. The report shall contain as much information as is known concerning the incident. An ENG Form 3394 shall be completed within 30 calendar days after the incident in accordance with the instructions attached to the form and forwarded tothe Contracting Officer. The ENG Form 3394 shall be legible and signed by the supervisor of the person injured (or supervisor of the activity where property damage occurred) and by the next level of management.

10.1.2 The contractor shall immediately report to the Contracting Officer any incident which could bring adverse attention or publicity to the U.S. Army or the Corps of Engineers.

10.1.3 The contractor shall maintain a list of alternate points of contact in the event the Contracting Officer is not available. CEHNC shall provide the alternate points of contact.

11. DISTRIBUTION STATEMENT

DD Form 1664, JUN 86 *PREVIOUS EDITIONS ARE OBSOLETE*

DATA ITEM DESCRIPTION	FORM APPROVAL OMB NO 0704-0188

1. TITLE Personnel/Work Standards	2. IDENTIFICATION NUMBER OE-025

3. DESCRIPTION / PURPOSE To describe the personnel qualifications and work requirements for Ordnance and Explosives (OE) projects

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
000303	CEHNC-OE-CX		

7. APPLICATION / INTERRELATIONSHIP

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER

10. PREPARATION INSTRUCTIONS:

10.1 Qualifications of proposed key personnel and of personnel filling core labor categories (see par. 10.3, 10.4) shall meet the requirements listed below and shall be submitted in resume form. The resumes shall document all required educational and experience requirements. Resumes for Unexploded Ordnance (UXO) personnel shall be accompanied by the Explosive Ordnance Disposal (EOD) school course graduation certificate. Resumes need not be submitted for personnel listed on the USAESCH Database for UXO Personnel; contractors need only submit name, proposed position, and UXO number. The contractor shall certify in writing to the Contracting Officer that UXO personnel scheduled to fill the positions of Senior UXO Supervisor, UXO Safety Officer, and UXO Quality Control Specialist are fully qualified to fill those positions. The other labor categories are provided for the contractor's encouraged use and guidance.

10.2 **Unexploded Ordnance (UXO) Personnel, General.** UXO personnel, assigned to positions UXO Technician I, UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, and Senior UXO Supervisor, shall be U.S. citizens and graduates of one of the following schools or courses:

a. US Army Bomb Disposal School, Aberdeen Proving Ground, MD;

b. US Naval Explosive Ordnance Disposal (EOD) School, Indian Head, MD;

c. EOD Assistants Course, Redstone Arsenal, AL; EOD Assistants Course, Eglin Air Force Base, FL; or, a DoD certified equivalent course.

10.2.1 The term UXO Qualified Personnel applies only to personnel meeting the requirements for the positions ofUXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, and Senior UXO Supervisor. .

10.2.2 EOD experience in National Guard or Reserve Units will be based on the actual documented time spent on active duty, not on the total time of service.

10.3 **Key Personnel**. When required for the work effort, the following personnel will be designated as key personnel and shall meet the minimum qualifications listed for each labor category.

10.3.1 **Geographical Information System (GIS) Manager**. This individual shall have a minimum of 3 years of direct experience managing computerized GIS within a Microstation GIS Environment. Operation and management of site specific GIS, based on USAESCH hardware and software standards described in DID OE-005-14, may be a major element of this project.

10.3.2 **Project Geophysicist**. This individual shall have a degree in geophysics, geology, geological engineering, or a closely related field, and shall have a minimum of 5 years of directly related geophysical experience. This individual has oveall responsibility for design, implementation, and management of all geophysical investigations required for the work effort, but nay not necessarily be on-site full time. This individual shall be the project geophysicist-of-record.

11. DISTRIBUTION STATEMENT

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10.3.2.1 **Site Geophysicist.** This individual shall have the same education requirements as the project geophysicist, except the five years minimum experience requirement is waived, if working under the general supervision of a Project Geophysicist. This individual is responsible for day-to-day operations of the site geophysical investigations. This individual may also be the project geophysicist.

10.3.3 **Project Manager.** This individual shall have at least 3 years experience in general contract project management on programs similar in size and complexity to the effort described in the SOW. Exceptions shall be submitted to the Contracting Officer for approval.

10.3.4 **Senior UXO Supervisor (SUXOS).** This individual shall be a graduate of a school listed in paragraph 10.2.a or 10.2.b. This individual shall have at least 15 years UXO experience, which may be a combination of active duty military EOD and contractor UXO experience, and shall include 10 years in supervisory positions. A SUXOS must be able to fully perform all of the functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III. In addition, the ability to perform the following functions is a requirement for the SUXOS: Planning, coordinating, and supervising all contractor on-site UXO activities; preparation of standard operating procedures (SOPs) for UXO operations ensuring compliance with DOD directives as well as local, state, and federal statues and codes; and certification of Ammunition, Explosives, and Dangerous Articles (AEDA) and/or range scrap as ready for turn-in or disposal in accordance with current policies. The SUXOS must also be fully capable of supervising multiple project teams which may be performing UXO and UXO related activities; e.g., vegetation clearance; land surveying; reconnaissance and classification of UXO, pyrotechnic items, and military explosives and demolition materials; locating surface and subsurface UXO; destroying UXO and OE by burning or detonation; and/or transporting and storing UXO and explosives material.

10.3.5 **UXO Safety Officer (UXOSO).** This individual shall have the same minimum qualifications as a UXO Technician III as listed in paragraph 10.4.2. In addition, this individual shall have the specific training, knowledge, and experience necessary to implement the SSHP and verify compliance with applicable safety and health requirements. This individual must be able to perform all functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III. In addition, the UXOSO must have the ability to implement the approved UXO and explosives safety program in compliance with all DOD, federal, state, and local statutes and codes; analyze UXO and explosives operational risks, hazards, and safety requirements; establish and ensure compliance with all site specific safety requirements for UXO and explosives operations; enforce personnel limits and safety exclusion zones for UXO clearance operations, UXO and explosives transportation, storage, and destruction; conduct safety inspections to ensure compliance with UXO and explosives safety codes; and operate and maintain air monitoring equipment required at site for airborne contaminates.

10.3.6 **UXO Quality Control Specialist (UXOQCS).** This individual shall have the same minimum qualifications as a UXO Technician III as listed in paragraph 10.4.2. In addition, this individual shall have documented Quality Control Training. This individual must be able to fully perform all functions enumerated for UXO Sweep Personnel and UXO Technicians I, II, and III. This individual must have the specific training, knowledge, and experience necessary to fully implement the contractor's QC plans. In addition, the UXOQCS must have the ability to implement the UXO specific sections of the Quality Control Program for all OE related evolutions; conduct quality control inspections of all UXO and explosives operations for compliance with established procedures; and direct and approve all corrective actions to ensure all OE related work complies with contractual requirements.

10.4 **Core Labor Categories.** The following labor categories may be required for each work effort, as described in each specific task order.

10.4.1 **Civil Engineer.** This individual shall have, as a minimum, a bachelor's degree in Civil Engineering or Civil Engineering Technology and 3 years of field or office experience. Preferably this individual should have a minimum of 3 years experience in OE or OE related activities. This could include surveying, mapping, aerial triangulation, global positioning system, geographical information systems development, or project management.

10.4.2 **UXO Technician III.** This individual, who supervises a project team, shall be a graduate of a school listed in paragraph 10.2.a. or 10.2.b. This individual shall have experience in OE clearance operations and supervising personnel, and shall have at least ten years combined active duty military EOD and contractor UXO experience. This individual must be able to fully perform all functions enumerated for UXO Sweep Personnel, UXO Technicians I and II. In addition, the ability to perform the following functions is a requirement for the UXO Technician III: Supervising and performing on-site disposal of Ordnance and Explosives; preparing explosives storage plans in accordance with all applicable guidance; preparing required OE administrative reports; preparing SOPs for on-site OE operations; performing risk hazard analyses; conducting daily site safety briefings; and supervising the conduct of all on-site evolutions directly related to OE operations.

10.4.3 **UXO Technician II.** This individual shall be a graduate of a school listed in paragraph 10.2.a. or 10.2.b. As an exception, a UXO Technician II may be an UXO Technician I with at least five years combined military EOD and contractor UXO experience. This individual must be able to fully perform all functions enumerated for UXO Sweep Personnel and UXO Technician I. In addition, the ability to perform the following functions is a requirement of the UXO Technician II: Properly storing OE material in accordance with applicable guidance; identifying fuzes and determining fuze condition; determining a magnetic azimuth using current navigational/locating equipment; performing field expedient identification procedures to identify explosives contaminated soil; preparing an on-site holding area for OE material; and operating modes of transportation for transporting OE material, when appropriate.

10.4.4 **UXO Technician I.** This individual shall be a graduate of a course listed in paragraph 10.2.c. A UXO Technician I can advance to the UXO Technician II category after five years combined active duty military EOD and contractor UXO experience. This individual assists fully qualified personnel (UXO Technician II and above) in the following functions: Conducting reconnaissance and classification of UXO and other OE materials; identifying all munitions including bombs and bomb fuzes, guided missiles, projectiles and projectiles fuzes, rockets and rocket fuzes, land mines and associated components, pyrotechnics items, military explosives and demolition materials, grenades and grenade fuzes, and submunitions; locating subsurface UXO using military and civilian magnetometers and related equipment; performing excavation procedures on subsurface UXO; locating surface UXO by visual means; transporting UXO and demolition materials; preparing firing systems, both electric and non-electric, for destruction operations; operating Personnel Decontamination Stations (PDS); inspecting salvaged OE related material and erection of UXO related protective works; and donning and doffing personnel protective equipment.

10.5 **Other Labor Categories**. The following labor categories may typically be required to perform each work effort:

10.5.1 **Biologist**. This individual shall be able to apply a knowledge of principles and theories of biology and related sciences in the collection, measurement, analysis, evaluation, and interpretation of biologic information concerning the structure, composition, and history of plants and animals. This includes the performance of basic research to establish fundamental principles to identify and protect special-status species and habitats.

10.5.2 **Certified Industrial Hygienist**. This person shall meet the Office of Personnel Management Standards for the Industrial Hygiene Series GS-690 and is certified by the American Board of Industrial Hygiene with at least 2 years hazardous waste site operations experience. Board certification or eligibility shall be documented by written confirmation by the American Board of Industrial Hygiene (ABIH). Military personnel must be identified as being a qualified Industrial Hygienist by the Surgeon General and be certified by the American Board of Industrial Hygiene.

10.5.3 **Chemist**. Performs a full range of experiments and analyses and any of the duties associated with a lab technician while also holding at least a bachelor's degree in chemistry.

10.5.4 **Drafter 1**. Performs drafting work using a computer, requiring knowledge and skills in drafting methods, procedures, and techniques. Prepares drawings of structures, facilities, land profiles, water stems, mechanical and electrical equipment, pipelines, duct system, and similar equipment, systems, and assemblies. Drawings are used to communicate engineering ideas, design, and information. Uses recognized systems of symbols, legends, shadings, and lines having specific meanings in drawings.

10.5.5 **Emergency Medical Technician**. Provides emergency medical treatment to sick or injured persons at site of emergency and while in transit to medical facility, working as a member of an emergency medical team. Determines nature and extent of illness or injury, or magnitude of catastrophe, and establishes procedures to be followed or need for additional assistance, basing decisions on statements of persons involved, examination of victim or victims, and knowledge of emergency medical practice. Administers prescribed medical emergency treatment at site of emergency, or in vehicle en route to medical facility, performing such activities as applying splints, administering oxygen, maintaining an adequate airway, treating minor wounds or abrasions, or performing cardiopulmonary resuscitation. Communicates with professional medical personnel at emergency treatment facility to obtain instructions regarding further treatment and to arrange for reception of victims at treatment facility.

10.5.6 **Environmental Engineer.** This individual shall have, as a minimum, a bachelor's degree in chemical engineering, civil engineering or environmental engineering.

10.5.7 **Field Office (Administrative)**. This individual shall have the same qualifications as a clerk/typist but must be capable of operating the office in the absence of the UXO Supervisor. This person must be able to understand and answer questions relating to project status as obtained from status reports. This individual must also be capable of keeping track of field offce personnel and appropriate time sheets.

10.5.8 **Geologist.** This individual shall be able to apply a knowledge of principles and theories of geology and related sciences in the collection, measurement, analysis, evaluation, and interpretation of geologic information concerning the structure, composition, and history of the earth. This includes the performance of basic research to establish fundamental principles and hypotheses and develop a fuller knowledge and understanding of geology and the application of these principles and knowledge to a variety of scientific, engineering, and economic problems.

10.5.9 **Heavy Equipment Operator**. Operates heavy equipment such as cranes, clamshells, power shovels, motor graders, .eavy loaders, carryalls, bulldozers, rollers, scrapers, and tractors. Equipment is used to excavate, load or move dirt, gravd or other materials. Operator may be required to read and interpret grade and slope stakes and simple plans. May be required to grease,adjust and make emergency repairs to equipment.

10.5.10 **Industrial Hygienist**. This individual shall meet the Office of Personnel Management Standard for the Industrial Hygiene Series GS-690, with three years experience in HTRW work; personnel certified by the American Board of Industrial Hygiene with one year experience in HTRW work; and military personnel identified as being a qualified Industrial Hygienist by the Surgon General having three years experience in HTRW work. In addition, it is expected that these personnel, by virtue of their educaion, special studies and training, have acquired competence in the practice of Industrial Hygiene.

10.5.11 **Lab Technician**. Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics or composition of solid, liquid, or gaseous materials and substances. Sets up and adjusts laboratory apparatus and operates grinders, agitators, centrifuges, ovens, condensers, and vibrating screens to prepare material for testing according to established laboratory procedure. Test materials for presence and content of elements or substances, such as HTRW. Examines materials using microscope. Records test results on standard forms, writes test reports describing procedures used, and prepares graphs and charts. Cleans and sterilized laboratory apparatus. May prepare chemical solutions according to standard formulae.

10.5.12 **Laborer**. Performs tasks, which primarily require physical abilities and effort involving little or no specialized skill or prior work experience. The following tasks are typical of this occupation: Loads and unloads trucks and other conveyances;moves supplies and materials to proper location by wheelbarrows or hand trucks; stacks materials for storage or binning; collects refise and salvageable materials; digs, fills, and tamps earth excavations; levels ground using pick, shovel, tamper, and rake; shovels cncrete and snow; cleans culverts and ditches; cuts tree and brush; operates power lawnmowers; moves and arranges heavy pieces of office ad household furniture, equipment, and appliances; moves heavy pieces of automotive, medical engineering, and other types of machiery and equipment. Spreads sand and salt on icy roads and walkways; picks up leaves and trash.

10.5.13 **Mechanic.** Repairs, rebuilds, or overhauls major assemblies of internal combustion automobiles, buses, trucks, or .actors. Diagnoses the source of trouble and determines the extent of repairs required; replaces worn or broken parts.

10.5.14 **Safety Engineer**. This individual shall meet the Office of Personnel Management Standards for a Safety Engineer Series GS-803 with three years experience in HTRW work; or be certified by the Board of Certified Safety Professionals with one-year experience in HTRW work. In addition, it is expected that these personnel, by virtue of their education, special studies and taining, have acquired competence in the practice of safety and occupational health.

10.5.15 **Security Guard**. Protects property from theft or damage, or persons from hazards or interference. Duties involve serving at a fixed post, making rounds on foot or by motor vehicle, or escorting persons or property. May be deputized to make arrests. May be required to demonstrate (1) proficiency in the use of firearms and other special weapons and (2) continuing physical fitness.

10.5.16 **Surveyor**. This individual should have minimum of 5 years experience as a Survey Party Chief, performing the following functions Leading day-to-day work activities of survey party under the direction of a land surveyor; supervising a crew engaged in gathering data about the earth's surface, using a variety of surveying instruments; clearing land and setting stakesto identify certain points; checking final field notes for clarity and accuracy; and completing transmittal of forms.

10.5.17 **Surveyor Aide**. Performs any of following duties to assist in surveying land: Holds level or stadia rod at designated points to assist in determining distances and elevations and laying out stakes for map making, construction, mining, land, and other surveys. Calls out reading or writes station number and reading in notebook. Marks points of measurement with elevation, station number, or other identifying mark. Measures distance between survey points, using steel or cloth tape or surveyor's chain. Marks measuring point with keel(marking crayon), paint sticks, scratches, tacks, or stakes. Places stakes at designated points and drives them into ground at specified elevation, using hammer or hatchet. Cuts and clears brush and trees from line of surey, using brush hook, knife, ax, or other cutting tools.

10.5.18 **Truck Driver**. This individual shall have the appropriate Commercial Drivers License (CDL) depending on the .ehicle type and transportation requirements. This individual drives a truck to transport materials, merchandise, equipment, or workers between various types of establishments such as manufacturing plants, freight depots, warehouses, wholesale and retail establishments or between retail establishments and customers' houses or places of business. May also load or unload truck wih or without helpers, make minor mechanical repairs, and keep truck in good working order.

10.5.19 **UXO Sweep Personnel**. UXO Sweep personnel assist UXO technicians and supervisory personnel in the clearance f UXO, operating only under the direct supervision of qualified UXO technicians and/or UXO supervisors. This position requires site and job specific contractor training (which may include ordnance recognition, safety precautions, donning and doffing personnel protective equipment, etc.) but does not require UXO technician qualifications. UXO Sweep Personnel conduct visual and/or instrumented UXO search activities in the field; perform field maintenance on military and civilian magnetometers; operate ordnance detection instruments and other similar equipment to include digital geophysical mapping instruments; and remove OE scrap afte such items have been certified/verified safe for handling by a qualified UXO technician. UXO sweep personnel are not involvedin the execution of explosives operations.

10.6 **Work Standards**: The following are minimum work standards for Ordnance and Explosives projects. Prior approval of the Contracting Officer shall be obtained to relax these standards.

10.6.1 **Work Week:** UXO personnel involved in performing UXO field operations shall be limited to a 40 hour week, either four 10 hour days or five eight hour days. Two consecutive work weeks shall be separated by 48 hours of rest.

10.6.2 **Project Team Composition and Roles.**

10.6.2.1 Conventional OE Investigations or Removal Actions.

10.6.2.1.1 Each UXO team shall consist of one UXO Technician III and six or less team members. Teams shall have a minimum of two UXO qualified personnel, one of which shall be the UXO Technician III. When the UXO operations are limited to surface removals using UXO Sweep Personnel identified in paragraph 10.5.19, personnel ratios shall NOT exceed six (6) UXO Sweep Personnel to one (1) UXO Technician II, or three (3) UXO Technicians II to one (1) UXO Technician III.

10.6.2.1.1.1 The minimum team separation distance for all teams is the greater of 200 feet or the K50 distance of the most probable munition (MPM) for the OE area.

10.6.2.1.2 The UXO Technician III shall supervise all UXO tasks and UXO teams. This individual may supervise other than UXO teams such as brush-clearing teams. When non-UXO teams are under the direct supervision of someone other than a UXO Technician III, the teams shall be accompanied by a UXO Technician II who will provide UXO avoidance support.

10.6.2.1.3 The Senior UXO Supervisor shall supervise no more than ten UXO Technicians III. There shall be no more than one Senior UXO supervisor on an OE project without prior approval of the Contracting Officer.

10.6.2.1.4 A full time UXOSO shall be on site for each OE project This position may be dual-hatted with the UXOQCS when there are less than 15 personnel on site. The UXOSO shall not be involved in any OE removal or investigation tasks. The UXOSO shall be directly hired by and work for the prime contractor and shall report directly to the project manager or someone higher in the contractor's organization.

10.6.2.1.5 A UXO Quality Control Specialist may not be required full time on site. However, QC functions shall be performed for all field activities. The UXOQCS shall ensure high quality in the field without compromising safety. The UXOQCS shall not perform any removal or investigative tasks. The UXOQCS shall be directly hired by and work for the prime contractor and must report directly to the project manager or someone higher in the contractor's organization. When this position is dual hatted as the UXOSO the individual filling this position shall remain on site during the project.

10.6.2.1.6 The UXO Technician I shall be limited to the functions listed in paragraph 10.4.4 The UXO Technician I shall not determine if UXO are safe to move.

10.6.2.1.7 UXO Sweep Personnel shall not excavate anomalies nor handle UXO. They may only perform the functions listed in paragraph 10.5.19.

10.6.2.2 Chemical Warfare Materiel (CWM) Investigations and Removal Actions.

10.6.2.2.1 A full time UXOSO shall be present during all field operations on a CWM project site due to the complex hazards posed by CWM.

10.6.2.2.2 A full time UXOQCS shall be used for all CWM field operations. This requirement may be relaxed if a written request, citing actual site conditions, is submitted to the Contracting Officer for approval.

APPENDIX H
BASIC SAFETY CONCEPTS AND CONSIDERATIONS FOR ORDNANCE AND EXPLOSIVES (OE) OPERATIONS

CEHNC-OE-CX (200-1c)

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Basic Safety Concepts and Considerations for Ordnance and Explosives (OE) Operations, OE Center of Expertise (CX) Interim Guidance Document 00-03

1. PURPOSE: To specify how OE operations will be performed on project sites.

2. APPLICABILITY: This guidance is applicable to all U.S. Army Corps of Engineers Commands having responsibility for performing OE response activities.

3. REFERENCES: Refer to Appendix A of the enclosure.

4. REQUIREMENTS AND PROCEDURES: Refer to the enclosed document, Basic Safety Concepts and Considerations for Ordnance and Explosives Operations. This document should be used by USACE personnel at OE sites and should be incorporated into contract work statements for OE activities. This document supersedes Interim Guidance Document 00-02, Basic Safety Concepts and Considerations for Ordnance and Explosives (OE) Operations, dated 7 March 2000. We are issuing a revised document to make both minor and significant changes to the 7 March 2000 version. Significant changes include:

a. Paragraphs 1-7.f.(4) and 6-1.b: Clarification is provided for the use of earth-moving machinery to remove overburden from suspected OE.

b. Paragraph 1-8.b: Clarification is provided concerning the supervision of activities performed by non-UXO personnel.

c. Paragraph 2-1.c: Additional detail is provided for procedures to be followed when suspect chemical warfare materiel (CWM) is encountered at a conventional OE site.

d. Paragraph 6-1.a: The term "UXO personnel" is replaced by "UXO qualified personnel" in reference to hand excavation of suspect OE.

e. Paragraph 7-1: The sentence previously reading "Open burning of explosives, propellants, incendiary materials, and pyrotechnics is unauthorized" is deleted.

5. EFFECTIVE DATES: The requirements and procedures set forth in this interim guidance are effective immediately. They will remain in effect indefinitely, unless superseded by other policy or regulation.

6. POINTS OF CONTACT: If you need additional information, please contact Mr. Gregory Bayuga at 256-895-1596.

FOR THE COMMANDER:

Encl

C. DAVID DOUTHAT, P.E.
Director, Ordnance and
Explosives Team

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CEHNC-OE-CX (200-1c)
SUBJECT: Basic Safety Concepts and Considerations for Ordnance and Explosives (OE) Operations, OE Center of Expertise (CX) Interim Guidance Document 00-03

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BASIC SAFETY CONCEPTS AND CONSIDERATIONS FOR ORDNANCE AND EXPLOSIVES OPERATIONS

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

22 May 2000

TABLE OF CONTENTS

BASIC SAFETY CONCEPTS AND CONSIDERATIONS FOR ORDNANCE AND EXPLOSIVES (OE) OPERATIONS

CHAPTER 1
INTRODUCTION

1-1. Purpose. This pamphlet establishes the safe operating procedures for dealing with ordnance and explosives (OE) and unexploded ordnance (UXO) items on formerly used defense sites (FUDS), base realignment and closure (BRAC) and installation restoration (IR) projects. Because there are no absolute safe procedures for dealing with OE, merely procedures considered being least dangerous, it is essential that a planned and systematic approach be established.

1-2. Applicability. This pamphlet applies to all Headquarters, United States Army Corps of Engineers (HQUSACE) elements, United States Army Corps of Engineers (USACE) commands, and their contractors having the responsibility for performing OE response activities. For the purpose of this document, all references to OE include UXO.

1-3. References. Required and related publications are listed in appendix A.

1-4. Distribution. Approved for public release; distribution is unlimited.

1-5. Policy. It is the policy of the USACE to produce products and services that fully meet the customers' expectations of quality, timeliness and cost effectiveness. All OE response procedures must be formulated to ensure harmony with the USACE Strategic Vision and should be in concert with activities presented in other USACE guidance. There should be no compromise of health and safety requirements to meet production or quality goals. Safety is the leading edge of quality.

1-6. Responsibilities. It is the responsibility of all USACE and contractor personnel involved with OE response projects to safely execute them in accordance with (IAW) the approved Site Safety and Health Plan (SSHP), Work Plan (WP), and all applicable laws, regulations, and policies.

1-7. Terms and Definitions.

a. Ordnance and Explosives. Ammunition, ammunition components, chemical or biological warfare materiel, or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried or fired. Such ammunition components and explosives are no longer under accountable record control of any DOD organization or activity.

b. Explosive Soil. Explosive soil refers to a mixture of explosives in soil, sand, clay or other solid media at concentrations such that the mixture itself is explosive.

c. Unexploded Ordnance (UXO). Military Munitions that have been primed, fuzed, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to the operations, installations, personnel, or material, and remain unexploded either by malfunction, design, or any other cause.

d. UXO Qualified Personnel. The term UXO Qualified Personnel applies only to personnel meeting the requirements for the positions of UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, and the Senior UXO Supervisor. For qualification requirements, refer to EP 1110-1-18, Ordnance and Explosives Response.

e. OE Procedures. These procedures include, but are not limited to, the following actions performed by a UXO qualified individual.

(1) Gaining access to (manual excavation) and identifying subsurface anomalies and assessing the condition of buried OE.

(2) Identifying and assessing the condition of surface OE.

(3) Recovery and final disposal of all OE.

f. OE Related procedures: These OE related procedures include, but are not limited to, the following and can be performed by a non-UXO qualified individual:

(1) Location and marking of subsurface anomalies.

(2) Location and marking of suspected surface OE.

(3) Transportation and storage of recovered OE.

(4) Utilizing earth-moving machinery (EMM) to excavate overburden from suspected OE.

1-8. General Safety Concerns and Procedures.

a. OE operations will not be conducted until a complete plan for the site is prepared and approved. These plans will be based upon limiting exposure to the minimum number of personnel, for the minimum time, to the least amount of OE consistent with safe and efficient operations.

b. Only UXO qualified personnel will perform OE procedures. Non-UXO personnel may be utilized to perform OE related procedures when supervised by a UXO Technician III. _All personnel engaged in field operations will be thoroughly trained and capable of recognizing the specific hazards of the procedures being performed. To ensure that these procedures are performed to standards, all field personnel will be under the direct supervision of a UXO Technician III.

c. Personnel who will be handling OE items will not wear outer or inner garments having static electricity generating characteristics. Materials made of 100 percent polyester, nylon, silk and wool, are highly static producing. Refer to DA Pam 385-64 for more information regarding non-static producing clothing.

d. Prior to any action being performed on an ordnance item, all fuzing will be positively identified. This identification will consist of fuze type by function, condition (armed or unarmed), and the physical state/condition of the fuze, i.e., burned, broken, parts exposed/sheared, etc.

CHAPTER 2
OE SAFETY PRECAUTIONS

2-1. OE Safety Precautions.

a. Every effort will be made to identify a suspect OE item. Under no circumstances will any OE be moved in an attempt to make a positive identification. The OE item will be visually examined for markings and other external features such as shape, size, and external fittings. If an unknown OE item is encountered, the on-site USACE representative will be notified immediately. If there is no USACE personnel on-site, the District or Design Center's OE Safety representative will be notified as soon as possible. If external research is required, it will be initiated by the U.S. Army Engineering and Support Center, Huntsville. The following are additional considerations for the safe handling of OE items:

(1) Projectiles containing Base Detonating (BD) fuzes are to be considered armed if the round is fired.

(2) Arming wires and pop-out pins on unarmed fuzes should be secured prior to any movement.

(3) Do not depress plungers, turn vanes, rotate spindles, levers, setting rings or other external fittings on OE items. Such actions may arm or activate the OE.

(4) Do not attempt to remove any fuze(s) from the OE. Do not dismantle or strip components from any OE items.

(5) UXO Personnel are not authorized to inert any OE items found on-site.

(6) OE /UXO items will not be taken from the site as souvenirs/training aids.

(7) Civil War ordnance will be treated as any other OE.

b. Prior to entering areas/ranges contaminated with Improved Conventional Munitions (ICM) an approved DA -waiver must be obtained. The District and/or Design Center's OE Safety representative must be notified.

c. Any time -suspect chemical warfare materiel (CWM) is encountered during conventional OE site activities, all work will immediately cease. Project personnel will withdraw along cleared paths upwind from the discovery. A team consisting of a minimum of two personnel will secure the area to prevent unauthorized access. Personnel should position themselves as far upwind as possible while still maintaining security of the area.

(1) On Formerly Used Defense Sites (FUDS), the UXO team will notify the local Point of Contact (POC) designated in the Work Plan. The local POC will facilitate Explosives Ordnance Disposal (EOD) response and two personnel will secure the site until EOD's arrival. If the local POC designated in the Work Plan is not the local law enforcement agency, the local POC will inform the local law enforcement agency of the discovery. The EOD unit will notify the Technical Escort Unit (TEU) and secure the area until TEU's arrival. After notifying the local law enforcement agencies, the local POC will notify the USAESCH Safety Office to inform them of the actions taken.

(2) On active installations, the UXO team will normally notify the Range Control Officer, Facility Engineer, Post Headquarters, or POC designated in the Work Plan.

d. Avoid inhalation and skin contact with smoke, fumes, and vapors of explosives and other related hazardous materials.

e. Consider OE items, which may have been exposed to fire and detonation, as extremely hazardous. Chemical and physical changes may have occurred to the contents, which might render it more sensitive than its original state.

f. Do not rely on the color coding of OE for positive identification. Munitions having incomplete or improper color codes have been encountered.

g. Avoid approaching the forward area of an OE item until it can be determined whether or not the item contains a shaped charge. The explosive jet, which is formed during detonation, can be lethal at great distances. Assume that all shaped charge munitions contain a piezoelectric (PZ) fuzing system until identified. PZ fuzing is extremely sensitive. They can function at the slightest physical change and can remain hazardous for an indefinite period of time.

h. Approach an unfired rocket motor from the side at a 45-degree angle. Accidental ignition can cause a missile hazard and hot exhaust.

i. Do not expose unfired rocket motors to any Electromagnetic Radiation (EMR) sources.

j. Consider an emplaced landmine armed until proven otherwise. It may be intentionally booby-trapped to deceive.

(1) Many training mines contain spotting charges capable of inflicting serious injury.

(2) Exercise extreme care with wooden mines that have been buried for long periods of time. Certain soil conditions can cause the wood to deteriorate and any inadvertent movement or pressure may initiate the fuze.

k. Assume that practice OE contains a live charge until it can be determined otherwise. Expended pyrotechnic and practice devices can contain red or white phosphorus residue. Due to incomplete combustion, the phosphorous residue may re-ignite spontaneously if the crust is broken and exposed to air.

l. Do not approach a smoking white phosphorous (WP) munition. Burning WP may detonate the explosive burster charge at anytime.

m. Foreign ordnance was returned to the United States for exploitation and subsequent disposal. Every effort will be made to research the applicable documentation and publications prior to commencement of a project.

n. Anomaly Avoidance Operations. Anomaly Avoidance procedures are detailed in

- ETL 385-1-2, (Draft) Generic Scope of Work for Ordnance Avoidance Operations, August 1996, and
- Ordnance and Explosives (OE) Center of Expertise (CX) Interim Guidance Document 99-01, Unexploded Ordnance (UXO) Support for Other Activities, 5 February 1999.

These documents can be located on the OE Home Page at:

http://www.hnd.usace.army.mil/oew/policy/regpro.html.

CHAPTER 3
OE STORAGE

3-1. OE Storage. During OE projects, explosive storage falls into two categories, on-DOD installations and off-DOD installations.

a. On-DOD installations the provisions of DOD 6055.9 STD will be followed. Generally, the installation should have an explosive storage area that meets DOD standards. The permitting and compliance requirements are the responsibility of the installation. The compatibility of explosives found in Chapter 3, DOD 6055.9 STD will be followed. OE items awaiting final disposition will not be stored with other explosives. Storage of commercial explosives requires DOD hazard class storage compatibility group.

b. In the event the installation does not have an existing storage facility, the provisions of paragraph c, in this section, will apply.

c. Off-DOD installations, the contractor will be responsible for the construction of a temporary explosive storage area. This temporary storage area will meet all local, state, and 27 CFR, Bureau of Alcohol Tobacco and Firearms (BATF) requirements and as much of DOD 6055.9 STD as is practical to implement. The establishment of a temporary explosive storage area must meet the following requirements.

(1) The area will, if possible, meet the inhabited building and public traffic route distances specified in DOD 6055.9 STD. If the distances are less than required by the DOD guidance, a proposed barricading plan to protect the public from accidental detonation must be submitted and approved by the Huntsville Center's Engineering Directorate.

(2) Magazines must meet the requirements of the BATF regulations, and each magazine must have a Net Explosive Weight (NEW) established for the explosives to be stored.

(3) Each magazine must be grounded as specified in NFPA 780 and must meet the intermagazine distances as defined in the DOD guidance.

(4) A physical security survey will be conducted to determine if fencing or guards are required. This survey will be coordinated through local law enforcement agencies. Generally, a fence around the magazine is not needed IAW BATF regulations. However, it is the responsibility of the contractor for determining the degree of protection to prevent the theft of explosives and OE items.

(5) A fire plan for either on or off-installation explosive storage areas will be prepared and coordinated with the local fire department. All magazines will have placards IAW 27 CFR/ATF P 5400.7 or DOD 6055.9 STD.

CHAPTER 4
OE TRANSPORTATION

4-1. OE Transportation. In the event that OE items must be transported off-site, the provisions of 49 CFR, DA Pam 385-64 state and local laws will be followed. These additional considerations are provided for the safe transportation of OE items:

a. USACE contractors are prohibited from transporting OE off-site for destruction until the provisions of paragraph 1-9, TB 700-2 are followed.

b. Do not transport WP munitions unless they are immersed in water, mud or wet sand.

c. If loose pyrotechnic, tracer, flare or similar mixtures are to be transported, they will be placed in #10 mineral oil or equivalent to minimize the fire and explosion hazards.

d. Incendiary loaded munitions should be placed on a bed of sand and covered with sand to help control the burn if a fire should start.

e. If an unfired rocket motor must be transported, it will be positioned in the vehicle parallel to the rear axle. This will afford maximum protection for the personnel operating the vehicle.

f. If a base-ejection projectile must be transported to a disposal area, the base will be oriented in the vehicle so that it is parallel to the rear axle. This will afford maximum protection for the personnel operating the vehicle.

g. OE with exposed hazardous fillers such as High Explosive (HE), will be placed in appropriate containers with packing material to prevent migration of the hazardous fillers. Padding should be added to protect the exposed filler from heat, shock and friction.

CHAPTER 5
EXCLUSION ZONE OPERATIONS

5-1. Exclusion Zone Operations. On OE project sites, it is the responsibility of the contractor's UXO Safety Officer (UXOSO) to establish the exclusion zone for each UXO team. This exclusion zone should not be confused with the safe separation distance, which is maintained between teams.

a. The purpose of the exclusion zone is for the protection of non-essential project personnel and the public from blast overpressure and fragmentation hazards. There are two criteria for calculating exclusion zones;

(1) Intentional Detonations. When destroying ordnance, both the hazards from fragmentation and overpressure must be considered. The minimum separation distances in DOD 6055.9 STD will be used unless otherwise stated. The maximum fragmentation and overpressure distances may also be calculated IAW HNC-ED-CS-S-98-1, Methods for Predicting Primary Fragmentation Characteristics of Cased Munitions.

(2) Unintentional Detonations. If the identification of OE on an OE site is unknown, the minimum separation distance specified in DOD 6055.9 STD, Chapter 5, Paragraph C5.5.4, will be used to establish the exclusion zones. When the identification of OE items are known, the exclusion zones will be determined by the U.S. Army Engineering and Support Center, Huntsville, (USAESCH) Engineering Directorate using HNC-ED-CS-S-98-1.

b. When multiple teams are working on site, a safe separation distance will be established. The minimum distance maintained between teams will never be less than 200 feet or the K50 overpressure distance. The one that is greater will be used.

c. While OE operations are being conducted, only personnel essential for the operation will be allowed in the exclusion zone. When non-essential personnel enter the exclusion zone, all OE operations will cease. In addition to this work stoppage, the following actions will be accomplished:

(1) The individual(s) must receive a safety briefing and sign the visitor's log prior to entering the zone.

(2) The individual(s) will be escorted by a UXO qualified individual.

(3) All OE operations will cease within the radius of the exclusion zone for the areas to be visited.

d. All personnel working within the exclusion zone will comply with the following:

(1) There will be no smoking within the exclusion zone, except in areas designated by the UXOSO.

(2) There will be no open fires for heating or cooking (gas stoves, grills, etc.) within the exclusion zone, except where authorized by the UXOSO.

(3) During magnetometer operations, workers will have no metal parts in or on their shoes that would cause the magnetometer to present false indications.

CHAPTER 6
OE EXCAVATION OPERATIONS

6-1. OE Excavation Operations.

a. Hand excavation is the most reliable method for uncovering OE provided the item is near the surface. Hand excavation exposes personnel to the hazard of detonation for longer periods of time than any other method. Taking this into consideration, only UXO qualified personnel will be used to accomplish this task.

b. Earth-Moving Machinery (EMM) may be used to excavate overburden from suspected OE. EMM will not be used to excavate within 12 inches of a suspected OE. Once the EMM is within 12 inches of the OE, the excavation will be completed by hand excavation methods. Personnel who are not UXO qualified may operate EMM only when supervised by a UXO Technician III.

(1) If more than one EMM is to be used on site, the same minimum separation distances required for multiple work teams applies.

(2) EMM operations will be conducted within the guidelines of EM 385-1-1 and 29 CFR 1926 Subpart P.

c. Excavation operations, whether by hand or EMM, will employ a step down or offset access method. Under no circumstances will any excavation be made directly over the suspected OE.

CHAPTER 7
OE DISPOSAL OPERATIONS

7-1. OE Disposal Operations. All demolition operations will be conducted IAW TM 60A 1-1-31 and the USAESCH Procedures for Demolition of Multiple Rounds on OE Sites. No other publications are to be used for these operations.

a. As a general rule, all demolition operations will be accomplished by electrical means to assure maximum safety. There are exceptions to this requirement in situations where static electricity or Electromagnetic Radiation (EMR) hazards are present. Unintentional detonations can occur because of these induced currents (or lightning). The following precautions from TM 9-1375-213-12 are to be followed.

(1) Premature detonation of electric blasting caps by induced current from radio frequency (RF) signals is possible. Refer to TM 9-1375-213-12 that shows the minimum safe distance in respect to transmitter power and indicates distance beyond which it is safe to conduct electric blasting even under the most adverse conditions.

(2) Lightning is a hazard to both electric and non-electric blasting caps. A strike or a nearby miss is almost certain to initiate either type of cap or other sensitive explosive elements such as caps in delay detonators. Lightning strikes, even at distant locations, may cause extremely high local earth currents that may initiate electrical firing circuits. Effects of remote lightning strikes are multiplied by proximity to conducting elements, such as those found in buildings, fences, railroads, bridges, streams, and underground cables or conduits. The only safe procedure is to suspend all blasting activities during electrical storms and when one is impending.

(3) Electric power lines also pose a hazard for electric initiating systems. It is recommended that any demolition operation closer than 155 meters to electric power lines be done with a non-electric system such as NON-EL. This non-electric firing system provides the same amount of safety and control as electrical firing systems, but without the interference of EMR and static electricity hazards.

(4) Provisions of paragraph 1-9, TB 700-2 will be fully complied with prior to USACE contractors transporting OE off-site for destruction.

a. Only serviceable condition explosive material will be used for disposal operations.

b. The only acceptable disposal method is the one stated in the appropriate TM60 Series manual for specific ordnance types. Any commercial explosives being used will be equivalent to the military explosive required for the disposal operation.

NOTE

[illegible]

c. If a situation dictates, protective measures to reduce shock, blast overpressure, and fragmentation will be taken. The USAESCH Engineering Directorate will assist in any design work and will review and approve all proposed protective works. As a minimum requirement all demolition shots will be tamped with clean earth or sand. IAW DOD 6055.9 STD the following separation distances will be observed unless otherwise directed by the Engineering Directorate.

(1) Minimum separation distance for non-fragmenting explosive materials will be no less than 1250 feet.

(2) Minimum separation distance for fragmenting explosive ordnance will be no less than 2500 feet. For bombs and projectiles with a diameter of 5 inches or greater, use a minimum distance of 4000 feet.

(3) Ordnance items with lifting lugs, strong backs, base plates, etc., will be oriented away from personnel, as fragments from these items tends to travel farther than normal.

d. Once demolition operations are completed, a thorough search of the demolition area will be conducted with a magnetometer to ensure a complete disposal was accomplished.

g. Inert ordnance will not be disposed of for scrap until the internal fillers/voids have been exposed and unconfined. Heat generated during the reclamation process can cause the inert fillers, moisture or air to expand and burst the sealed casings. In this situation, Oil Well Perforators can be used for venting these ordnance items which require demilitarization.

Appendix A

27 CFR 55	Alcohol, Tobacco Products and Firearms
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
49 CFR 100-199	Hazardous Materials Transportation
DOD 6055.9 STD	DOD Ammunition and Explosives Safety Standards, August 1997
AR 190- 11	Physical Security
DA PAM 385-64	Ammunition and Explosives Safety Standards
TM 9-1375-213-12	Operators and Organizational Maintenance Manual; Demolition Materials
TM 60A 1-1-22	EOD Procedures /General EOD Safety Procedures, April 1991
TM 60A 1-1-31	EOD Procedures/General Information on EOD Disposal Procedures, May 1994
EM 385-1-1	USACE Safety and Health Requirements Manual, September 1996
USAESCH	Procedures for Demolition of Multiple Rounds (consolidated shots) on Ordnance and Explosive Sites, August 1998
ER 1110-1-8153	Ordnance and Explosives Response, 19 May 1999
EP 1110-1-18	Ordnance and Explosives Response, 24 April 2000
ATF P 5400.7	ATF Explosives Laws and Regulations, June 1990
HNC-ED-CS-S 98-1	Methods for Predicting Primary Fragmentation Characteristics of Cased Explosives, January 1998
HNC-ED-CS-S 98-2	Methods for Calculating Range to No More Than One Hazardous Fragment Per 600 Square Feet on OE Sites, January 1998
HNC-ED-CS-S 96-8	Guide Selection and Siting of Barricades for Selected OE, September 1997

APPENDIX I
PROPERTY OWNERSHIP SPREADSHEETS

NOT USED FOR THIS PROJECT: ***ALL PROPERTY WITH THE INVESTIGATION AREA IS OWNED BY THE NY STATE PARKS DEPARTMENT WITH THE EXCEPTION OF 0.03 ARCES OWNED BY THE MONTAUK HISTORICAL SOCIETY. NO OTHER PROPERTY OWNERS.***

APPENDIX J
GEOPHYSICAL MEANDERING PATH START AND END POINTS, AND GEOPHYSICAL GRID COORDINATES

GEOPHYSICAL MEANDERING PATH (TRANSECTS) START AND END POINTS, AND GEOPHYSICAL GRID COORDINATES

Point ID	Transect ID	X Coord	Y Coord
1-a	1	1570879.57	331439.55
1-b	1	1571513.79	332212.85
2-a	2	1572068.27	332192.45
2-b	2	1572465.13	333110.41
3-a	3	1572456.74	333471.00
3-b	3	1573270.84	334051.45
4-a	4	1574204.60	335178.12
4-b	4	1574425.28	336153.57
5-a	5	1574398.30	335328.45
5-b	5	1574568.43	335798.46
6-a	6	1574386.77	335328.45
6-b	6	1574556.89	335798.46
7-a	7	1574378.12	335351.51
7-b	7	1574548.24	335821.52
8-a	8	1574444.44	336207.91
8-b	8	1574735.67	336614.48
9-a	9	1574464.62	336190.61
9-b	9	1574755.86	336597.18
10-a	10	1573415.03	333875.17
10-b	10	1573002.69	333592.59
11-a	11	1573406.38	333898.24
11-b	11	1572994.04	333615.65
12-a	12	1573394.85	333927.07
12-b	12	1572982.51	333644.49
13-a	13	1572281.82	332254.65
13-b	13	1572532.68	332687.17
14-a	14	1572299.12	332251.76
14-b	14	1572549.98	332684.29
15-a	15	1570859.14	331439.55
15-b	15	1571493.36	332212.85
16-a	16	1570889.78	331429.33
16-b	16	1571524.00	332202.64
17-a	17	1572052.95	332200.11
17-b	17	1572449.81	333118.07
18-a	18	1572086.15	332187.35
18-b	18	1572483.00	333105.30
19-a	19	1572096.36	332169.47
19-b	19	1572493.21	333087.43
20-a	20	1572487.38	333542.50
20-b	20	1573301.48	334122.94
21-a	21	1572525.68	333606.33
21-b	21	1573339.78	334186.77
22-a	22	1572420.99	333414.83
22-b	22	1573235.10	333995.27
23-a	23	1572385.24	333351.00
23-b	23	1573199.35	333931.44
24-a	24	1574286.31	335264.94
24-b	24	1574506.99	336240.38