APPENDIX C

FORT MCCLELLAN, ALABAMA
PROPOSED SCOPE OF WORK FOR EE/CA SAMPLING
CHARLIE AREA EE/CA

APPROACH

Foster Wheeler Environmental Corporation (FWENC) will perform three EE/CAs at Fort McClellan, Alabama to address ordnance contamination at the site. During performance of the sampling phase of the EE/CA process, FWENC will conduct sector sampling in the following manner. Prior to geophysical data collection, FWENC will survey the corners of sample grid locations and select transect pathways in each of the sectors. Minimum underbrush will then be cleared from sampling grids and pathways as necessary. FWENC's field crews will collect geophysical data. This data will be correlated with navigational data so that anomalies can be examined using digital geophysical mapping and data analysis procedures and the selected targets can be reacquired. Selected anomalies will be excavated to determine the type of UXO, OE, scrap, or other object that generated the geophysical anomaly, and to validate the geophysical data collection and analysis performance. Sufficient acreage will be sampled to arrive at logical and statistically defensible determinations of OE or UXO density in each homogeneous sampling sector.

During performance of the analysis phase of the EE/CA process, FWENC will define and evaluate various feasible options for further action, based upon the risk posed by UXO present and anticipated future land use of a given area. All feasible alternatives for UXO removal actions will be evaluated. The data and analysis, descriptions of alternatives, cost and risk analysis of each alternative, and rationale for selection of the proposed remedial options will be contained in the EE/CA.

PROPOSED SCOPE OF WORK- CHARLIE AREA EE/CA

Background

The area included in the Charlie EE/CA comprises unnamed parcels in the Choccolocco Mountains east of the Redevelopment Area, and portions of the Choccolocco Corridor east of the mountains. These areas are slated for future use by the Fish and Wildlife Service. FWENC expects the steep terrain and remote nature of much of this area, as well as significant suspected OE contamination in some areas, to result in a relatively time-consuming characterization and clearance operations for these parcels. These parcels and the sampling sectors associated with them will be investigated in the Charlie Area EE/CA.

There are 13 sampling sectors within the Charlie Area totaling approximately 8,526 acres of area to be investigated for ordnance. These sectors are shown in Table C1.

Table C1
Sampling Sectors - Charlie Area EE/CA

Parcel	Sector	Level of Contamination	Total Area (acres)	Investigation Area (acres)	Sample Area (acres)	Vegetation (acres)				Terrain (acres)		
						Open	Light Woods	Moderate Woods	Heavy Woods	Flat	Hills	Mountains
+	1L	Low	1,746	1,746	35	0.5	1	7	26.5	-	1.5	33.5
	2L	Low	3,219	3,219	64.5	-	13	15.5	36	-	3.5	61
	1M	Medium	1,114	1,114	22.5	1	5	7	9.5	-	4	18.5
	2M	Medium	280	280	6	-	0.5	2	3.5	0.5	0.5	5
	1H	High	75	75	2.5	-	-	0.5	2	-	1	1.5
	2H	High	238	238	5	-	0.5	1	3.5	-	0.5	4.5
	3H	High	254	254	5.5	-	1.5	2	2	-	0.5	5
	3M	Medium	10	10	2.5	1	1.5	-	-	-	-	2.5
CC	1L	Low	1,466	1,466	29.5	-	-	9	20.5	-	5.5	24
	2L	Low	20	20	2.5	1.5	-	1	-	2.5	-	-
	3L	Low	18	18	2.5	-	1	-	1.5	1	-	1.5
	4L	Low	74	74	2.5	0.5	-	-	2	2.5	-	-
	5L	Low	12	12	2.5	-	-	1	1.5	2	0.5	-
TOTALS:			8,526	8,526	183	4.5	24	46	108.5	8.5	17.5	157

Task 1 – Work Plan

FWENC shall prepare and submit a Work Plan for this project in accordance with DID OT-FMC-005-01. The Work Plan shall propose site locations and the anticipated work that shall be conducted. The Work Plan shall include all necessary sub-plans in accordance with DID OT-FMC-005-01 and each required sub-plan's corresponding DID. The work conducted under this Work Plan shall also be performed in accordance with the technical requirements as outlined in each DID. Specific requirements determined by FWENC as not applicable will be clearly identified by FWENC in the Work Plan.

Task 2 – Geophysical and Intrusive Sampling

The purpose of the geophysical and intrusive sampling shall be to delineate the magnitude and extent of OE contamination for the area identified in the 'Background' section above, and in Table C1. This characterization shall produce sufficient information for FWENC to identify target anomalies, prepare risk assessments, evaluate alternatives for remediation, prepare cost analyses for each alternative, and recommend remediation alternatives.

Within the Charlie Area, FWENC will perform geophysical sampling over areas totaling up to 183 acres throughout the 8,526-acre investigation area contained within the 13 sampling sectors delineated. The sampling acreage required for each sector is shown in Table C1. These are the minimum acreage necessary in each sector that must be investigated without finding any energetic ordnance items in order to demonstrate with a 90% confidence level that a UXO density of 1.0 UXO/acre is not exceeded. This UXO target density was selected for the Choccolocco Mountains and Corridor in anticipation of future use by the Fish and Wildlife Service (FWS) as a wildlife management area.

Within the 183 acres to be sampled, FWENC estimates that approximately 4 percent of the terrain is flat, 10 percent is hilly, and 86 percent is mountainous. CEHNC anticipates that these percentages will apply to the grids and transects to be sampled. In areas where terrain is flat or moderately sloping, FWENC geophysical teams will collect data using an EM-61 in one-acre oversize grids. Grid locations will be randomly selected for 80% of the grids in a given sector, and 20% of the grids will be located at the discretion of FWENC based on information gathered to date. Random grid placement within sectors will be accomplished by dividing the entire sector into equal sized squares, numbering each square, and utilizing a random number generator to pick which of the squares will contain sampling grids. Discretionary grids will be positioned by FWENC to assure uniform grid coverage of a given sector, to confirm the location of sector boundaries of different OE density, or to address areas of special concern related to past activities or specific proposed future use.

Field teams will collect navigation data within grids using USRADS 2200. Following geophysical data collection and identification of anomalies, FWENC will excavate selected anomalies during the intrusive phase of the sampling to determine what type of UXO or OE items, if any, are present. Selected anomalies will be excavated to determine the type of UXO, OE, scrap, or other objects that generated the geophysical anomaly, and to validate the geophysical data collection and analysis performance. In order to maximize the probability of finding UXO items during the intrusive phase, the anomalies selected first for excavation will be

those which give a geophysical response larger than the smallest target munition believed to be present in that area. In addition, some smaller anomalies will be excavated in order to calibrate the geophysical responses to the range of items present. Intrusive activities will be performed at approximately 10 percent of the grids investigated, with the remaining 90 percent of the grids characterized by geophysical response.

Much of the terrain in Charlie Area is very steep and not suitable for data collection using grids. Data in very steep areas will be collected using a hand-held metal detector or magnetometer carried along a series of transects through each sector. This method allows data to be collected along a series of approximately 3-foot swaths over steep or difficult terrain until the necessary sampling acreage is achieved. FWENC will collect navigation data along transects using Differential Global Positioning Systems (DGPS) with special techniques for determining transect paths. For areas where transects are utilized, the intrusive phase of the sampling will be conducted as follows. In areas of low anomaly density (less than 1 anomaly per 100 feet of transect), all anomalies will be investigated. In areas of anomaly density greater than 1 anomaly per 100 feet, selected anomalies, as determined by analysis of the geophysical data, will be investigated.

In areas suspected of containing a high UXO density, FWENC may be able to sample less acreage while still demonstrating a UXO target density greater than 5/acre. It is assumed that in areas with more than 5 UXO/acre, further action will be necessary during the remediation phase. In such high-density areas, FWENC may terminate sampling of grids once a 5 UXO/acre density is verified, but a minimum of 10 grids, or equivalent coverage using transects, will be sampled in each sector regardless of density in order to provide sufficient sample to verify statistical significance of the sample data.

In areas of suspected medium UXO density (more than 0.1 UXO per acre and less than 5 UXO per acre), sufficient acreage will be sampled to quantify the UXO density present. Depending upon the findings, FWENC will consider redesignating those areas, or portions of areas, as high or low UXO density, as necessary.

Task 3 – Data Management

FWENC will manage all data in accordance with DID OT-FMC-005-14. This shall include incorporation of all reports, drawings, or data generated during performance of this SOW onto the Fort McClellan database.

Task 4 – Prepare EE/CA Report

FWENC shall prepare and submit an EE/CA Report in accordance with DID EE/CA-FMC-090. The report shall include FWENC's conclusions as to the nature and extent of OE contamination, risk assessments for each area of concern, and provide recommendations for future work at Fort McClellan within those areas. The area of concern should be sufficiently characterized in the EE/CA. 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.

Evaluate Land-Use Controls – As part of Task 4, the EE/CA Report shall fully evaluate physical removal and land-use controls as possible action alternatives. Basic data for the analysis of land-use controls will be collected on forms provided to FWENC by the Government. The survey data will be collected by a professional Urban Planner or equivalent. Personal or telephone contact insures obtaining quality information. The survey forms will not be mailed. All gathered data shall be safeguarded and protected from unofficial use.

Task 5 – Prepare Action Memorandum

The EE/CA will be provided to the public for their review and comments. FWENC shall evaluate any public comments provided by the Contracting Officer and shall incorporate them where directed by the Contracting Officer. Afterwards, FWENC shall prepare an Action Memorandum describing the selected alternative.

Task 6 – Meetings/ Public Affairs

FWENC shall attend and participate in four meetings with DoD, regulatory, and civilian agencies as directed by the Contracting Officer. The meetings shall last one day each and be held at Fort McClellan, Alabama. FWENC shall assist USAESCH Public Affairs Office (PAO) and the Corps of Engineers, Mobile PAO in developing and executing a Public Affairs program to include public meetings and Restoration Advisory Board (RAB) meetings.

7.0 OE PLANNING AND OPERATIONS

7.0.1 Definitions

A complete list of definitions applicable to UXO/OE investigations is presented in the General Site Wide Work Plan.

7.0.2 Field Equipment

Foster Wheeler Environmental UXO personnel will conduct a visual surface sweep of all support zones, staging areas, and access roads as required to support site mobilization, land and geophysical surveys. A Schonstedt GA-52CX magnetometer will be used as an aid in locating and avoiding hazardous surface items. During intrusive activities, the UXO team will also use the Schonstedt GA-52CX magnetometer, Vallon VMX2, EM-61 (Hand-held mode) or White's XLT Spectrum detectors to ensure any excavated sites are clear of additional anomalies for safety purposes. Neither instrument will be used for UXO characterization; however, they may be used as part of standard UXO Health and Safety procedures during surface sweeps or excavation.

7.0.3 Safety Procedures

The specific site safety procedures found in the following documents will be followed throughout this project: Safety Concepts and Basic Considerations for Unexploded Ordnance (see Section 6 and Attachment 6-10 of the General Site-Wide Work Plan, and SSHP (Section 8.0 of this Plan). Known CWM areas are excluded from the EE/CA investigation, however, if the presence of CWM or chemical agents is suspected at any time, all work will stop and personnel will immediately evacuate a minimum of 100 feet in an upwind direction and will notify the CEHNC Safety Representative and Transition Force Operations, (TFO). The CEHNC Representative and TFO will request EOD assistance, if required. Foster Wheeler Environmental UXO personnel will secure the area until relieved by government personnel.

7.1 OPERATIONS IN UXO/OE AREAS

7.1.1 Site Preparation

The UXO team will conduct a visual surface sweep of all support zones, work areas and access roads as required to support the land and geophysical survey. All site activities, including non-intrusive activities such as geophysical surveys, archeological assessments, and environmental resource inventories will require an UXO Specialist escort. Further

non-intrusive activities in areas previously inspected by UXO Specialists will not require an UXO escort.

7.1.1.1 Any suspected or known UXO/OE encountered will be clearly marked and its position annotated on the appropriate map. The SUXOS shall evaluate all encountered UXO and determine if the work planned for the area can safely continue or what actions must occur prior to commencing work in that area. If the ordnance item is considered to be hazardous, work in the area will cease and personnel will be evacuated to a safe distance. UXO personnel will rope off the area with tape or flags and the area will be declared an exclusion zone. Only essential UXO personnel will be allowed into the zone until the hazard has been removed.

7.1.1.2 Items identified as metallic waste will be removed from the area to prevent interference with survey instruments. Items identified as inert OE-related waste will be removed from the area and disposed of in accordance with Section 2.9 of the General Site Wide Work Plan. All UXO items will be disposed of in the area they were located in. Any UXO identified as fuzed and armed or fired are too hazardous to move and will be blown in place (BIP) by FWENC UXO personnel. Foster Wheeler Environmental will notify the CEHNC Representative and TFO and the individuals/agencies listed on Table 7.1 of any unsafe to move items. Approved demolition explosives will be used. Sand bags, trenching, and/or blast mats will be utilized as deemed necessary to contain fragmentation and prevent shock damage.

7.1.1.3 Trees will be pruned on a case-by-case basis and only as required to accomplish the tasks outlined in this Work Plan. If tree pruning is required, the tree will be pruned using gas-powered hand tools (e.g., chain saws). Tree branches will be disposed of on site by running the branches through a chipper.

7.1.1.4 The primary method for brush trimming will be gas-powered hand tools such as chain saws, weed eaters, or hedge trimmers. A visual sweep of the designated area for surface UXO will be made prior to the start of brush trimming operation. An UXO Technician III will oversee brush clearing and will be responsible for sweeping newly cleared areas for UXO/OE potentially uncovered by brush clearing operations. Disposal of vegetation will be conducted onsite. Note- Mechanical brush clearing equipment may be used in some areas after a UXO surface clearance has been completed.

Table 7.1
Explosive Operations Notification List

In the event of any explosive operations, Foster Wheeler Environmental on-site UXO Supervisor will notify the SUXOS and CEHNC Safety Specialist. The SUXOS will notify:	
Transition Force Operations	256-848-5178
Foster Wheeler Project Manager	256-820-7904
CEHNC Project Manager	256-895-1567
Anniston Police Department	256-238-1800
Anniston Fire Department	256-237-3541
Stringfellow Memorial Hospital	256-235-8900
Fort McClellan Forester	256-848-7452

Notes: Foster Wheeler Environmental will be responsible for securing the area to include barricading roads if necessary, and ensuring the area is clear during the conduct of the explosive operations.

7.1.1.5 Location Surveys Support Methodology. During all field activities, the land survey crew shall be accompanied by a UXO Specialist. In all areas suspected of having possible OE contamination, the UXO Specialist will visually inspect the areas where personnel may transit. At all points where wooden stakes or posts are to be driven into the soil or where survey corners are to be located, a magnetometer check of that point will be accomplished prior to their emplacement. If at any time the magnetometer indicates a positive reading, another location free of anomalies shall be selected for placement of the marker. Survey and boundary stake installation are the only intrusive activities (subsurface) authorized during surveying activities.

7.1.2 INTRUSIVE SAMPLING

Intrusive sampling of selected anomalies will be performed to identify and remove UXO from the subsurface to a maximum depth of four (4) feet. This sampling will characterize homogeneous areas of the site and provide statistical data (e.g., density and UXO type) that will be used to perform a risk analysis. The Senior UXO Supervisor will receive a Dig Package from the on-site Data Manager containing information regarding subsurface anomalies selected for investigation for each sampling plot. The Dig Package will include a color-coded geophysical map and a tabulated prioritized dig list of anomalies for investigation including anomaly identification number, anomaly coordinates in relative sample area coordinates and/or Alabama State Planar Coordinates, and depth and size (if applicable) estimates for each anomaly. This information will be provided to each UXO team member prior to intrusive activities.

7.1.2.1 The following procedures describe the specific activities required for intrusive sampling of selected sample areas and anomalies, including daily sample area briefing/verification, exclusion zone establishment, anomaly acquisition, excavation, UXO/OE disposal, sample area demobilization and data collection and recording.

7.1.2.1.1 Daily Sample Area Briefing/Verification

The Senior UXO Supervisor will receive a Dig Package for each sample area and will provide a daily briefing to the intrusive team that includes the following:

- Review emergency procedures;
- Discuss previously located UXO/OE; and
- Describe any known utilities.

7.1.2.1.2 The Senior UXO Supervisor will complete the Daily Health and Safety Equipment, Equipment Utilization Log, and Intrusive Activities Checklists for each sample area. These documents are located in the General Site-Wide Work Plan for Fort McClellan.

7.1.2.2 Exclusion Zone (EZ) Establishment

An exclusion zone will be established around each sample area perimeter using caution tape, cones, barricades, and/or security guard prior to conducting intrusive activities to prevent entry of unauthorized personnel into the work area during these activities. The exclusion zone may vary because of terrain and cultural features around each sample area. The exclusion zone distances will be based on the largest fragmentation distance for the UXO expected in each sector using either the Minimum Separation Distance (MSD) as calculated by CEHNC or the largest fragmentation distance using the default distances from DoD 6055.9 Standard, Table C5.T1, July 2000. Whenever ordnance is found that is not listed in Table 3.1 of this Work Plan, a request for review of the MPM and exclusion zone will be submitted to CHENC, Huntsville. Engineering controls to prevent unauthorized entry into the exclusion zone will include barricades, warning signs, and caution tape. In areas where the exclusion zone extends beyond the boundary of the installation, Foster Wheeler will evaluate the use of additional engineering controls to reduce the potential fragmentation distance, thus minimizing the need to close roads or evacuate people from those areas during intrusive operations.

7.1.2.2.1 Where the exclusion zone intersects roads, building structures, or other public areas, a security guard (along with barricades, warning tape, etc.) will be posted to maintain traffic control, if required. In a situation where this is required, no activity will occur without prior coordination with TFO. A walk-through of the area will also be conducted to determine if any members of the public are near or within the proposed exclusion zone. Should any individuals refuse to leave the exclusion zone area, TFO will be notified. Intrusive work will not be conducted until the area is considered secure.

7.1.2.3 Anomaly Acquisition

Suspected subsurface UXO locations (geophysical anomalies) will be presented as coordinate locations in the intrusive Dig Packages provided to the Senior UXO Supervisor. DGPS (where applicable), USRADS, robotic total station, measuring tapes or appropriate surveying techniques will be used to locate the X, Y coordinates of each anomaly. Each anomaly will be flagged with a numbered pin flag corresponding to the anomaly ID located at that position.

7.1.2.3.1 As necessary, hand-held geophysical instruments will be utilized to aid in the precise location of geophysical anomalies. Since an electromagnetic method will be utilized for the geophysical investigation, a Vallon VMX2 Metal Detector or Geonics EM-61 HH (Hand held mode) unit will be utilized for anomaly re-acquisition. UXO Specialists will be authorized to excavate any anomalies re-acquired within, but not to exceed, a 3.5-foot radius of the flagged location of an anomaly.

7.1.2.3.2 If an anomaly is not found within the 3.5-foot radius of the flagged location or if the anomaly is a non-UXO-like item, it will be reevaluated by the geophysicist. The

Scope of Work allows for a false-positive ratio of 15%, however, the anomaly interpretation will be analyzed by the geophysicist. If the false-positive ratio exceeds 15%, then actions will be taken to determine and eliminate the cause.

7.1.2.4 Intrusive Activities

Anomalies selected in the geophysical survey will be relocated for intrusive investigation. The coordinates of each selected anomaly will be provided to the Senior UXO Supervisor for accurate relocation. The Standard Operating Procedure (SOP) for intrusive sampling activities is included as Attachment 7-1. All excavation activities will comply with the provisions of 29 Code of Federal Regulations (CFR) 1926, Subpart P.

7.1.2.5 Sample Area Demobilization

Following intrusive sampling in each sample area, all signs and barricades will be removed. The excavated area will be backfilled and all disturbed areas will be re-vegetated, if necessary. Backfill material will consist of native soil from the excavation.

7.1.2.6 Data Collection and Recording

The UXO Technician will record all data on the Intrusive Investigation Data Form (included in Attachment 7-1). All anomalies will have their characteristics recorded in the GIS database.

7.1.3 Quality Control

Quality control is performed to ensure that the targeted anomaly is recovered or determined to exist below the limit of the excavation. Because non-targeted anomalies may exist near the dig site, limited lateral excavation is authorized. The Senior UXO Supervisor will determine the area of excavation and search.

7.1.3.1 The SSHO/QC representative will ensure that the following procedures are being followed.

- Perform follow-up QC on dig procedures.
- Ensure proper exclusion zone controls.
- Ensure proper procedures are used while excavating with earth moving equipment.
- Ensure that hand tools are used properly.
- Ensure the proper use of probes to locate anomaly depth.

- Complete data entry on the Intrusive Investigation Data Form.
- Ensure that the Project Archeologist has been consulted when UXO items that may be culturally significant are exposed and that recordation has been completed.
- Escort designated QA representatives to perform QA checks prior to backfill operations, if required.

7.1.3.2 In addition to the process outlined above, the Project Geophysicist will obtain the UXO dig results and compare them to the geophysical depth and size estimates for 100% of the targeted anomalies. The QA/QC Plan is described in Section 11.

7.1.4 Public Affairs

Foster Wheeler Environmental's UXO personnel shall be available in an advisory capacity in dealing with the commentary on technical matters as they relate to UXO work methodology, UXO transportation and disposal issues. Unless requested by the FMC BEC or CEHNC, Foster Wheeler Environmental UXO personnel will not respond to direct queries from the media. All media queries will be directed to the CEHNC Project Manager or the Public Affairs Officer at the Fort McClellan. In addition, any media personnel who arrive on-site unescorted will be directed to contact the FMC BEC.

7.2 OE Accountability and Records Management

The Senior UXO Supervisor will maintain a daily journal of operations that will include the following:

- A listing of all personnel involved with site activities;
- A detailed description of all deliveries and/or shipments to or from the site;
- Summary of major communications with Foster Wheeler Environmental Project Manager, on-site CEHNC representatives, FMC BEC, or task leads;
- The identification of each sampling plot investigated as to location; the time required to mark and excavate each sampling plot; the identification, location, and depth of each UXO/OE and/or UXO/OE-related item located;
- The weight, length of long axis, diameter, and orientation as discovered of each UXO/OE or UXO/OE-related item located. These characteristics are determined using calibrated scales, calipers, rulers, and measuring tapes. Items that are too hazardous to move (i.e., fuzed or armed), will not be weighed;
- Handling, transport, or storage of UXO/OE discovered;
- The total number and weight of non-UXO related items discovered;
- The time required to clear each sampling plot, the vegetation and terrain encountered;
- Daily temperature ranges and climatic conditions;
- Other pertinent data as required by CEHNC; and

- Any problems encountered.

7.2.1 The UXO Team Leader/Senior UXO Supervisor will take photographs of all UXO/OE and UXO/OE-related materials encountered by his team, and these photographs will become enclosures to the logbook. A photograph log will be maintained, and will include (at a minimum) the following information for each photograph: film roll/disk number, photograph number, date and time of photograph, photographer name, and specific subject of photograph.

7.2.2 An exact accounting of all UXO/OE items and UXO/OE-related items encountered will be maintained. This accounting will include the amounts of UXO/OE, the specific location of each UXO/OE found, their identification and condition, depth located, and disposition. For each UXO/OE item located, a thorough description of the item, potential explosive filler, and fuzing will be made prior to detonation or storage. Upon explosive disposal of UXO/OE items, the Senior UXO Supervisor will determine whether each item did or did not contain explosive filler and identify the explosive filler (i.e., HE, black powder). This determination will be clearly and thoroughly documented in the Field Activity Logbook and will provide invaluable information for the subsequent site risk assessment. At a minimum, the following reference manuals and procedures will be used to identify ordnance items recovered during the field investigation:

- Safe Precautions (60A-1-1-22);
- EOD Procedures for the Protection of Personnel and Property (60A-1-1-4);
- EOD Disposal Procedures (60A-1-1-31);
- Ordnance Identification Guide (ORD DATA);
- Ammunition General (TM9-1300-200);
- Military Explosives (TM9-1300-214);
- Artillery Ammunition (TM9-1901);
- EOD Disposal (EODB 1385-1);
- Bombs and Bomb Components (TM9-1330-200);
- Grenades, Hand and Rifle (TM9-1325-200);
- Land Mines (TM9-1345-200);
- Aircraft Bombs (OP-1664); and
- Military Pyrotechnics (OP-2213).

7.2.2 The accounting system will also document demolition materials utilized to detonate UXO/OE on-site and the recovered non-OE related metallic debris in weight per sample area. The accounting will become part of the EE/CA report.

7.2.3 The UXO Field Activity Logbook, to be maintained by the Senior UXO Supervisor, will provide a daily journal of the activities associated with the project site. It shall be opened upon first arrival for field operations and closed after demobilization at

the project site. The UXO Field Activity Logbook is an official record of activities being performed and will contain, as a minimum, the following data:

- Date;
- Daily weather conditions;
- Safety Meetings;
- Start and stop times;
- Personnel assigned and job classification;
- Work stoppages;
- Equipment used and number of hours in use;
- Injuries to personnel;
- Damage to equipment;
- Official communication, written or verbal;
- Quantity and type of UXO/OE and UXO/OE-related items encountered and their precise location (Grid and anomaly identification number), depth, weight, length of long axis, diameter, orientation as discovered, fuzing, potential explosive content, and disposition;
- Transportation activities;
- Demolition materials utilized for on-site disposal and their quantities;
- Weight of non-OE related metallic debris; and
- Signature of the Senior UXO Supervisor indicating that the recorded information and data are true and correct.

7.3 UXO/OE IDENTIFICATION

The UXO team will perform Explosive Ordnance Reconnaissance (EOR) procedures and assessment of all suspect UXO/OE to determine conditions and potential hazards. If UXO/OE is encountered, it will be detonated in place, if possible. The Senior UXO Supervisor will notify the CEHNC Safety Representative, and personnel listed on Table 7.1 prior to conducting disposal operations.

7.3.1 The potential UXO/OE areas to be intrusively investigated under this Delivery Order at Fort McClellan are not suspected of containing CWM. If suspected CWM is encountered during UXO/OE operations, all work will immediately halt and personnel will withdraw from the area by evacuating in an upwind direction. The Senior UXO Supervisor will notify and request guidance from the CEHNC Safety Specialist on-site or at the Huntsville, Alabama office and the TFO. The CEHNC Safety representative and TFO will notify the appropriate authorities (e.g., local EOD Units) to arrange for response from the Technical Escort Unit (TEU). Foster Wheeler Environmental personnel will stand-by for follow-up instructions from CEHNC and secure the area until relieved by Government personnel.

7.3.2 Items that are non-OE related metallic debris recovered from each sampling area will be weighed and reported in pounds per sample area. Metallic debris will be disposed of IAW the Site Wide Work Plan Section 2.9.

7.4 UXO/OE REMOVAL

All aspects of UXO/OE removal operations are provided in the Intrusive Operations Standard Operating Procedures, Attachment 7-1.

7.4.1 Prior to the commencement of the intrusive investigation, Foster Wheeler Environmental will meet with the CEHNC safety Representative, TFO and FMC BEC to identify the specific local transportation requirements (e.g., transporting route, speed limit, convoy cars, and time of the day for transporting) and the traffic control assistance required from local law-enforcement agencies. Foster Wheeler Environmental will comply with the local requirements and will fully cooperate with local authorities.

7.5 OE TRANSPORTATION

Procedures for OE transportation are discussed in Section 3.4 of the General Site Wide Work Plan.

7.6 OE STORAGE

Procedures for OE storage are discussed in Section 3.3 of the General Site Wide Work Plan.

7.7 UXO/OE DISPOSAL

All UXO/OE will be disposed of pursuant to Attachment 2-1 (UXO DEMOLITION PROCEDURES), of the FWENC General Site Wide Work Plan.

- UXO/OE – all UXO will be disposed of in the area/grid where the item was located. UXO items that are considered safe to move may be moved within the area to consolidate shots with approval of the CEHNC Safety Representative.
- Non-OE Metal Debris - If visual inspection determines the item does not contain waste residue, then waste is non-hazardous scrap metal and will be disposed of IAW with the Site Wide Work Plan, Section 2.9.
- OE Metal Debris - If visual inspection determines the item was not in contact with energetic materials, then the waste is non-hazardous scrap metal; and will be collected and stored for recycling IAW with the Site Wide Work Plan, Section 2.9.

- OE Waste - If visual inspection determines the material was in direct contact with energetic materials (explosives/pyrotechnics) it will be vented in the area found and then treated IAW with the Site Wide Work Plan, Section 2.9.

7.7.1 All UXO/OE will be disposed of by Open Detonation pursuant to Attachment 2-1, General Site Wide Work Plan.

7.7.2 The Minimum Separation Distance (MSD) for intentional detonations will be based upon either calculation by CEHNC or the largest fragmentation distance using the default distances from DoD 6055.9 Standard, Table C5.T1, July 2000. MPM's are included as Attachment 3-1.

7.8 OE Disposal Range

A dedicated OE disposal range does not exist for this site. Disposal procedures will be conducted pursuant to the guidelines of Attachment 2-1 of the FWENC General Site Wide Work Plan.

7.9 UXO Personnel and Qualifications

All individuals executing UXO procedures or UXO-related procedures will be qualified UXO personnel and meet or exceed the DID OE 025 Standards. These personnel will be US citizens who have graduated from the US Army Bomb Disposal School, Aberdeen, Maryland, or the US Naval Explosive Ordnance Disposal (EOD) School, Indian Head, Maryland or an approved UXO training facility. UXO personnel resumes and appropriate training certificates will be provided to CEHNC for approval prior to field mobilization.

7.9.1 Personnel Responsibilities

The procedures outlined within this Work Plan shall be followed at all times by the Foster Wheeler Environmental field team. The UXO team will consist of qualified Senior UXO Supervisors and UXO Specialists approved by CEHNC. Qualification certificates are maintained on file at the corporate office and will also be maintained on-site in the office trailer. The roles of the key personnel are described in the following paragraphs. Prior to field mobilization, the UXO Team will be identified for CEHNC approval.

- Project Manager. The Project Manager is responsible for communications with and execution of all instructions received from CEHNC for each task; managing all aspects of the project; coordinating all contract work; and overseeing all task

identification and resolutions. The Project Manager is also responsible for achieving the contractual cost and schedule targets negotiated between CEHNC and Foster Wheeler Environmental. The Project Manager will coordinate the preparation of detailed work order specifications and schedules; identify the technical and site personnel to accomplish the work scope; implement project quality and safety and health (S&H) procedures, and direct delivery order personnel to achieve successful and timely completion of the work scope. The Project Manager will interface directly with the CEHNC Project Manager to keep her advised of progress and to promptly implement CEHNC approved and authorized changes to ongoing work orders as necessary.

- Delivery Order Manager. The Delivery Order Manager coordinates with the Foster Wheeler Project Manager in developing project scope and costs, detailed work order specifications and schedules, and in identifying project personnel to be utilized in accomplishing the Scope of Work. Procurement and management of subcontractors is also the responsibility of the DO Manager. The DO Manager is responsible for the completion of all major deliverables, from the initial draft of the Site Specific EE/CA Work Plan to the final draft of the Action Memorandum. The DO Manager will also approve charges by field and office personnel, compare ongoing project cost and schedule performance to the baseline cost/schedule, and bring any significant variance to the attention of the Foster Wheeler PM, who will communicate impacts to the CEHNC PM as necessary. The DO Manager will identify if a change in scope is necessary to meet technical requirements, and will discuss potential changes in scope with the Foster Wheeler PM, and with the CEHNC PM as necessary.

- Senior UXO Supervisor. The Senior UXO Supervisor assists in the development of site-specific work plans, identifies personnel and equipment requirements, and directly supervises all daily activities of the field team. The Senior UXO Supervisor is responsible for the successful performance of the UXO-qualified field team, the early detection and identification of potential problem areas, and for instituting corrective measures. The Senior UXO Supervisor is also responsible for execution of instructions received from the Foster Wheeler Environmental Project Manager and CEHNC, documentation of site conditions, videotaping of removal actions preparation of all project reports, and identification of any effort required to accomplish the Scope of Work. On small projects involving limited intrusive investigations, the Senior UXO Supervisor may perform the duties as UXO Team Leader when only the Senior UXO Supervisor and two UXO Specialists are on-site. A UXO qualified SSHO/QC must be on-site.

- Site Safety and Health Officer/Quality Control Representative (SSHO/QC). The SSHO/QC is UXO qualified and is responsible for the implementation of the Site Safety and Health Plan (SSHP) and the Quality Assurance/Quality Control (QA/QC) Plan. The SSHO/QC has Stop Work authority for safety conditions. The SSHO/QC evaluates and analyzes any potential safety problems, implements safety-related corrective actions, and maintains a daily safety log. The SSHO/QC Representative is

an independent body responsible for maintaining control of quality of all contract elements and ensuring the quality of its performance and that of its subcontractors.

- UXO Supervisor/Team Leader. This individual shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland with a minimum of 10 years combined active military EOD and Contractor UXO experience. The UXO Supervisor/Team Leader shall supervise all UXO Specialists assigned to perform duties such as UXO sweeps, intrusive investigations, demolition team leader, data recording and other duties as assigned by the Senior UXO Supervisor. The UXO Supervisor/Team Leader reports to the Senior UXO Supervisor.

- UXO Specialist. The UXO Specialist performs on-site duties including locating UXO, equipment operation, UXO safety, and escort duties as required. The UXO Specialist reports to the assigned team leader/Senior UXO Supervisor.

- Geophysical Survey Personnel. Two on-site geophysicists will perform oversight for the data acquisition process. They are skilled in correlating the acquired data and interpreting the results. They will report to the Lead Geophysicist (GTM) and work in close coordination with the Senior UXO Supervisor.

- Heavy Equipment Operators. The heavy equipment operator is trained in the use of heavy equipment, clearing and grubbing techniques. This individual reports to the assigned Senior UXO Supervisor.

- Sweep Personnel. Sweep personnel will receive training in UXO safety precautions and basic ordnance recognition features. Sweep personnel will be allowed to use magnetometers, as well as visual means, to locate OE items on the surface, but must refer any OE items located to trained UXO personnel supervising the Sweep Team. Sweep personnel are not permitted to excavate or handle suspected or known UXO/OE.

7.9.1.1 Note: The Project Manager, Delivery Order Manager, Geophysical survey personnel, sweep personnel, and heavy equipment operators are not required to be UXO trained. Each will have received training on UXO safety precautions and basic ordnance recognition features but are NOT permitted to excavate or handle suspected or known UXO/OE.

7.10 DISPOSAL ALTERNATIVES

Does not apply. OE will be disposed of in accordance with Section 7.7 of this work plan.

7.11 MANAGEMENT AND STORAGE OF DEMOLITION EXPLOSIVES.

The Explosives Siting Plan is discussed in Section 3.0 of the General Site Wide Work Plan.

ATTACHMENT 7-1

Standard Operating Procedure for Intrusive Sampling/ Removing

Attachment 7-1

STANDARD OPERATING PROCEDURE

FOR INTRUSIVE SAMPLING/REMOVAL UNEXPLODED ORDNANCE INVESTIGATION

FORT MCCLELLAN

FORT MCCLELLAN, ALABAMA

CONTRACT NUMBER

DACA87-99-D-0010

REVISION 0

FOSTER WHEELER ENVIRONMENTAL CORPORATION

18 October, 2000

TABLE OF CONTENTS

ATTACHMENTS

1. INTRUSIVE ACTIVITES CHECKLIST
2. HEALTH AND SAFETY EQUIPMENT CHECKLIST
3. INTRUSIVE INVESTIGATIONS DATA FORM

ACRONYMS AND ABBREVIATIONS

BIP	Blow in Place
CFR	Code of Federal Regulation
CGI	Combustible gas indicator
CQC	Contractor Quality Control
CSO	Caretaker Support Office
EOD	Explosive Ordnance Disposal
HS	Health and safety
ID	Identification
LEL	Lower explosive limit
O/E	Ordnance and explosives
PPE	Personal protective equipment
ppm	parts per million
PVC	polyvinyl chloride
QC	Quality control
SCBA	Self-contained breathing apparatus
SHSO	Site Health and Safety Officer
SHSP	Site-Specific Health and Safety Plan
SOP	Standard Operating Procedure
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded ordnance

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide site-specific procedures for unexploded ordnance (UXO) intrusive sampling of selected anomalies at Fort McClellan, Alabama in accordance with the *Site-Specific Work Plan and to provide site-specific procedures for conducting intrusive investigation in support of construction support task.*

2.0 SCOPE

This SOP provides detailed information required to reacquire, excavate, and record subsurface anomalies. Specific requirements are defined for community notification/coordination, personnel, training, equipment/material, and intrusive sampling activities. The intrusive sampling section includes procedures for daily sector briefing/verification; exclusion zone establishment; anomaly acquisition; excavation; located UXO procedures; handling, transportation, and storage of UXO and ordnance and explosives (OE); disposition of located anomalies; sector demobilization; and data collection and recording. Data analysis, interpretation, and selection of sector/anomalies to be intrusively sampled will be completed under separate portions of the *Site-Specific Work Plan.*

3.0 DEFINITIONS

- ***Anomaly*** – An object or location shown on the dig map as a possible UXO object resulting from interpretation of the geophysical survey data. Anomalies selected for possible excavation will have an assigned anomaly identification (ID) number.

- ***Exclusion Zone*** – Areas where contamination (hazards) are known or likely to be present, or because of activity, have the potential to cause harm to personnel. The exclusion zone shall be large enough to protect other personnel from the blast and fragmentation hazards of accidental detonation. The minimum exclusion zone for UXO operations will be 200 feet.

- ***Expended Ordnance*** – A munition that has functioned as designed, leaving the shell or container behind. This shell of container may or may not contain explosive/pyrotechnic/toxic residue. This material would not be considered inert, and could not be salvaged as scrap without appropriate visual inspection, sampling, and/or treatment.

- ***Explosive Ordnance Disposal Personnel*** – Active duty military personnel who have completed the training course at the U.S. Naval School, Explosive Ordnance Disposal (EOD), Indian Head, Maryland / Eglin Air Force Base, Florida and are currently assigned to a military EOD unit.

- ***Foster Wheeler Environmental Command Center*** – A designated location staffed by personnel to relay and control all communications/activities of field personnel and other units.

- ***Inert Ordnance***—Ordnance that never contained explosives, or ordnance items which have had all explosive components removed and certified safe.

- ***Intrusive Investigation*** – Excavating for suspected UXO items or for plotted anomalies. Excavation will be by hand, or utilizing heavy equipment as deemed appropriate.

- ***Non-Intrusive Investigation*** – Locating/investigating UXO on the surface of the ground where excavation is not required.

- ***Non-Ordnance and Explosive Metal Debris*** – Metal debris recovered during operations which is not ordnance related, such as metal rebar, angle iron, sheet metal and bar stock, etc.

- ***Ordnance and Explosives*** – Bombs, guided and ballistic missiles, artillery, mortars, rocket ammunition, small arms ammunition, antipersonnel and antitank mines, demolition charges, pyrotechnics, grenades, sea mines, torpedoes, depth charges, containerized and non-containerized high explosives and propellants, depleted uranium rounds, military chemical agents, and all similar components related to munitions that were designed to cause damage to personnel or material through explosive force, incendiary action, or toxic effects. Non-containerized high explosives, propellants, or soils contaminated with explosive constituents are considered explosives if the concentration of explosive material is 10 percent or higher.

- ***Ordnance and Explosive Metal Debris*** – Ordnance materials which have not been in direct contact with the energetic materials of the ordnance, such as bomb fins, grenade spoons, shipping containers, etc.

- ***Ordnance and Explosive Waste*** – Ordnance materials which have been in direct contact with the energetic materials of the ordnance, such as, expended rocket motors, shell casings, warhead fragments, powder containers, etc.

- ***Practice Ordnance*** – Munitions that demonstrate similar characteristics as their high explosive counterparts, and may or may not contain pyrotechnic, explosive, or chemical (e.g., titanium tetrachloride) spotting charges.

- ***Unexploded Ordnance*** – 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 operations, installation, personnel, or material, and remain unexploded either by malfunction, design, or any other cause. For the purpose of this project, the definition of UXO is limited to items larger than 50-caliber.

- ***UXO Personnel*** – Any former member of the armed forces who has graduated from the U.S. Naval School, Explosive Ordnance Disposal, Indian Head, Maryland, served in EOD billets and assignments while on active military duty, and now works as a civilian specialist with UXO items/materials.

4.0 NOTIFICATION/COORDINATION PROCESS

Coordination of all personnel assigned to Fort McClellan will be vital to the safe and efficient intrusive sampling process. The ongoing UXO investigation effort by Foster Wheeler Environmental and its subcontractors will ensure that Fort McClellan will continue to be a safe place to occupy. Assistance of all contractors and Activity personnel is encouraged to ensure that the intrusive sampling effort will be completed in the shortest possible time.

Coordination activities will begin with a series of meetings with U.S. Army Engineering and Support Center, Huntsville (CEHNC) and Fort McClellan Transition Force Operations (FMCTFO), to identify shared and individual responsibilities of each organization. The community will be informed of the project schedule and the expected impacts through a public meeting presentation. The coordination, notification, and verification activities are outlined below.

- **Coordination Meeting** – Before the intrusive sampling is scheduled to begin, a coordination meeting will be conducted to establish roles and responsibilities. The meeting will address specific elements of planning and could involve CEHNC, FMCTFO, Foster Wheeler Environmental, and community support personnel. Topics will include:

  - Dig permits;
  - Hazardous material characterization and handling;
  - Notifications;
  - Maintenance of exclusion zone; and
  - Community impact.

- **Town Meeting** – A town meeting will be held, if required, prior to commencing intrusive activities. A Foster Wheeler Environmental representative will present a brief detailing the sequential steps involved with the scheduled activities. Topics will include:

  - Daily hours of operation
  - Requirements for evacuation and road closures
  - Exclusion zone procedures

- Emergency procedures.

- **Notifications** – The Foster Wheeler Environmental command center will notify CEHNC and FMCTFO a minimum of 24 hours prior to scheduled intrusive activities to facilitate timely coordination arrangements for the evacuation of designated areas and closure of required roads. Foster Wheeler Environmental UXO personnel will ensure that the following agencies are informed of the schedule and prepared to respond as necessary for emergency assistance:

  - Hospital- Stringfellow Memorial (256) 235-8900
  - Anniston Fire Department - (256) 237-3541
  - Anniston Police Department - (256) 237-1800

- **Exclusion Zone Information Package** – Foster Wheeler Environmental will provide to CEHNC one copy of the exclusion zone map for each sector prior to excavation.

  - CEHNC and FMCTFO will coordinate evacuations and road closures with all personnel in the affected areas.
  - Foster Wheeler Environmental will erect exclusion zones and be responsible for road closures during intrusive activities.
  - Special access to the intrusive sampling exclusion zone will be coordinated through Foster Wheeler Environmental on-site personnel. Field logbook entries will be used for personnel accountability.
  - Exclusion zones will remain in effect until proper notification by the Foster Wheeler Environmental command center.

- **Daily Verification** – Prior to each day's activities, the SUXOS will verify with Foster Wheeler Environmental, Command Center that the following have been performed:

  - Emergency response activities have been notified and are available
  - Work areas have been evacuated as required.

5.0 Personnel Requirements

The Senior UXO Supervisor will be in charge of all UXO intrusive activities. The UXOQC Representative will ensure that all work within the exclusion zone is performed in accordance with the approved *Site-Specific Work Plan*. In addition, one or more UXO teams will be utilized for the intrusive phase. Each UXO team will consist of the following members, at a minimum:

- UXO Supervisor
- 2-UXO Specialist

The intrusive sampling effort will be supported by a team of laborers (if required) who will assist in the exclusion zone set up at the start of the day and the breakdown of the exclusion zone at the close of intrusive activities.

6.0 Training Requirements

All personnel assigned to the intrusive investigation teams and other site personnel involved with the intrusive investigation will attend a site-specific orientation. The purpose of this orientation will be to review site-specific and emergency response procedures. The topics to be covered during the orientation are listed below. Course attendance sheets with attached curriculums will be used to document completion of each orientation session.

TRAINING SCHEDULE

A. Introduction

1. Project summary

B. Presentation

1. *Site-Specific Health and Safety Plan* (SHSP) review
2. Review SOP
3. Equipment training
   a. Differential GPS training
   b. Metal Locator training
   c. Heavy Equipment training
4. Emergency procedures
   a. Review emergency response equipment
   b. Talk/walk through of emergency procedures
   c. Emergency drill

7.0 Equipment/Material Requirements

Each UXO Specialist will inspect health and safety and intrusive equipment prior to commencing operations. An equipment checklist is included as Attachment 2. A checklist of health and safety equipment is included as Attachment 3. It is anticipated that all tasks will be performed in Level D personal protective equipment (PPE).

The following publications are required to be on-site during intrusive operations:

- Approved Work Plans
- Approved dig permit for the areas of planned intrusive activities.

8.0 INTRUSIVE INVESTIGATION

This procedure will cover intrusive investigation for geophysical surveys and procedures for construction support and removal activities. For geophysical surveys, intrusive sampling of selected anomalies will be performed to identify UXO from the surface to a specified depth below grade. This sampling will characterize homogeneous areas of the site and provide statistical data (e.g., density and UXO type) that will be used to conduct a risk analysis. This procedure also covers intrusive removal of all selected anomalies during removal actions and in support of construction support task.

Notification procedures will be recorded on the Intrusive Activities Checklist by the Senior UXO Supervisor . Following completion of UXO intrusive investigation of the selected anomalies, all recorded data will be delivered to the data entry technician for entry into the data base.. The Senior UXO Supervisor will provide information on the anomalies to be excavated to each UXO Supervisor prior to intrusive activities.

The following procedures describe the specific activities required for intrusive sampling/removal of selected anomalies, including daily briefing/verification; exclusion zone establishment; anomaly acquisition; excavation; located UXO procedures; disposition of located anomalies; demobilization; and data collection and recording.

8.1 DAILY SECTOR BRIEFING/VERIFICATION

The Senior UXO Supervisor will receive a package for the selected sampling areas within each sector and verify that CEHNC and FMCTFO received an exclusion zone map at least 24 hours prior to intrusive activities. The Senior UXO Supervisor will assign selected areas to each of the UXO teams for intrusive sampling/removal and will also provide a daily briefing to the intrusive teams which includes the following:

- Review emergency procedures;
- Discuss previously located UXO; and
- Describe any known utilities.

The Senior UXO Supervisor will complete the top portion of the Intrusive Activities Checklist for each area and transfer it to the assigned UXO Supervisor for completion. Attachment (1)

The UXO Supervisor is responsible for completing the Intrusive Activities Checklist received from the Senior UXO Supervisor and will brief the UXO team on potential hazards identified in their particular area. The checklist includes the following activities:

- Verify dig permit has been issued.
- Verify that roads have been closed.
- Verify exclusion zone boundaries.
- Complete Health and Safety and Intrusive Equipment Checklists
- Ensure the Foster Wheeler Environmental Command Center has completed the notification checklist:
  - CEHNC;
  - FMCTFO;
  - Medical Facility;

- Fire Department; and
- Security Department.

- Perform daily tailgate safety briefing:
  - Designate emergency vehicles;
  - Designate emergency evacuation route; and
  - Review emergency response procedures.
- Conduct QC operational check of locator equipment in test grid and record results.
- Verify daily equipment inspection.
- Verify with FMCTFO engineering that underground utilities have been secured.
- Verify with designated personnel that the area has been evacuated.
- Notify the Foster Wheeler Environmental Command Center that intrusive investigations are commencing.
- Start intrusive activities.
- Request the SSHO/QC Representative check area.
- Stop intrusive activities.
- Request CEHNC conduct a QA check (if required).
- Verify that the Foster Wheeler Environmental Command Center notifies the following upon completion of the days activities:
  - CEHNC.
  - FMCTFO.
  - Medical Facility.
  - Fire Department.
  - Security Department.
- Fill all dig sites and smooth area.
- Demobilize the area.
- Provide packet to the data entry technician for database entry.
  - The UXOQC Representative is responsible for conducting daily inspections of each intrusive site to ensure compliance with the SHSP. The SSHO/QC Representative has stop work authority in case of imminent safety hazards or potentially dangerous situations. After stopping work, the SSHO/QC Representative will immediately notify the Senior UXO Supervisor. Additionally, the SSHO/QC Representative will conduct QC checks at the completion of each sector and will escort CEHNC personnel assigned for quality assurance inspections.

8.2 EXCLUSION ZONE ESTABLISHMENT

All exclusion zones for UXO operations will be in accordance with DOD 6055.9 or as calculated by USACE CEHNC Engineering Branch for the most probable munition.

An exclusion zone will be established around each area prior to conducting intrusive activities. The exclusion zone will vary because of terrain and cultural features around each area. Road barricades will be utilized to block road access and warning tape will restrict access areas as required. Exclusion zones will remain in effect until notification by the Foster Wheeler Environmental command center to CEHNC and FMCTFO upon completion of intrusive activities. Special access within the exclusion zone will be controlled through the sign-in/sign-out log (field log) only when the UXO team is not actually digging. A minimum distance of 200 feet should be maintained between each UXO team.

8.3 ANOMALY ACQUISITION

Suspected subsurface UXO locations (geophysical anomalies) will be presented as coordinate locations in the intrusive sector package provided to the Senior UXO Supervisor. The Senior UXO Supervisor will provide the coordinates to each team for anomaly acquisition. The designated anomalies will be acquired and marked with pin flags using DGPS or conventional surveying procedures. The operator will locate the plotted anomaly position and place a numbered pin flag corresponding to the anomaly identification located at that position. The reacquisition will be accomplished prior to assigning an UXO Team to intrusively investigate. For construction support task, the area of investigation will be delineated and divided into a grid system. A "mag" and dig procedure will be used to locate subsurface anomalies.

8.4 EXCAVATION

Each selected anomaly will be investigated and recorded. Hand excavation is the safest and most reliable method for uncovering UXO; however, unless the UXO is very near the surface, hand excavation exposes more people to the hazard of detonation for a longer period of time than any other method.

Earth moving machinery may be used to excavate anomalies deeper than 12 inches. Earth moving machinery should not be used to excavate within 12 inches of UXO. When excavation is within approximately 12 inches of the anomaly, hand excavation will be used to uncover the item. During excavation operations, only those personnel absolutely necessary for the operation will be within the exclusion zone. Excavation and trenching shall comply with the provisions of 29 Code of Federal Regulations (CFR) 1926, Subpart P.

8.4.1 EXCAVATION OF UXO

During mechanical excavation, the Senior UXO Supervisor will be in a position to observe the operator and the excavation process. A third UXO specialist will be positioned at the edge of the exclusion zone to observe activities and provide assistance if required. The area of the pin flag will be probed if possible with the fiberglass probes to determine the depth of each anomaly.

When the anomaly is detected, 4-inch layers of soil will be carefully excavated to within 12 inches of the anomaly by hand excavation methods or by using earth moving machinery. Hand excavation will be used within 12 inches of the anomaly until the anomaly is exposed and identified. When the anomaly has been removed, the excavated area will be checked with a locator to verify that the area is clean.

If the selected anomaly is a surface feature that cannot be removed, the UXO Supervisor will excavate around the feature to determine if additional anomalies are below the feature. Excavation will be stopped at a depth specified in the scope of work.

If recovered UXO/OE is identified as Recovered Chemical Warfare Material (RCWM) all intrusive activities will cease, the site will be evacuated in an upwind direction, and secured. The CEHNC safety Specialist will be notified and disposition instructions requested. Foster Wheeler Environmental personnel will not participate in any RCWM disposal work unless approval is given by the UXO/OE Operations Manager and the Project HSM, and the SHERP is amended to account for these new activities.

8.4.2 ANOMALIES OTHER THAN UXO

It is anticipated that during the UXO intrusive investigation hazardous material other than UXO will be located, including underground utilities, chemicals, and other hazards.

- **Underground Utilities** – In an attempt to avoid underground utilities, a dig permit will be obtained from FMCTFO for each area that will be intrusively investigated.. The Schonstedt locator will be used during intrusive activities to locate energized power lines. Indication from the Schonstedt locator or uncovering a tell-tale tape will require immediate suspension of intrusive activities
- **Chemicals** – During intrusive activities, locating industrial type chemicals is a possibility. If any evidence of chemical contamination is detected, all intrusive activities will cease and the Foster Wheeler Environmental command center will notify CEHNC and FMCTFO. The FMCTFO environmental response team will evaluate the situation and perform first response functions as required. Foster Wheeler Environmental UXO personnel will escort all personnel entering the exclusion zone. Other site personnel will assist FMCTFO as required. The evacuated area will be evaluated by the Senior UXO Supervisor, and the SSHO. Operations will continue only when it is safe to proceed.
- **Other Hazards** – In the event that sealed drums, contaminated soils, or other suspect materials or conditions are encountered during the intrusive investigation that would indicate a potential health or safety hazard, work efforts will stop and the FMCTFO environmental response team will be notified. Work will not continue until an evaluation by the Senior UXO Supervisor and SSHO Representative is made. Operations will continue only when it is safe to proceed.

8.5 LOCATED UXO PROCEDURES

– The safest procedure for personnel when encountering UXO/OE is to destroy the UXO/OE in place using explosives (Blow in Place BIP); however this is not always practical. Located UXO/OE will be handled in accordance with the UXO Demolition Procedures.

8.6 HANDLING, TRANSPORTATION, AND STORAGE OF UXO/OE

All handling of UXO/OE will be in accordance with accepted safety precautions found in AR 385-64, ETL-385-1-1, EODB 60A-1-1-31 and EODB 60A-1-1-22.

8.7 DISPOSITION OF LOCATED ANOMALIES

All excavated anomalies (e.g., UXO, and UXO related material,) will be identified and disposed of in accordance with the *Site-Specific Work Plan* and the SOP for OE Disposal.

Anomalies identified as UXO will be disposed of daily in the grids / areas they were located in.

Non-UXO/OE anomalies will be categorized and disposed as outlined below:

- Non-Ordnance and Explosives Metal Debris – If visual inspection determines the item does not contain waste residue, waste is non-hazardous scrap metal. Collect and store for recycling.
- Ordnance and Explosive Metal Debris – If visual inspection determines the item was not in contact with energetic materials, waste is non-hazardous scrap metal. Collect and store for recycling.
- Ordnance and Explosive Waste – If visual inspection determines the material was in direct contact with energetic materials (explosives/pyrotechnics) it will be collected, containerized and managed in the Material Processing Area as a dangerous waste until final treatment is performed by FWENC.

Recovered UXO/OE will be tracked from discovery to disposal. Each aspect of UXO/OE handling and disposal will be documented using the UXO Acquisition and Accountability Log, as described in the *Site-Specific Work Plan*.

8.8 AREA DEMOBILIZATION

Following intrusive sampling in each area, all signs and barricades will be removed and the excavated area will be back-filled. Backfill material will consist of native soil from the excavation if required.

8.9 DATA COLLECTION AND RECORDING

The UXO Supervisor will record all data on the Intrusive Investigation Data Form. This data will be turned over to the GIS technician who will enter it into the database. All electronic data will be turned over to the SSHO/QC Representative or designated individual. The data form includes the following information:

All items marked with a check (✓) are required for all anomalies, other items are required only for UXO and UXO-related materials.

- ✓ Sector ID – Verify using the dig package map or area designation.
- ✓ Anomaly ID – Enter ID from dig package map or area designation.
- ✓ Survey method – Three-tape pull, conventional ground survey, or DGPS.
- ✓ Accuracy – If the actual location varies from the projected location by > 12 inches, enter distance in inches and approximate direction (e.g., 18 inches SE) Geophysical investigation only.
- ✓ Depth at center of mass (inches) – Use English unit measuring tape to measure depth of anomaly center of mass to the estimated ground surface.
- Orientation – Estimate degrees from magnetic north (e.g., N 45 degrees E).
- Inclination (degrees from horizontal) – Visually estimate degrees from horizontal (0 to 90°).
- Object length (inches) – Measure the maximum dimension (length) of the object.
- ✓ Object size – Estimate size as small (≤ 60 mm), medium (> 60 mm to ≤ 155 mm), or large (> 155 mm).
- Diameter (inches) – Measure the diameter of the object using calipers.
- ✓ Ferrous Object – Indicate whether object is ferrous.
- ✓ Anomaly type – Identify type of anomaly (e.g., UXO, scrap).
- Photograph number – Identify photograph number for each excavated anomaly.
- Description – Observed characteristics of the object or type of object if non-ordnance.

9.0 Quality Control

For geophysical investigation quality control is performed to ensure that the targeted anomaly is recovered or determined to exist below the Scope of Work limit of excavation. Because non-targeted anomalies may exist near the dig site, limited lateral excavation is authorized. The UXO Supervisor will determine the area of excavation and search.

The UXOQC Representative will ensure that the procedures are implemented and are being followed as defined in the *Site-Specific Work Plan* and listed below.

- Perform follow-up QC on dig procedures.

- Conduct surveillance on a periodic basis
- Ensure proper exclusion zone controls.
- Ensure excavation is performed in accordance with this SOP.
- Ensure the proper use of probes to locate anomaly depth.
- Complete data entry on intrusive investigation anomaly form.
- Perform QC checks on 10% of all anomalies in each sector prior to backfill operations and/or perform QC investigation in accordance with site specific work plan.
- Escort designated QA representatives to perform QA checks prior to backfill operations, if required.

10.0 REFERENCES

U.S. Department of Defense. DOD Ammunition and Explosives Safety Standards. DOD 6055.9-STD, July 2000. The Office of the Under Secretary of Defense, Washington, D.C.

U.S. Army. Ammunition and Explosives Safety Standards. Army Regulation 385-64, 28 Nov 1997. Headquarters Department of the Army, Washington, D.C.

Navy Explosive Ordnance Disposal. Explosive Ordnance Disposal Procedures, Protection of Personnel and Property. Bulletin 60A-1-1-4, Revision 3, 11 April 1998. Naval Explosive Ordnance Disposal Technology Division. Indian Head, Maryland.

Navy Explosive Ordnance Disposal. Explosive Ordnance Disposal Procedures, General Information on EOD Disposal Procedures. Bulletin 60A-1-1-31, Revision 1, 31 December 1997. Naval Explosive Ordnance Disposal Technology Division, Indian Head, Maryland.

U.S. Army Corps of Engineers. Safety and Health Requirements Manual. EM 385-1-1, September 1996. Department of the Army, Washington, D.C.

Attachment 1

INTRUSIVE ACTIVITIES CHECKLIST

Date_____ **Team**_____

FUNCTION	DATE/TIME	SIGNATURE
Senior UXO Supervisor		
Assign UXO Intrusive Team		
Brief Intrusive Team Review emergency procedures Discuss OE/UXO located in area Describe known utilities		
Inspect exclusion zone upon completion of operations		
Intrusive Team Supervisor		
Verify dig permit has been issued		
Verify roads are closed		
Verify exclusion zone boundaries in place		
Complete health and safety and equipment checklists		
Ensure command center has completed the verification checklist CEHNC FTMCTFO EOD- If a local unit is available. Medical Facility Fire Department Security/Police Department		
Intrusive Supervisor tailgate safety brief: Designate emergency vehicles Designate emergency evacuation route Review emergency response procedures		
Verify daily equipment inspection		
Verify that exclusion zone has been set		
Verify that area has been evacuated		
Notify command center that operations are commencing		
Start Intrusive activities		
Stop Intrusive activities		
QC check performed		
QA check by CEHNC (if required)		
Foster Wheeler command center notify upon completion: CEHNC FTMCTFO EOD Medical Facility Fire Department Security/Police Department		
Complete OE/UXO Accountability Log		
Demobilize		
Record data on anomaly acquisition sheet		

Attachment 2

Health and Safety Equipment Checklist

Date: _____ **Team:** _____

X	ITEM	QTY	Location	Notes
	Pruning Shears			2 per Team
	Mattock			3 per Team
	Saw			2 per Team
	Shovel, large handle			2 per Team, (1) QC (1) Safety Vehicle
	Shovel, Sharpshooter			1 per team
	Spare Tire			1 Per Vehicle
	Spray Bottle, (8 oz)			1 per Team
	Spray Tank (5 gal)			2 with the Demo Equip/Back Pack
	Rope, Line, ¼" Nylon			1200'
	Sunscreen			1 per Team
	Tape Measure, 16'			1 Demo Equipment
	Tape Measure, 100'			2 per Team
	Tape Measure, 200'			2 per Team
	Tie Down Straps			6 per Team
	Trash Bags			6 per Team
	Toilet Paper			2 rolls per Team
	Tool Box			1 per Safety Vehicle
	Tow Strap			1 per Safety Vehicle
	Wasp Spray			1 per Team
	Machete			2 per Team
	Rain Suits			1 per Team Member (Lg, XLg, XXLg)
	Safety Glasses			2 per Team Member (1 Clear, 1 Sunglass)
	Safety Vests			1 per Team Member
	Stretcher			1 per Safety Vehicle
	Water Containers			1 per Team (5 Gallon)

X	ITEM	QTY	Location	Notes
	Water Containers			1 per Team Member (Back Pack)

Attachment 3

INTRUSIVE (REACQUISITION & EXCAVATION) INVESTIGATION DATA FORM

REACQUISITION

Grid ID / AREA	
Anomaly ID (e.g., 4):	
Reacquisition Method (e.g., EM61 HH w/ USRADS, etc.)	
Reacquisition; Positive Instrument Indication of magnetic and/or conductive material present	___Yes ___No ____Unsure Flag # placed in ground ___Yes ___No ____ #_____
~ Accuracy (inches) and Azimuth (degrees) {Digsheet coordinates to inferred location, e.g., 12" @ 270)	
Reacquisition Comments	
EXCAVATION	
Depth of anomaly (inches) at center of mass (e.g., 17"):	
Orientation (NSEW +degrees) (e.g., N 45° E) (**Ordnance only**):	
Inclination (degrees) (0 to 90° up/down) (**Ordnance only**):	
~ Object description (2D or 3D measurements) (inches) (e.g., 2 " D x 10 " L rebar)	
Estimated Weight (lbs):	
Ferrous (magnetic) Object?	
Item Removed?	___Yes ___No
Photograph Number/Digital Photo Disk #	___ UXO Fired ___UXO Abandoned ___ OE Waste ___OE Debris ___Non OE Scrap ___Practice Ordnance ___Other (Explain in Remarks) ___No metal material present in excavation
Review (Initial): _____ UXO Supervisor _____Geophysics _____ QC	_____ Other _____ Other _____ Other

STANDARD OPERATING PROCEDURE

INTRUSIVE SAMPLING/REMOVAL

UNEXPLODED ORDNANCE INVESTIGATION

US ARMY CORPS OF ENGINEERS

AND

FOSTER WHEELER ENVIRONMENTAL CORPORATION

CONTRACT NUMBER DACA87-99-D-0010

FORT McCLELLAN

FORT McCLELLAN, ALABAMA

REVISION 0

APPROVED:

John C. McIlrath, P.E.
Project Manager
Foster Wheeler Environmental
Corporation

APPROVED:

David Skridulis
Project Manager
US Army Engineering and Support
Center, Huntsville

APPROVED:

James W. Ennis
Site Manager
Foster Wheeler Environmental
Corporation

APPROVED:

Wayne Galloway
Chief, Safety Group for Ordnance and
Explosive Team
US Army Engineering and Support
Center, Huntsville

8.0 SITE-SPECIFIC SAFETY AND HEALTH PLAN

Safety and health guidelines are discussed in Section 6.0 of the FWENC General Site Wide Work Plan. This plan contains information that is specific to the Alpha Area and supplements the Site Wide Plan referenced above. For topics that are not specific to the Alpha Area and covered in the Site-Wide Safety and Health Plan (Section 6), the Site-Specific Plan below references the Site-Wide Plan.

8.1 INTRODUCTION

This Site-Specific Safety and Health Plan (SSHP) has been prepared to address the hazards associated with characterization activities within the Alpha Area at Fort McClellan in Anniston, Alabama. This SSHP will be used in combination with the Site-Wide SSHP, and both plans will be available to workers during activities in the Alpha Area. By their signatures, the undersigned certify that this SSHP will be utilized for the protection of the health and safety of workers during site characterization activities at the Alpha Area.

APPROVALS:

John C. McIlrath, PE, Project Manager — Date: 3/15/01

Phillip M. Potter, PG., Delivery Order Manager — Date: 3/15/01

Joseph L. Sbarra, CIH
Project Environmental and Safety Manager — Date: 03/15/01

James Ennis
Senior UXO Site Safety and Health Officer — Date: 3/15/01

8.2 SCOPE AND APPLICABILITY

This SSHP has been prepared in conformance with the Foster Wheeler Environmental, Health and Safety programs, policies and procedures; the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1; and the U.S. Army Corps of Engineers Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities, ER 385-1-92. This SSHP, along with referenced safety and health sections of the General Site-Wide Work Plan, contains the requirements for protection of site personnel and the general public during clearance activities at the Alpha Area of Fort McClellan and will be implemented by the UXO Site Safety and Health Officer (UXOSO) or his

designee during site work. The content of this SSHP may change or undergo revision based upon additional information made available to safety and health personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed by the Foster Wheeler Environmental UXOSO and are subject to the approval of the Foster Wheeler Environmental Project Environmental and Safety Manager (PESM). Changes are also subject to the approval of the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville (CEHNC). The Field Change Request Form, provided in Attachment 6-1 of the General Site Wide Work Plan, will be used to initiate such changes.

8.2.1 The protection of site workers and environmental safety and health are major concerns during site operations. The purpose of this plan is to ensure safe and healthful working conditions at the Alpha Area. The safety and health organization and procedures contained in this SSHP have been established based upon an analysis of the potential hazards, and personnel protection measures have been chosen based on these risks.

8.2.2 Compliance with this SSHP is required by all Foster Wheeler Environmental employees and their contractors, subcontractors and visitors who may participate in activities at the Alpha Area at Fort McClellan. Refusal or failure to comply with the SSHP or violation of any safety procedures by field personnel and/or subcontractors may result in their immediate removal from the site following consultation with the Foster Wheeler Environmental PESM and the Project Manager (PM).

8.2.3 This plan has been developed to address health and safety concerns during the UXO characterization activities at the Alpha Area.

8.2.4 The plan addresses the following activities:

- Mobilization/demobilization,
- OE surface survey,
- Brush clearance,
- Survey study areas, establish corners and boundaries,
- Establish geophysical test lines and grids,
- Conduct geophysical surveys,
- Manually excavate anomalies.

8.2.5 Major risks associated with clearance activities at the Alpha Area include:

- Possible exposure to UXO
- Exposure to chemicals of concern
- Heat stress
- Slips, Trips and Falls
- Environmental Hazards (i.e., poison ivy & oak, insects, animals)

8.3 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

The responsibilities of the health and safety staff are described in the following sections.

8.4 PROJECT MANAGER (PM)

The Project Manager is John C. McIlrath. It is the responsibility of the Project Manager to:

- Ensure that full corporate resources are made available to the program, as needed;
- Serves, as necessary, as an intermediary between the CEHNC contract officer (CO) and Foster Wheeler's corporate management; and
- Assist the Delivery Order Manager in problem resolution/corrective action implementation.

8.5 DELIVERY ORDER MANAGER

The Delivery Order Manager is Phillip M. Potter, PG.; it is the responsibility of the Delivery Order Manager to:

- Provide the major point of control to ensure that the program's technical, financial and scheduling objectives are achieved;
- Ensure implementation of this program through coordination with the responsible Project Environmental Safety Manager (PESM);
- Conduct periodic inspections;
- Participate in incident investigations;
- Ensure the SSHP has all of the required approvals before any site work is conducted;
- Ensure that the PESM or UXO Site Safety and Health Officer (UXOSO) is informed of project changes which require modifications of the site safety plan; and
- Assume overall project responsibility for Project Health and Safety.

8.6 PROJECT ENVIRONMENTAL AND SAFETY MANAGER (PESM)

The Project Environmental and Safety Manager (PESM) is Joseph Sbarra, CIH. The responsibilities of the PESM are outlined and described in Section 6.2.2 of the General Site-Wide Work Plan.

8.7 SENIOR UXO SUPERVISOR (SUXOS)

The Senior UXO Supervisor (SUXOS) is Jim Ennis. The responsibilities of the SUXOS are outlined and described in Section 6.2.3 of the General Site-Wide Work Plan.

8.8 UXO Site Safety and Health Officer (UXOSO)

The UXO Site Safety and Health Officer (UXOSO) is Ted Jennen. The responsibilities of the UXOSO are outlined and described in Section 6.2.4 of the General Site-Wide Work Plan.

8.9 Field Crew Personnel

Field crew personnel include all other persons entering the site for the purpose of assisting in the completion of the project. This includes, but is not limited to geophysicists, client representatives, subcontractors, regulatory personnel, and site workers. The responsibility of all field crew personnel are outlined and described in Section 6.2.5 of the General Site-Wide Work Plan.

8.10 Site Description and Contamination Characterization

The former Fort McClellan main post is bounded to the south and west by the City of Anniston and to the northwest by the City of Weaver and consists of 18,929 acres. Adjoining the former main post to the east is the Redevelopment Area. The Redevelopment Area has been subdivided into two study areas for the purposes of site characterization activities: 1) The Alpha Area, consisting of all or portions of Parcels M5 and M6, and 2) the Bravo Area, consisting of all or portions of Parcels M3 and M4. To the east of the Redevelopment Area lies the Charlie Area, consisting of the Choccolocco Mountains and the Choccolocco Corridor. The Alpha Area is the subject of the upcoming site characterization effort, which is addressed by this plan.

8.11 Site Description

The Alpha Area consists of approximately 876 acres containing all or portions of Parcels M5 and M6. The Archives Search Report (ASR) identifies areas within these parcels, which are potentially contaminated with OE. The potential OE that is suspected to be in the Alpha Area, or in the vicinity thereof, are identified in Table 3.1, along with the explosive/incendiary hazard associated with each ordnance type.

8.12 Previous Site Investigations

Previous Investigations are discussed in Section 2.4 of this Work Plan.

8.13 SOURCE AND NATURE OF CONTAMINATION

The data presented were obtained during previous archival research, remedial investigations, and remedial designs. The suspected types of OE associated with the Alpha Area are presented in Table 3.1. The previous investigations conducted in and around the Alpha Area indicate that it was used primarily as a training area. The types of OE used at this site are all training items with minimal penetration (less than 6 inches). Through erosion and accumulation of organic material over the site, all OE is anticipated to be encountered at depths of less than one foot unless disposed of in a burial pit. Burial pits are generally created to dispose of multiple items making them easily detectable.

8.14 HAZARD ANALYSIS AND RISK ASSESSMENT

This section presents an assessment of the potential hazards associated with the site activities including chemical hazards (Chemical Warfare Materials CWM, and OE), physical hazards, and biological hazards. Attachment 8-1 is the Activity Hazard Analysis covering all hazard types for this site.

8.15 CHEMICAL HAZARDS

It is not anticipated that CWM will be encountered at the Alpha Area. However, in the event of CWM material discovery all personnel will evacuate the area immediately in an upwind direction. The SUXOS will notify Foster Wheeler Environmental Command Center and the CEHNC Safety Representative. Foster Wheeler Environmental UXO personnel will standby the area until response elements arrive on scene or until directed by the CEHNC safety representative. The Foster Wheeler Environmental Command Center will notify the Ft. McClellan Transition Force Operations and other personnel listed on Table 8.1 as required.

Table 8.1
Emergency Telephone Numbers

Contact	Firm or Agency	Telephone Number
Emergencies Police	Calhoun County Emergency Services Anniston Police Dept.	911 (256) 238-1800
Fire	Anniston Fire Dept.	(256) 231-7644
Ambulance	Anniston EMS	(256) 237-8572
Hospital	Stringfellow Memorial	(256) 235-8900
HAZMAT Response	Anniston Police Dept.	(256) 237-3541
BRAC Environmental Coordinator, Mr. Ronald Levy	Fort McClellan	(256) 848-6853
Project Manager, Mr. John C. McIlrath	Foster Wheeler Environmental Corporation	(256) 830-4100
DO Manager, Mr. Phillip M. Potter, PG.	Foster Wheeler Environmental Corporation	(256) 820-7904
PESM, Mr. Joseph Sbarra	Foster Wheeler Environmental Corporation	(973) 630-8101
Project Manager, Mr. Daniel Copeland	CEHNC	(256) 895-1468
Poison Control Center		(800) 462-0800
Chemtrec		(800) 424-9300
National Response Center		(800) 424-8802
Fort McClellan Transition Force Operations		(256) 848-5178

8.16 PHYSICAL HAZARDS

The principal safety hazards, including physical hazards and biological hazards, are discussed in the Activity Hazard Analysis (AHA) in Attachment 8-1 for the different phases of the project. Attachment 8-2 is the emergency hospital route. In addition to the AHAs, standing work rules and other safety procedures are described in Section 6.15 of the General Site-Wide Work Plan.

8.16.1 Heat Stress

Potential hazards posed by heat stress and the recommended and/or required measures to control these hazards are described in Section 6.4.2.1 of the General Site-Wide Work Plan.

8.16.2 UXO/Explosives

The Alpha area may contain UXO; there also is a possibility that personnel may encounter ordnance-related items (small arms, cartridges, etc.). Only UXO trained personnel are authorized to handle OE material. The recommended and/or required

8.16.3 Cold Stress

Potential hazards posed by cold stress and the recommended and/or required measures to control these hazards are described in Section 6.4.2.3 of the General Site-Wide Work Plan.

8.16.4 Equipment Safety

Potential hazards posed by heavy equipment operations and the recommended and/or required measures to control these hazards are described in Section 6.4.2.4 of the General Site-Wide Work Plan.

8.16.5 Hand and Power Tools

Potential hazards posed by the use of hand and portable power tools and the recommended and/or required measures to control these hazards are described in Section 6.4.2.5 of the General Site-Wide Work Plan. Safety measures for the use of these tools used for clearing and grubbing are as follows:

8.16.5.1 Power Saws

- The engine shall be started and operated only when all co-workers are clear of the saw.
- The operator will shut off the saw when carrying it over slippery surfaces, through heavy brush, and when adjacent to personnel; the saw may be carried running (idle speed) for short distances (less than 50 feet) as long as it is carried to prevent contact with the chain or muffler.
- The engine shall be stopped for all cleaning, refueling, adjustments and repairs to the saw or motor, except where manufacturer's procedures require otherwise.
- All chain saws shall have an automatic chain brake or kick back device.
- The idle speed shall be adjusted so that the chain does not move when the engine is idling.
- The operator will hold the saw with both hands during all cutting operations.
- Chaps will be worn by operators during use.
- A chain saw must never be used to cut above the shoulder height.

8.16.5.2 Chopping Tools

- Chopping tools that have loose or cracked heads or splintered handles shall not be used.
- Chopping tools shall be swung away from the feet, legs, and body, using the minimum power practical for control.
- Chopping tools shall not be driven as wedges or used to drive metal wedges.

8.16.6 Brush Clearing and Grubbing Operations

Clearing and grubbing operations pose many potential hazards. These hazards include, but are not limited to being struck by falling debris, damaging equipment, tools, personnel and supplies as a result of improper tree felling and brush clearing activities. All clearing and grubbing activities shall be conducted in accordance EM 385-1-1, Section 31, Tree Maintenance and Removal and ANSI Z133.1-1994, Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements. These requirements include, but are not limited to, the following:

8.16.6.1 Tree Felling:

- Ensure footing before starting to cut, clear away brush and other materials that might interfere with cutting operation.
- A notch and back cut shall be used in felling trees over 5 in diameter, no tree shall be felled by "slicing" or "ripping " cuts.
- The employee shall work from the up hill side when ever possible.
- The work area shall be cleared to permit safe working conditions.
- Just before the tree or limb is ready to fall an audible warning shall be given to all those in the area: all persons shall be safely out of range when the tree or limb falls.
- Persons shall be kept back from the butt of a tree that is starting to fall.

8.16.6.2 Brush Removal and Chipping:

- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall be equipped with an in-feed hopper not less than 85 in. (the sum of the horizontal distance from the chipper blade out along the center of the chute to the end of the chute and the vertical distance from the chute down to the ground) and shall have sufficient height on its side members to prevent personnel form contacting the blades or knives of the machine during normal operations.

- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall have a flexible antikickback device installed in the in-feed hopper for the purpose of protecting the operator and other persons in the machine area from the hazards of flying chips and debris.
- Disk-type tree or brush chippers equipped with a mechanical in-feed system shall have a quick stop and reversing device on the in-feed: the activating mechanism for the quickstop and reversing device shall be located across from the top, along each side of, and as close as possible to the feed end of the in-feed hopper and within easy reach of the operator.
- The feed chute or feed table of a chipper shall have sufficient height on its side members to prevent operator contact with the blades or knives during normal operation. Brush chippers shall be equipped with an exhaust chute of sufficient length or design to prevent contact with the blade.

- All workers feeding brush into chippers shall wear eye protection. Workers feeding the chipper shall not wear loose hair or clothing, gauntlet-type gloves, rings and watches.
- Employees shall never place hands, arms, feet, legs or any other part of the body on the feed table when the chipper is in operation or the rotor is turning; push sticks – of material which can be consumed by the chipper – shall be used.
- Brush chippers should be fed from the side of the feed table centerline, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor or feed rollers.

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ATTACHMENT 8-1

Activity Hazard Analysis

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Mobilization /Demobilization

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY/ DATE
1. Mobilization/ demobilization of equipment and supplies.	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; instruct personnel on proper lifting techniques.	CP 09/11/00
	2. Heavy Equipment Operation	2. A small tractor and a Brush hog or similar equipment will be used on the Alpha EE/CA. Follow procedures in Section 6.15.2 of the General Site-Wide Work Plan, equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift; spills and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms, and all equipment will be outfitted with fire extinguishers.	JS 03/14/01
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	5. Vehicular Traffic	5. Spotters will be used when backing up trucks and heavy equipment; trucks and heavy equipment will be equipped with back up alarms; traffic cones/vests will be used when working in public traffic areas.	CP 09/11/00
	6. Overhead Hazards	6. Personnel will be required to wear hard hats.	CP 09/11/00
	7. Dropped Objects	7. Composite toe boots will be worn.	JS 03/14/01
	8. Noise	8. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.	CP 09/11/00
	9. Eye Injuries	9. Safety glasses will be worn during all field activities including escort, data acquisition, reacquire, and intrusive activities. A portable eye wash station will be located adjacent to work activities.	JS 03/14/01
	10. Sharp Objects	10. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	11. Fire	11. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.	CP 09/11/00
	12. Spills	12. Spill and absorbent materials will be readily available. All waste materials generated will be contained in 55-gallon drums.	CP 09/11/00
	13. Biological Hazards	13. Follow procedures outlined in Section 6.4.3 of the General Site-Wide Work Plan.	JS 03/14/01
	14. Hand and Power Tools	14. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Heavy Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities — Location: Fort McClellan, Anniston, Alabama
Activity: OE surface survey

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/ CONTROLS	ANALYZED BY/ DATE
1. Initial/surficial OE survey of study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	5. Overhead Hazards	5. Personnel will be required to wear hard hats.	CP 09/11/00
	6. Dropped Objects	6. Composite toe boots will be worn.	JS 03/14/01
	7. Hand and Power Tools	7. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00
	8. Eye Injuries	8. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	9. Sharp Objects	9. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	10. Biological Hazards	10. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.	JS 03/14/01

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Geophysical Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Survey study areas, establish corners and boundaries

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY/ DATE
1. Conventional survey of study areas, establish corners and bounds.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	5. Dropped Objects	5. Composite toe boots will be worn.	JS 03/14/01
	6. Hand and Power Tools	6. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00
	7. Eye Injuries	7. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	8. Sharp Objects	8. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	9. Biological Hazards	9. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.	JS 03/14/01

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Conventional Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Brush clearance

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY / DATE
1. Tree and Brush Trimming	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Heavy Equipment Operation	3. A small tractor and a Brush hog or similar equipment will be used on the Alpha EE/CA. Follow procedures in Section 6.15.2 of the General Site-Wide Work Plan, equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift; spills and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms, and all equipment will be outfitted with fire extinguishers.	JS 03/14/01
	4. Temperature Extremes	4. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	5. Slips/Trips/Falls	5. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	6. Vehicular Traffic	6. Spotters will be used when backing up trucks and heavy equipment; trucks and heavy equipment will be equipped with back up alarms; traffic cones/vests will be used when working in public traffic areas.	CP 09/11/00
	7. Overhead Hazards	7. Personnel will be required to wear hard hats.	CP 09/11/00
	8. Dropped Objects	8. Composite toe boots will be worn.	JS 03/14/01
	9. Noise	9. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.	CP 09/11/00
	10. Eye Injuries	10. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	11. Sharp Objects	11. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	12. Fire	12. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.	CP 09/11/00
	13. Spills	13. Spill and absorbent materials will be readily available; all waste materials generated will be contained in 55-gallon drums.	CP 09/11/00
	14. Biological Hazards	14. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.	JS 03/14/01
	15. Hand and Power Tools	15. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Heavy Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Establish geophysical test lines and grids

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY / DATE
1. Establish geophysical test lines and grids in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00
	6. Dropped Objects	6. Composite toe boots will be worn.	JS 03/14/01
	7. Eye Injuries	7. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	8. Sharp Objects	8. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	9. Biological hazards	9. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan.	JS 03/14/01

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Conventional Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Conduct geophysical surveys

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY / DATE
1. Conduct geophysical survey in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00
	6. Dropped Objects	6. Composite toe boots will be worn or other sturdy work shoes if the steel toe boots interfere with the survey for magnetic anomalies.	JS 03/14/01
	7. Eye Injuries	7. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	8. Sharp Objects	8. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	9. Biological Hazards	9. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan.	JS 03/14/01

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Geophysical Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel in proper use of hand and power tools

ACTIVITY HAZARD ANALYSES

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Excavate anomalies

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZE BY / DATE
1. Excavation of magnetic anomalies in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.	CP 09/11/00
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.	CP 09/11/00
	3. Heavy Equipment Operation	3. Follow procedures in Section 4.3.1; equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift; spills and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms.	JS 03/14/01
	4. Temperature Extremes	4. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.	CP 09/11/00
	5. Slips/Trips/Falls	5. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.	CP 09/11/00
	6. Vehicular Traffic	6. Spotters will be used when backing up trucks and heavy equipment; trucks and heavy equipment will be equipped with back up alarms; traffic cones/vests will be used when working in public traffic areas.	CP 09/11/00
	7. Overhead Hazards	7. Personnel will be required to wear hard hats.	CP 09/11/00
	8. Dropped Objects	8. Composite toe boots will be worn.	JS 03/14/01
	9. Noise	9. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.	CP 09/11/00
	10. Eye Injuries	10. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.	CP 09/11/00
	11. Sharp Objects	11. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.	CP 09/11/00
	12. Fire	12. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.	CP 09/11/00
	13. Spills	13. Spill and absorbent materials will be readily available; all waste materials generated will be contained in 55-gallon drums.	CP 09/11/00
	14. Hand and Power Tools	14. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.	CP 09/11/00
	15. Biological Hazards	15. Follow control measures outlined in Section 6.4.3 of the General Site-Wide Work Plan. If poisonous plant are present, PPE will be upgraded to include tyvek and gloves.	JS 03/14/01
	16. Cave-in	16. No excavation will exceed 4.0 feet below land surface.	CP 09/11/00

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Level D PPE 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Heavy Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel in proper use of hand and power tools

ACTIVITY HAZARD ANALYSIS

Project: Alpha EE/CA, Clearance Activities
Location: Fort McClellan, Anniston, Alabama
Activity: Decontaminate heavy equipment

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY / DATE
1. Steam clean heavy equipment and accessories (Hazards and controls 1 –14 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.	CP 09/11/00
	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.	CP 09/11/00
	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and moving equipment. When working on or near roadways, the area will be clearly marked with traffic cones or high visibility fencing. Workers will wear high visibility traffic safety vests. Work done in the roadway proper will be limited. Coordinate with facility personnel if road closings are necessary.	CP 09/11/00
	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads and equipment swing areas. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.	CP 09/11/00
	5. Dropped Objects	5. Composite toe boots meeting ANSI Standard Z41 will be worn during all site activities.	CP 09/11/00
	6. Chemical Hazards	6. Wear PPE per Table 6-1; practice contamination avoidance; follow good personal hygiene practices	CP 09/11/00
	7. Steam/Heat/Splashing	7. Use face shield **and** safety glasses or goggles; stay out of the splash/steam radius; do not direct steam at anyone; do not hold objects with your foot and steam area near it; ensure that direction of spray minimizes spread of constituents of concern; use shielding as necessary, personnel will be trained on the proper operation of pressure washer, pressure washer wand will be equipped with a dead man's switch.	CP 09/11/00
	8. Pinch/Cut/Smash	8. Use hand tools properly and wear appropriate protective equipment, cut resistant work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.	CP 09/11/00
	9. Temperature Extremes	9. Drink plenty of fluids; train personnel of signs/symptoms of heat/cold stress; monitor air temperatures when extreme weather conditions are present; stay in visual and verbal contact with your buddy; and use Temperature Extremes program EHS 4-6.	CP 09/11/00
	10. Hand and Power Tools	10. Daily inspections will be performed; remove broken or damaged tools from service; use the tool for its intended purpose; and use in accordance with manufacturer's instructions.	CP 09/11/00
	11. Inclement Weather	11. Monitor weather conditions daily.	CP 09/11/00
	12. Eye Injuries	12. Safety glasses meeting ANSI Standard Z87 will be worn.	CP 09/11/00
	13. Heavy Equipment Operation	13. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with	JS 03/14/01

Project: Alpha EE/CA, Clearance Activities
Activity: Decontaminate heavy equipment

Location: Fort McClellan, Anniston, Alabama

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	ANALYZED BY / DATE
		backup alarms.	
	14. Struck by/Burns	14. Personnel operating the pressure washer will use the lowest effective pressure and temperature settings on the pressure washer. Pressure washer spray/stream will not be aimed at people. Personnel using pressure washer will not use hands, feet or knees to brace or hold material to be pressure washed. Pressure washer will not be used to clean personnel boots. Thermal/insulated boots may be used during pressure washing operations.	CP 09/11/00
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**	
1. Hand and Power Tools 2. Appropriate PPE 3. Pressure Washer	1. Initial inspection of heavy equipment will be performed upon arriving on-site. 2. Pressure washers will be inspected daily, prior to each days use. 3. Hand and power tools will be inspected to ensure they are in good condition prior to each days use. 4. PPE will be inspected before and after each use.	1. Personnel have read and will comply with SSHP. 2. Personnel will receive site specific training. 3. Only qualified operators can operate heavy equipment or vehicles. 4. Personnel will have knowledge of proper use of hand and power tools and pressure washer. 5. At least 2 individuals on-site will have current CPR and first aid training.	

ATTACHMENT 8-2

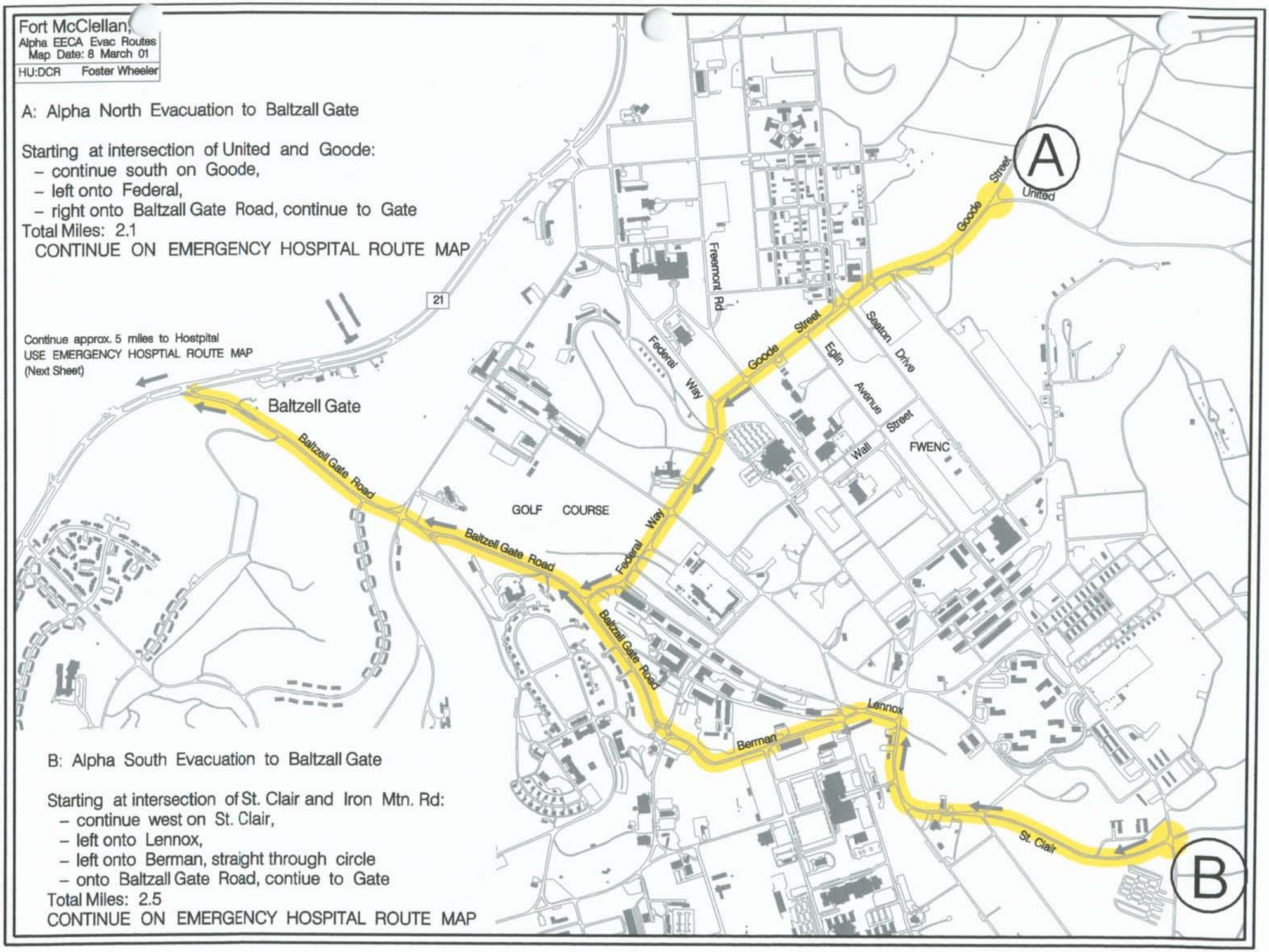
EMERGENCY HOSPITAL ROUTE

Fort McClellan
Alpha EECA Evac Routes
Map Date: 8 March 01
HU:DCR Foster Wheeler

A: Alpha North Evacuation to Baltzall Gate

Starting at intersection of United and Goode:
- continue south on Goode,
- left onto Federal,
- right onto Baltzall Gate Road, continue to Gate

Total Miles: 2.1
CONTINUE ON EMERGENCY HOSPITAL ROUTE MAP



B: Alpha South Evacuation to Baltzall Gate

Starting at intersection of St. Clair and Iron Mtn. Rd:
- continue west on St. Clair,
- left onto Lennox,
- left onto Berman, straight through circle
- onto Baltzall Gate Road, contiue to Gate

Total Miles: 2.5
CONTINUE ON EMERGENCY HOSPITAL ROUTE MAP

9.0 ENVIRONMENTAL PROTECTION PLAN

This Environmental Protection Plan (EPP) has been developed to minimize any potential adverse effects to the environment occurring as a result of OE investigations at Fort McClellan. Specifically, this EPP will describe sensitive natural resources within Fort McClellan and will set forth methods to protect and conserve those resources during OE sampling activities. The investigation sample areas will be field verified by a Foster Wheeler Environmental biologist and a site biologist from Fort McClellan in order to minimize the project's potential disturbance to natural resources. Location of sampling areas will meet the following objectives where feasible:

- Minimizing the use of heavy machinery;
- Minimizing off-road intrusion (i.e., trucks and cars can be parked on roads, side roads, lots, etc.);
- Utilization of areas that require minimal trimming and cutting of brush, and elimination of cutting brush to ground level; and
- Avoidance of areas known to have threatened or endangered flora and/or fauna.

9.0.1 Where impacts to sensitive biological resources cannot be avoided, this EPP outlines potential measures that can be implemented to mitigate such impacts. These mitigation measures were developed based upon a site-specific analysis that addressed unique concerns at Fort McClellan and incorporate more general best management procedures and guidelines that have been implemented for intensive UXO remediation undertakings at other former military training sites.

9.0.2 The U.S. Fish & Wildlife Service considers Fort McClellan a critical natural area because it contains one of the last remaining pristine, old-growth stands of mountain longleaf pine in the United States. Fort McClellan is also believed to have the finest remaining mountain longleaf pine forest ecosystem (Varner, Kush, and Meldahl 2000). This keystone species dictates the best management guidelines set forth by the USFWS to protect this unique community at Fort McClellan.

9.0.3 Twenty-seven plant and animal species associated with longleaf forests have been listed as federally endangered or threatened by the USFWS, with an additional 99 candidate species. Of these listed species, three have been recorded on Fort McClellan; the red-cockaded woodpecker, Mohr's barbara buttons, and Tennessee yellow-eyed grass. Five candidate species for potential listing have also been identified. Management of these species and their associated communities is of special concern and is facilitated through Fort McClellan's Endangered Species Management Plan. Descriptions of these species and special interest natural areas defined by the USFWS are described in the General Site-Wide Work Plan.

9.0.4 After review of the sampling sectors M6-1L, M6-1M, and M5-1L by a USFWS representative, it was determined that appropriate habitat for any federally listed endangered/threatened species or state listed candidate species did not exist inside project boundaries (B. William Garland, USFWS, personal communication). The gray bat *(Myotis grisescens)* inhabits the Main Post, an area adjacent to these sampling sectors, but does not pose a concern. The red-cockaded woodpecker (*Picoides borealis*) has historically occupied longleaf forest on the Main Post as well, however it has not been sighted on Fort McClellan since 1968 (DOE, 1996).

9.0.5 Since the dominant vegetation of the sampling sectors is mountain longleaf pine, the USFWS does consider these sectors to contain a special interest natural area. However, since disturbance will be limited to clearing of the under brush, little or no impacts to longleaf pine will occur. In addition, a small, isolated wetland exists in the upper sampling sector, M6-1L. Impacts to this area are expected to be minimal due to its location on the project's northern boundary and limited extent.

9.0.6 Once sampling grid locations have been finalized, a Fort McClellan USFWS representative will be notified and given the opportunity to express possible concerns. In addition, field personnel will report any wildlife concerns or discoveries to the Service as work is carried out. If any biologically sensitive areas should be identified, coordination with the USFWS will determine appropriate field methods to avoid impacts to these resources.

10.0 Data Management Plan

10.1 Target Data Collection and Recording

All observations and measurements collected during the Intrusive Investigation will be recorded digitally in the field or on the Intrusive Investigation Data Form. When digitally recorded in the field, Intrusive Investigation observations and measurements will be recorded into an electronic form on a portable PC/handheld device by the UXO team supervisor. At the end of each day, the UXO Team Supervisor will download the digital data to the on-site computer network. The Data Manager will then incorporate the data into the project database.

10.1.1 All Intrusive Investigation Data, whether recorded digitally or on Intrusive Investigation Data forms, will be given to the SUXOSS and Site QC Technician within one working day of collection. The SUXOSS and Site QC Technician will review the data for accuracy by confirming that all mandatory information is recorded in the correct place and the designated data type is used to record the data (e.g., diameter is recorded in inches to the nearest 1 inch). The SUXOSS will also confirm that one sheet exists for each target that was investigated.

10.1.2 The SUXOSS will provide forms and logbook training to the crews and will coordinate with the Data Manager and Site CQC Representative to rectify any potential problem areas. This is a crucial step, as electronic data are only as accurate and complete as the hard-copy forms on which they are based. The SUXOSS will ensure the forms are completed correctly within 3 working days. Incomplete forms will be submitted to the SUXOSS for correction/completion. The checked and corrected forms will be delivered to the Data Manager for inclusion in the project database.

10.2 Photographs

Digital photographs will be taken of all ordnance items found during surface clearance and intrusive investigation activities. The digital photos will be downloaded to the on-site computer network by the UXO Team Supervisor. The Data Manager will incorporate the photographs into the project database.

10.3 TARGET COORDINATE DATA

The actual (not offset)coordinates of the reacquired target location will be recorded by the UXO reacquisition teams. The UXO excavation teams will record the offset from the flagged coordinates (reacquired location) to the excavated target(s). The data will be uploaded to the on-site computer network each day after the data is collected, by the UXO Team Supervisor. The Data Manager will incorporate the data into the project database.

10.4 INTRUSIVE INVESTIGATION DATABASE

All Intrusive Investigation observations and measurements will be entered into the Intrusive Investigation Data table of the project database. If fields PCs are used, the electronic data will be imported daily into the database.

10.4.1 If Intrusive Investigation Data Forms are used, the data will be entered into the database. The person responsible for data entry will perform the initial QC inspection by reviewing their own work (i.e., before moving to the next record, confirm that the entered data looks correct). All manually entered data will be printed and checked against the original data sheets under the supervision of the Data Manager. Errors discovered during the data checking will be corrected in the database. When the errors are corrected in the database, the person responsible for the change will initial and date the check sheet.

10.4.2 Digital photographs will be collected daily (if necessary) and pictures of ordnance items will be incorporated into the project database. Reacquired target coordinate data will be uploaded to the project database on a daily basis.

10.5 TRANSFER OF FIELD DATA AND DATA TRACKING

Several files are generated by the geophysical and location acquisition systems for each site surveyed. This data is stored on the field computers during data acquisition activities. At the end of the day, the data collected by each field team will be downloaded to the on-site computer network. The following file types are generated for each survey:

- Geophysical data file with signal intensity and position measurements.
- Location acquisition files containing position data and site identification.

10.5.1 If DGPS or a robotic total station is used during target reacquisition, data files will also be downloaded each day to the on-site computer network.

10.5.2 All EM-61 and location data files will be electronically logged each day by the Data Manager. The following items will be recorded in the tracking database for each EM61 and location file collected:

- Grid/Area ID
- Grid or Ribbon Walk (G or RW)
- Geo Team (1, 2, 3, or 4)
- Date collected
- USRADS file name
- Location file start and stop times
- EM-61 start and stop times

10.5.3 EM and location data will be processed on site. The following items will be added to the tracking database:

- Date USRADS, DGPS (if used) or robotic total station data (if used) processed
- Initials of processor
- Date location and EM-61 data merged (if applicable)
- Initials of processor merging files
- Merged data file name (*.xyz)

10.5.4 After the data has been interpreted, the selected target anomaly locations and information will be added to the project database. The following items will also be added to the tracking database:

- Number of Anomalies
- Date anomaly data added to project database

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11.0 UXOQC Quality Control

Quality Control is conducted using a three-phase control process, preparatory, initial, and follow-up inspection/audits to ensure processes are in control and opportunities for improving processes are captured and implemented.

11.1 PREPARATORY PHASE

A preparatory phase inspection will be performed prior to beginning each definable feature of work. The purpose of this inspection will be to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. The personnel responsible for the work activity are responsible for ensuring that:

- Appropriate plans and procedures are developed and approved
- Personnel required for the activity are identified and positions filled
- Training requirements are identified and training complete
- Preliminary work and coordination has been completed
- Equipment required to perform the work has been identified and is available

11.1.1 The following QC actions are performed by the QC Staff for each preparatory phase inspection:

- Verify that appropriate plans and procedures are developed, approved and are available
- Verify personnel identified are available and meet the requirements/qualifications for the position
- Verify that the required training has been performed
- Verify identified equipment is available, functional, and appropriate for the job
- Verify that the preliminary work and coordination have been accomplished
- Verify that quality issues have been addressed and agreed upon

11.1.2 The specific QC activities performed during the preparatory phase, and results of those activities, will be documented on the QC Surveillance Report, which will be attached to the Daily Quality Control Report.

11.1.3 Discrepancies between existing conditions and approved plans/procedures will be resolved and corrective actions taken for unsatisfactory and nonconforming conditions identified during a preparatory phase inspection.

11.1.4 The SSHO will discuss job hazards with site personnel and verify that the necessary safety measures are in place and ready for use.

11.2 INITIAL PHASE INSPECTION

An initial phase inspection will be performed the first time a definable feature of work is performed. The purpose of the inspection will be to check the preliminary work for the compliance with procedures and contract specifications. Also to establish the acceptable level of workmanship, and check safety compliance, review the preparatory phase inspection, and check for omissions and resolve differences of interpretation.

11.2.1 The following will be performed for each definable feature of work:

- Requirements of quality of workmanship will be established;
- Completion of readiness review actions verified;
- Conflicts resolved;
- Work Plan applicable documents reviewed to ensure that the requirements are being met;
- Performance of work will be observed and adequacy of work verified.

11.2.2 Discrepancies between site practices and approved plans/procedures will be resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the Site QC Manger or his designee, prior to granting approval to proceed.

11.2.3 The specific QC activities performed during the initial phase, and results of those activities, will be documented on a QC Surveillance Report and attached to the Daily Quality Control Report.

11.3 FOLLOW-UP PHASE INSPECTION (SURVEILLANCE)

The follow-up phase inspection is performed on a scheduled and unscheduled basis. The purpose of the inspection is to ensure a level of continuous compliance and workmanship. The Site QC Manager is responsible for on-site monitoring of the practices and operations taking place and verification of continued compliance with the specifications and requirements of the scope of work and approved SOPs. The following will be performed for each definable feature of work:

- Inspections/surveillance to ensure that the work is in compliance with the scope of work and work plans;
- Inspections/surveillance to ensure the required level of workmanship is maintained;

- Inspections/surveillance to ensure each project log book is properly filled out and maintained;
- Inspections/surveillance to ensure data management system is properly tracked and backed up; and
- Inspections/surveillance to check the "false positive" anomalies using a statistically valid sampling plan (i.e. MIL-STD-1916) or 10%.

11.3.1 Follow-up results either negative or positive will be documented on a Surveillance Report and attached to the Daily Quality Control Report.

11.4 DEFICIENCIES AND NONCONFORMANCE

All deficiencies or nonconformance conditions discovered during inspection or other QC functions will be noted on either a Deficiency or Nonconformance Report as appropriate. These two forms are contained in Attachment 11-1 along with the Corrective Action Request Log for tracking these reports. All deficiencies and nonconformance conditions will be resolved prior to completion of the project and in the most timely manner possible. The Daily QC Report will include a report on each Deficiency/NCR that was completed and closed out for the day.

11.4.1 It is the responsibility of all personnel on the project to identify deficiencies and nonconforming conditions to their supervisor or manager as soon as they think the condition exists. Deficiencies and nonconforming conditions should be considered opportunities to improve the process.

11.5 ROOT CAUSE ANALYSIS

Both the deficiency and nonconformance report forms contain an area for the entry of information regarding the cause of the problem and proposed resolution. The determination of the root cause of a deficiency or nonconformance is an integral part of the QC process. Root cause analysis is the responsibility of the functional manager or his/her designee with the assistance of Quality Control Representatives. Criteria considered in the analysis will include:

- Staff qualifications and training
- Adequacy of procedures
- Adequacy of equipment
- Adequacy of QC measures

11.5.1 Input will be obtained as necessary from field personnel and technical advisors in order to identify the factors, which led to the problem.

11.5.2 The root cause is always "upstream" from where the problem was detected. Two strategies that will be employed for determining the root cause of a deficiency or NCR for this project are: 1) tracing the problem back to the source, and 2) evaluation of the cause using basic questions such as who, what, when, where, why, and how. Why is probably the most beneficial question when attempting to arrive at a root cause. This question may need to be asked multiple times before the cause is identified. For example "Why did A happen?" Answer: "Because of B," "Why did B happen?" Answer: "Because of C." This process is carried on until the real cause is identified.

11.6 CORRECTIVE ACTION

Following the root cause analysis, the Site QC Manager will perform analysis of potential solutions(corrective actions) to determine which remedy is most effective in correcting the problem. The process will include all appropriate personnel and will be documented via meeting notes and information listed in the proper sections on the deficiency notice or NCR report. Potential remedies considered may include:

- Supplemental personnel training
- Changes of equipment or modification of equipment currently in use
- Acquisition of supplemental equipment
- Implementation of new procedures or modification of existing procedures
- Changes in QC procedures

11.6.1 The decision for appropriate corrective action to implement is the responsibility of the Delivery Order Manager, however, all parties involved prior to implementation should agree upon this decision.

11.6.2 Successful implementation of corrective action will be documented on the deficiency or nonconformance report. The project QC representative will verify through a follow-up phase surveillance that the corrective action implemented has corrected the deficiency or nonconforming condition and is sufficient to prevent recurrence.

ATTACHMENT 11-1

Deficiency Report, Nonconformance Report, Deficiency/ NCR Action Log, and QC Surveillance Report

DEFICIENCY REPORT
DACA87-99-D-0010
Former Ft. McClellan

Corrective Action Request		
CAR/Deficiency Number:	Date:	
Organization/Project/Team/Activity:	Person Contacted:	
Observation/Condition/Deficiency: Reference:		
Corrective Action Recommendation:		
Originator:	Signature:	
Site QC Representative:	Signature:	Date:
Corrective Action Response		
Responsible Manager/Designee:	Date:	Telephone/Email Address:
Immediate Action Taken:		
Root Cause:		
Corrective Action Taken to Prevent Reoccurrence:		
Corrective Action Taken By:	Signature:	Date:
Evaluation		
Responsible Manager:	Signature:	Date:
QC Comments:		
Site QC Representative: ☐ Acceptable ☐ Unacceptable	Signature:	Date:
Distribution		
☐ PM ☐ DOM ☐ CEHNC ☐ Site Superintendent ☐ SUXOSS ☐ Program QC Manager ☐ Other:		

NONCONFORMANCE REPORT
DACA87-99-D-0010
Former Ft. McClellan

Corrective Action Request		
Nonconformance Report Number:	Date:	
Organization/Project/Team/Activity:	Person Contacted:	
Nonconformance: Reference:		
Corrective Action Recommendation:		
Originator:	Signature:	
Site QC Representative:	Signature:	Date:

Corrective Action Response		
Responsible Manager/Designee:	Date:	Telephone/Email Address:
Immediate Action Taken:		
Root Cause:		
Corrective Action Taken to Prevent Reoccurrence:		
Corrective Action Taken By:	Signature:	Date:

Evaluation		
Responsible Manager:	Signature:	Date:
QC Comments:		
Site QC Representative: ☐ Acceptable ☐ Unacceptable	Signature:	Date:

Distribution

☐ PM ☐ DOM ☐ CEHNC ☐ Site Superintendent ☐ SUXOSS ☐ Program QC Manager ☐ Other:

DEFICIENCY/NCR ACTION LOG
DACA87-99-D-0010
Former Ft McClellan

Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:
Deficiency #:	Date:	Description:	Responsible Party:	Closed Date:
NCR #:	QC Rep:		Due Date:	Closed By:

QC SURVEILLANCE REPORT
DACA87-99-D-0010
Former Ft. McClellan

1 - Definable Feature of Work

☐ Project Management ☐ Geophysical Investigation ☐ Data Management ☐ Brush Cutting/Clearing

☐ Intrusive Investigation ☐ UXO Avoidance ☐ Demolition ☐ Other:

2 - Phase

☐ Preparatory ☐ Initial ☐ Follow up

3 - References

4 - Observed Condition/Activities:

5 - Comments:

6 - Results of Surveillance

☐ Acceptable	☐ Unacceptable	Deficiency #: NCR #:
Conducted By:	Signature:	Date:

7 - Site QC Representative Comments

8 - Site QC Representative Review

☐ Concur ☐ Non-Concur	Signature:	Date

9 - Distribution

☐ PM ☐ DOM ☐ CEHNC ☐ Site Superintendent ☐ SUXOSS ☐ Program QC Manager ☐ Other:

12.0 References

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FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO M. CRULL'S COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

ITEM	Drawing or Ref	Comment	Action
1	Table 3-1, Table 8-1, Fig 6-4, Fig 6-5, Fig 6-6, Attachment 6-1, Tables 1, 2, & 2A	All of these tables and figures list munitions which may be encountered in Area A. However, these lists are not the same. Conflicting information must be resolved. Recommend providing munitions list in only one location and referencing this location wherever necessary.	A - Table 3.1 was modified and contains munitions information for Alpha in a consolidated table. This is now the only table referenced for munitions inf0rmation and is consistent with the rest of the document.
2	Table 3-2	It is not clear how these three items were chosen as the MPM's (see comment 1). Check lists referenced in comment 1 and ensure that MPM for each area is chosen based on correct list.	A – The modified Table 3.1 was given to CEHNC and the MPM was chosen from that list. Exclusion zones were calculated by CEHNC based on that list.
3	Table 3-2	Provide copy of HNC calculation sheets in an attachment or appendix	A – Calculation sheets are now provided in Attachment 3-1.
4	Fig 3-3	If MPM for an area is changed (see above comments) make appropriate change to MSD on this figure.	A – Text was modified to indicate that if MPM for an area changes, the Work Plan figure will incorporate the change.
5	Section 7.1.2.2	Default distances are found in DoD 6055.9-STD Table C5.T1 not C9.72. Some munition specific distances are listed in DoD 6055.9-STD Table C5.T2. 60A-1-1-4 is not used to determine fragmentation distances for COE sites. Correct this paragraph to reflect this information.	A – Text corrected to showed correct information.
6	Section 7.7	Change reference from Attachment 2 to Attachment 2-1.	A – Text corrected.
7	Section 7.7	The General Site Wide Work Plan does not address the minimum separation distance for intentional detonations for specific munitions. This should be addressed in each site specific work plan. An MSD for intentional detonations must be included in this plan. Section 7.7 is a logical place to include this information.	A – MSDs are now addressed in Section 7.7.2.
8	Table 8-1	The Explosive/Incendiary Hazard listed is incorrect for several items. Verify the values listed and correct as necessary.	A – This information has been corrected and is now contained in the consolidated Table 3.1.

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO J. DURHAM'S COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

ITEM	Drawing or Ref	Comment	Action
1		Before I can completely evaluate this EE/CA, I need to review the McClellan General Site Wide Work Plan and Geophysical Prove-Out Report. And I do not have these. So some of my following comments may have already been addressed in these documents.	1. ACTION DEFERRED
2		The contractor needs to peruse DID OT -005-11, Quality Control Plan, to ensure that appropriate QC topics have been addressed in the EE/CA, to include Appendices.	2. ACCEPT/CONCUR FWENC read DID OT-005-11, Quality Control Plan and incorporated the appropriate QC topics and concerns in the Alpha Work Plan, specifically in Sections 6.6.9 Feed-Back Process (Comparison of Dig-Sheet Predictions With Ground Truth) and 6.6.10 Quality Control. Increased detail concerning these topics is included in the General Site Wide Work Plan, specifically Sections 5.6.1 Instrument Drift (DC Offset), 5.6.2 Standardization Procedures, 5.6.3 Abbreviated Standardization Checks, 5.6.4 Instrument Response to a Known Standard, 5.7.1 Instrument Drift, 5.7.2 Diurnal Drift Correction, 5.10 Feed-Back Process (Comparison of Dig-Sheet Predictions with Ground Truth), and 5.11 Quality Control.
3		Prior to running geophysical surveys, the contractor shall survey the prove-out grid with all instruments he intends to use (including schoenstedts and G858) to ensure he can detect the target ordnance of this EE/CA.. The contractor shall submit the results to CEHNC for approval before proceeding.	3. ACTION DEFERRED The equipment we are intending to use to resolve anomalies are Geonics EM-61, EM-61 Hand Held, and Vallon VMX 2. We are not planning on using Schoenstedts or G858 magnetometers on this project. FWENC performed a geophysical prove-out test in July, 1999 at Ft. McClellan to demonstrate the capabilities of the Geonics EM-61 to resolve anomalies at the Base. This test was submitted to the CEHNC during FWENC original bid process and then again as Attachment 5-1 in the General Site Wide Work Plan. FWENC also performs quality control checks on the data acquisition equipment as discussed in Section 6.6.10 Quality Control of the Alpha Work Plan specifically 6.6.10.2 6.6.10.3 and 6.6.10.4. The General Site Wide Work Plan also covers these topics in more depth including 5.6.1 Instrument Drift (DC Offset), 5.6.2 Standardization Procedures, 5.6.3 Abbreviated Standardization Checks, 5.6.4 Instrument Response to a Known Standard, 5.7.1 Instrument Drift, 5.7.2 Diurnal Drift Correction,

ITEM	Drawing or Ref	Comment	Action
			5.10 Feed-Back Process (Comparison of Dig-Sheet Predictions with Ground Truth), 5.11 Quality Control, especially 5.11.2, 5.11.6, 5.11.7, and 5.11.8. Per e-mail communication from Bob Selfridge on 2/20/01, CEHNC agrees that the previously performed prove-outs were sufficient for this purpose.
4		If not done so already, the contractor needs to submit a Geophysical Investigation Plan following the outline of DID OE-005-05. For those topics that are not applicable, the contractor needs to state as such. CEHNC must approve the plan before the EE/CA surveys begin.	4. ACCEPTED/CONCUR FWENC has submitted a draft of the Alpha Work Plan including Section 6.6 Geophysical Investigation Plan which follows the outline of DID OE-005-05 to the CEHNC. All topics pinpointed in DID OE-005-05 are addressed in Section 6.6. FWENC has received your comments in response to this submittal, is currently revising the draft, and will resubmit a finalized copy of the Alpha Work Plan including Section 6.6 to the CEHNC.
5	2nd page	Insert acronyms instead of referencing	5. ACCEPTED/ CONCUR A list of acronyms has been inserted into the Alpha Work Plan, instead of referencing the General Site Wide Work Plan.
6		As part of the contractor's QC efforts, the contractor needs to address running back-check surveys over grids that have been surveyed and "cleared by them. CEHNC will then select some of these grids and survey them as well.	6. ACTION DEFERRED – It is FWENC's understanding that CEHNC will perform QC back-checks on selected grids which have been surveyed by FWENC. In addition, FWENC QA/QC procedures require FWENC personnel to back-check selected anomaly excavations after reacquisition and intrusive operations. Section 11.2.9 of the General Site-Wide Work Plan establishes QA/QC procedures which include FWENC's back-checking of excavations, but geophysical resurveying QA activities will be performed by CEHNC and not by FWENC.
7	p. 5-2 Sentence 10, 11	Please clarify "since data validation for low-density grids was performed in Task 3".	7. CONCUR Edited Section 5.3 Phase I Site Characterization (Task 3), now reads: Based on FWENC's review of historical information and the field reconnaissance performed by FWENC at the three sampling sectors in the Alpha Area during March and April 2000, a field program consisting of geophysical and intrusive UXO investigations will be conducted at the site to characterize the UXO density and distribution in accordance with the specifications contained within this Work Plan. The sampling sectors contain varying concentrations of expected OE contamination (designated high, medium or low), and distribution of OE within each sector is

ITEM	Drawing or Ref	Comment	Action
			expected to be homogenous. Within the Alpha Area, FWENC will perform geophysical sampling over areas totaling up to 64.5 acres throughout the 876-acre investigation area contained within the 3 sampling sectors delineated. This task also includes limited intrusive activities associated with data validation. Data validation will be conducted at 9 low-density grids covering 4.5 acres, with excavation of up to 450 geophysical anomalies. This represents 10 % of the low-density grids in the Alpha Area. The remaining intrusive activities are included in subsequent tasks. A detailed description of the Phase I Site Characterization of the Alpha Area is contained in the Basis of Estimate, Attachment 5-1b of this work plan.
8		The contractor states that an EM61 is the instrument of choice. I assume this conclusion was arrived at via a prove-out test-grid. If so, the contractor needs to state as such	8. ACTION DEFERRED A sentence already exists at the beginning of Section 6.6 Geophysical Investigation Plan, Section 6.6.1.2, p 6-6, lines 29-31: Based on the prove-out test performed in the summer of 1999, it is anticipated that the primary geophysical sensor technology that will be used to meet the program objectives is time domain electromagnetics (TDEM).
9	Section 6.0 p. 6-15 Sentence 18, 19	I note that an EM61 HH and possibly a Vallon shall be used to reacquire anomalies. The contractor must demonstrate over the prove-out grid that these instruments are appropriate. This also applies to Attachment 6-1, p. 14, 2nd paragraph and p. 15 31d paragraph	9. CONCUR FWENC agrees that a test plot should be used to demonstrate the appropriateness of the equipment and the qualifications of its personnel on the equipment that will be used during this project, specifically the EM-61 HH and the Vallon VMX 2. FWENC will make inquiries with the CEHNC to persuade the Base to grant FWENC a plot of land to perform the testing and permission to bury items for testing purposes.
10	10 p. 6 Attachment 5-1b Task 4	The reacquisition must be immediately after a grid is surveyed	10. ACTION DEFERRED Where possible reacquisition will occur immediately after data acquisition. Reacquire cannot occur immediately after a high or medium density OE grid is surveyed because the data must be post processed, interpreted, and targets picked before reacquire can take place. While the site geophysicist is processing and interpreting the data, the field team must move onto another grid in order not to immobilize the fieldwork. FWENC acknowledges the importance of real time data validation, therefore where low density grids are encountered, field processing of geophysical data will be performed immediately following data collection. Where medium and high density grids are encountered, the interpretation will be more complicated and will take longer and therefore the data acquisition team will move onto another grid and reacquire will occur at a later date.

ITEM	Drawing or Ref	Comment	Action
11	Section 6.0 QC.	6.6.10.2. Quality Control. Insert the QC procedures at Attachment 1. Cite DID OT -005-11. In addition, the contractor must create a small plot of buried ordnance items of concern and run his instruments over that plot each morning to assure detection capabilities. Replace appropriate text in the EE/CA to reflect this.	11. ACCEPTED/ CONCUR The issues raised in Attachment 1: Geophysical QC are addressed in Section 6.6.10. Tests to collect background data and data over a target are completed at the commencement and completion of a survey. These QC activities are detailed in Section 6.6.10. The daily details of the geophysical surveys will be included in the Daily Reports which are submitted daily to the Corps. The file names and information associated with the individualized setups will be tracked on the palmtop computers.
12	Section 6, p.6-17, Sentence 1 and 2	The EM61 and EM61 HH must be calibrated using the null features of the top, and bottom coil. Make sure you get back pack with the null features	12. NON-CONCUR The EM-61 has been calibrated at the supplier and does not need to be further calibration because its readings are relative, and are not dependent on a set zero. This calibration issue is discussed in the Alpha Work Plan, Section 6.6.10 Quality Control, specifically 6.6.10.2 and 6.6.10.3. It is also addressed in more detail in the General Site Wide Work Plan in Sections 5.6.1 Instrument Drift (DC Offset), 5.6.2 Standardization Procedures, 5.6.3 Abbreviated Standardization Checks, 5.6.4 Instrument Response to a Known Standard, 5.7.1 Instrument Drift Correction, 5.11 Quality Control, specifically 5.11.2 and 5.11.6.
13	Section 6, 6.6.10.4	For cultural features, note them and take a GPS reading.	13. ACCEPTED/ CONCUR Section 6, 6.6.10.4, edited the following sentences: In addition, some targets interpreted to be the result of above ground cultural features (e.g., metallic monitoring wells, time synch target) may be selected for target reacquisition to exhibit the repeatability of the acquisition, processing, interpretation, and target reacquisition processes. Now reads: Above ground cultural features (e.g., metallic monitoring wells, time synch target) will be noted in the field notebook and surveyed using the USRADS technology. In addition, these targets interpreted to be the result of above ground cultural features may be selected for target reacquisition to exhibit the repeatability of the acquisition, processing, interpretation, and target reacquisition processes.
14	Section 6, p6-7	What grid spacing will be used for the surveys?	14. ACCEPTED/ CONCUR Section 6, p 6-7, 1-3, Edited the sentence: The geophysical sampling methodology that will be employed is

ITEM	Drawing or Ref	Comment	Action
			two-dimensional grids (i.e., closely spaced parallel transects). Now reads: The geophysical sampling methodology that will be employed is two-dimensional grids (i.e., 2.0-2.5 ft spaced parallel transects).
15	p.6-11	Only the USARAD system is addressed here for location. I thought GIS would be used as well.	15. ACTION DEFERRED Geophysical data will be acquired using grids and positioned using USRADS for the Alpha EE/CA. Currently there are no plans to incorporate DGPS into the Alpha EE/CA. Geophysical data will be acquired using grids and ribbon walks, and positioned using USRADS and DGPS respectively.
16	Section 6, p.6-12	All personnel must meet the qualifications as listed in DID OT -025. Cite this DID in the appropriate places along with the qualifications for each personnel type on . site. Make a statement that this DID shall be adhered to.	16. ACCEPTED/ CONCUR In Section 6.6.1.1 Personnel Qualifications we acknowledge the adherence to DID OE-025. Section 6.6.1.1 Personnel Qualifications All geophysical investigations shall be supervised by a geophysicist meeting the qualification requirements listed in DID OE-025. During the geophysical investigation of the Alpha Area, a geophysicist will be on-site during data acquisition operations. For clarification a sentence was edited in the Personnel Section 6.6.3.3. Section 6.6.3.3 Personnel, p 6.12, 11-13 The geophysical staff will consist of a Geophysical Task Manager (GTM) who meets the qualification requirements listed in DID OE-025 and two field geophysicists (FG). 6.6.3.3.1 The GTM will work with the field geophysicists and Foster Wheeler Environmental PM to ensure the production rates are met and the data quality, especially during field data acquisition activities, is adequate to meet the program objectives. The GTM will be responsible for the overall quality of the geophysical program, and will provide guidance to the FG's in the processing and interpretation of the data. The FG's will process and interpret the geophysical data in conjunction with the GTM, as well as provide field QC oversight for the data acquisition and specific intrusive investigation processes.
17	p.6-13 sentence 1	Weekly data must be submitted to the CEHNC Geotech POC early Mondays following collection. In addition, the attached form (Attachment 2) must be given to the CEHNC on-site POC or e-mailed, along with the data, to the CEHNC Geotech Branch,	17. ACCEPTED/ CONCUR Clarified wording in Section 6.6.3.3.1.

ITEM	Drawing or Ref	Comment	Action
		Jon.Durham@HND01.usace.army.mil	Original sentence: Transfer of the raw and positionally corrected data to CEHNC geophysical representative on a weekly basis. Now reads: The raw and positionally corrected data in addition to the CEHNC Geophysical Survey Data Logs will be transferred to CEHNC Geotech POC and Jon Durham the CEHNC geophysical representative, on a weekly basis, early Monday morning following the previous week's collection.
18	Section 6, p.6-15, sentence 18 and 19	Only qualified personnel can operate the EM61 Hand Held and Vallon. This is also true of the other instruments used in the surveys..	18. ACCEPTED/ CONCUR FWENC will pursue inquiries with the CEHNC for permission for a location at Ft. McClellan and permission to bury targets at that location. Clarified wording in Section 6.6.8.2. Original sentence: At this stage, an EM-61 (Hand-held mode) and/ or Vallon VMX 2 will be used by FWENC UXO and/or the FG's to pinpoint the target location within approximately 20 cm. Now reads: At this stage, an EM-61 (Hand-held mode) and/ or Vallon VMX 2 will be used by a qualified FWENC UXO and/or a FG's to pinpoint the target location within approximately 20 cm. Qualification will be proved through a successful completion of a prove-out grid with an EM-61 HH and a Vallon VMX 2.

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO K. WILLIAMS'S COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

ITEM	Drawing or Ref	Comment	Action
1	General	The Site-Specific Safety and Health Plan is not specific enough to provide adequate information to the workers. Recommend plan be re-written and submitted for review. Several specific examples include: 1. No signature block on it for the corporate CIH. EM 385-1-1 requires all SSHPs be signed by CIH. 2. No task hazard analysis identifying each task and their major steps along with the hazards and the controls. 3. No discussion as to emergency routes to hospitals.	Plan was modified to include examples below and now includes pertinent detailed information specific to Alpha Area. The Site-Wide SSHP is still referenced for items that are applicable on a Site-Wide basis. The Purpose of the Site-Wide Work Plan, per agreement with CEHNC, is to cover items applicable to the entire site so that all of that detail does not have to be republished in every Site-Specific Plan. A - SSHP now contains signature block for Joseph Sbarra, CIH, Foster Wheeler's Project Environmental Safety Manager for this site. A - A revised, detailed Activity Hazard Analysis has now been added as Attachment 8-1. A - A map showing the Emergency route to the hospital has now been added as Attachment 8-2.

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO S. MURDOCK'S COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

ITEM	Drawing or Ref	Comment	Action
1.	Sec. 1.1.2, lines 27. 28	a) The IR3M risk methodology may not be used for this EE/CA. Rephrase this sentence to say, "A risk analysis will be performed that incorporates the results of the investigation." b) Also, delete the term residual before UXO, here and in other locations throughout the document. Typically, the term residual UXO refers to the UXO left after an action is taken.	1a. Text modified as requested. However, much of Section 6.7 is written specifically for IR3M, and was not changed since no alternative risk methodology has been identified to FWENC. 1b. A - Text modified as requested.
2.	Sec. 1.2, lines 9	a) The mention of the SOW and the inclusion of it in this document are not 10' 12, 13 appropriate. Delete. b) The Recon Findings document was never submitted to the BCT members with the exception of CEHNC. The information in that document should be formally included in this document and referenced here to the section where it will be included.	2a. A - SOW was removed and most references to it were removed, but in some instances it was necessary to refer to the SOW for specific assumptions dictated by the SOW: example – the assumption of 100 OE items per acre in the SOW is used as a basis for many activities and the SOW was mentioned as the source of this assumption. 2b. A/N - This document is formally included in the Work Plan as Attachment 6-1. The reader is referred directly to this attachment in Section 2.1 and elsewhere as details are referenced. Pertinent information (quantities, acreages, etc.) are also repeated in the text of various sections as appropriate. Virtually all of the information in Attachment 6-1 was presented to the BCT during presentations/discussions of the EE/CA concept planning.
3.	Sec 2.1, line 15	Mention that the Choccolocco Mtns and Corridor are designated as the Charlie EE/CA.	A – Text modified as requested.
4.	Sec 2.2.3, line 7	Delete the word approved. Here and throughout the document refer to the plan as "Final General Site-Wide Work Plan. .It has not been approved by all parties, yet.	A - Text modified to delete "approved".
5.	Sec. 2.3.2, line	See comment 2. b. 28, 2.4.5, etc.	A - Reader is referred to Attachment 6-1. See response 2b.
6.	Sec 2.5.1, line	See comment 1.b. 17, Sec 4.1.1, etc.	A - Text modified as requested
7.	Sec 2.5.1, line	Add a statement that these areas have been excluded from this study	A - Text modified to refer to EBS.

ITEM	Drawing or Ref	Comment	Action
		based 20 upon the Environmental Baseline Study by ESE.	
8.	Sec 3.1, line 5	Throughout the document do not use the term remedial alternatives. Replace with response alternatives. Please do a global search and replace.	A - Text modified as requested.
9.	Table 3.2	Were these distances calculated by CEHNC or taken from the guidance tables? We should specify where these numbers are from.	A - The revised Table 3.2 shows distances calculated by CEHNC. Calculations are included as Attachment 3-1.
10.	Fig.3-3	The exclusion zone extends beyond the installation boundary. We should discuss the possibility of using engineering controls to reduce these areas, if there are activities in the off-site property that may be difficult to evacuate.	A - Added text to indicate that use of engineering controls will be evaluated adjacent to off-site properties.
11.	Sec. 4.4.2, lines	See comment 1.a. 15-18, 4.8, line 25	A - See response 1a.
12.	Attachment 5-1	This should not be included in this document.	A - SOW document removed along with most references. See Response 2a.
13.	Sec. 6.3, line 22	Reference para. 6.6.2.1.1 that explains oversized grids.	A - Text modified as requested.
14.	Sec.6.6.2.2.1, line 10	Mention that the CDTF has already been transferred to another federal agency.	A - Text modified as requested.
15.	Sec. 6.6.2.2.1.1, line 14	Add the word "be- between will and sampled.	A - Text modified as requested.
16.	Sec. 6.6.2.7	It may be beneficial to show the table from the Recon Findings report that has the vegetation and terrain types for each sampling sector .	A -Text modified to refer reader directly to Table 4 of Attachment 6-1. See Response 2b.
17.	Sec.7.1.2.2	See comment 9.	A - See Response 9.
18.	Sec. 8.16.6.2, line 35	Correct spelling of .shippers..	A - Spelling corrected to "chippers".
19.	Sec 6.7	This section may have to be significantly changed if the IR3M is not used for this EE/CA. A decision on this issue should be made within the next 2 weeks.	ACTION DEFERRED - See Response 1a.

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO M. GIFUN'S COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLANALPHA AREA EE/CA

ITEM	Drawing or Ref	Comment	Action
GIFFORD			
1.	Pg 3-11, Table 3.2	The calculation documents from CEHNC-ED to use these Exclusion Zones must be in the Work Plan.	A – Calculations included as Attachment 3-1.
2.	Pg 4-6 line 11-12	A QC geophysicist in the grid to evaluate excavated anomalies during intrusive investigation is not consistent with current guidelines ie: only mission essential personnel will be within the exclusion zone and the number of exposed personnel will be kept to a minimum. (chap 5 Basic Safety Concepts and Considerations for Ordnance and explosives Operations)	A – The Geophysicists will perform QC operations
3.	Pg 6-23 after line 23	Word and line spacing needs to be corrected.	A – Corrected.
4.	Pg 7-2 line 18	LAW Basic Safety Concepts and Considerations for ordnance and Explosive Operations. Dtd 7 Mar 2000 Jet perforators are not acceptable substitute for bulk explosive and will not be used for disposal operations.	A – Text modified.
5.	Pg 7-5 lines 6-12	Table 2-4 of 60A-1-1-4 is not authorized for use in determining minimum separation distance (MSD), the only authorized MSD's are obtained In DOD 6055.9 dtd July 1999 w/cg Table C5- T1 and C5- T2 and by CEHNC-ED Calculations for a particular Ordnance item.	FWENC used the more recent July 2000 version of the referenced document in the Draft version of the Alpha Work Plan. Also, CEHNC calculations were received and are now included as Attachment 3-1.
6.	Pg 1	Remove y after Florida	A – Text corrected.

ITEM	Drawing or Ref	Comment	Action
	Attachment 7-1 3.0 Definitions 4th Bullet		
7.	Attachment 7-1 Para 10.0 References	The following references are outdated: DOD 6O55.9-STD, July 1997, current date Is July 1999, AR 385-64.22 May 1987, current date Is 28 Nov 1997, 60A-1-1-31. Revision 0, 31 May 1994. Current date and revision is Revision 1, 31 Dec 1997. 60A-1-1-4, Revision 2,24 Sept 1990, Current date and revision is revision 3, 11 April 1998.	A – Updated publications have now been received and used in this document. References were also updated to reflect updated versions.
8.	Section 8 Table 8.1	Correct explosive/incendiary Hazard weight of Pentolite in the 2.36 inch Rocket. It should read .5 lbs.	A – Based on other comments received, Table 8.1 and Table 3.1 have now been combined into one table, and ordnance types have been revised revised based on further information concerning the ordnance specific to the Alpha Area. The 2.36-inch rocket is pertinent to the Bravo Area, not Alpha as previously thought. The correction to .5 lbs for this rocket has been made in the Bravo Area Draft Work Plan.
9.	Table 8-1 pg 8-6	Add the appropriate hazards associated with a Livins Projector other than the TNT hazard.	A – See Response #8. Table 3.1 in the Bravo Draft Work Plan has been revised to address this comment.
10.	Table 3-2 Pg 3-11	The 37MM Projo MK-2 was selected as the MPM for area M6-1M .Table 3-1 indicates that 4OMM and LAWS were used in this area. The MSD for these items should be calculated by CEHNC-ED as they may be greater than the 37MM MK- 2.	A - Attachment 3-1 contains calculations from CEHNC based on revised complete ordnance list provided by Foster Wheeler for the Alpha Area.

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO EPA's COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

The following comments were received verbally from Mr. Doyle Brittain during the Fort McClellan BCT Meeting on 1/10/01. Comments below are paraphrased based on notes taken at that meeting concerning Mr. Brittain's comments.

Comments - Responses

1. Comment – Justify intrusive sampling of 10% of the grids during the data validation phase of the site characterization.

   Response - Section 5.4.2 was expanded to address this issue.

2. Comment – Address the types of ordnance used at the installation, as well as ruling out types of ordnance not used (such as aerial bombing).

   Response – Types of ordnance used in the Alpha Area are summarized in Table 3.1. Section 2.5.8 summarizes the information found regarding aerial bombing. Historical information and field reconnaissance found no evidence of such bombing, although some inert bombs were used as training objects for decontamination of ordnance from chemical contaminants.

3. Comment – Discuss munition penetration depths vs. depths of geophysical investigation.

   Response – Section 6.6.2.5 discusses US Army Corps of Engineers guidance concerning penetration depths and detection depths of various ordnance items, depending on the types of geophysical methods used. In addition, a geophysical prove-out was conducted by Foster Wheeler at the site in 1999 demonstrating that the methods employed meet these requirements under Fort McClellan site conditions.

4. Comment – Provide information regarding the qualifications of key Foster Wheeler personnel being used in this project.

   Response – Attachment 3-2 contains resumes of key personnel showing qualifications and past experience in similar projects.

ADEM's COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA ORDNANCE AND EXPLOSOVES RESPONSE FORT McCLELLAN, ALABAMA

General Comments

1. Please read through the entire document carefully for typos and readability. The typos were numerous and this letter does not detail or discuss the changes needed.

2. There was no discussion in this work plan as to how UXO will be located or remediated in lakes, streams, and ponds. What are the techniques for this and how will you cover that area if needed? If there is no concern, then the report should at least attempt to discuss why there is no concern for water bodies.

3. There is no discussion of how landfills and fill areas are affected by UXO. What are the criteria for landfill/fill area investigations? If a fill area contains large amounts of metal (cans, metal fragments, construction debris containing metal, etc.), does this trigger a removal operation if UXO is found?

Specific Comments

#/Page/Section	Comment
1/2-1/2.1	Section 2.1: This section discusses the Alpha and Bravo areas but does not discuss the Charlie Area. Other sections discuss the Charlie Area (Section 6, Appendix C). Please include a small discussion about the Charlie Area so the reader is aware that there is more that two areas of concern.
2/2-4/2.5.1	Section 2.5.1: This section states that paved areas present little or no risk to UXO exposure. However, experience from past work at NASA in Huntsville, Alabama has shown that UXO had been paved over sometime in the past. Some of the roads that were dug up or roads that have been weathered away revealed exposed UXO. Some parking areas and roads that are suspect of UXO should be included in the study. Roads in range fans also should be suspect. If a paved road is located in an area that was picked by the random number generator, will the paved road be screened for UXO? What are your methods for digging through concrete and asphalt? If you suspect UXO under pavement and actually found OE related items during the initial reconnaissance, what measures will be taken to remove or dispose of the items?
3/Table 3-1	Table 3-1: This table has blank spaces for R35 under "FWENC" and "OA#". Please clarify. What does "-" represent under "OA#" for "End of Cycle Test R"?
4/Attach. 5-1a	Attachment 5-1a, Page 2, Section 2.3: Please add information about Charlie Area.

5/Attach. 5-1a	Attachment 5-1a, Page 6, Section 4.1: The deliverable "Action Memorandum-Draft Alpha Area, Bravo Area" has under "Days after NTP" the statement "10 days after F EECA received." Please explain what "F" represents.
6/Attach. 5-1a	Attachment 5-1a, Page 6, Section 4.4: Please adjust the Table to one page. This table is out of date. David Skridulis, Bart Reedy, and Norrell Lantzer are no longer on the project at this time. The table needs updating. Please change "Phillip" to "Philip."
7/ Attach. 5-1b	Attachment 5-1b, Page 10, Task 7, Last Paragraph, Last Sentence: Where is "Attachment 1"? Please clarify.
8/6-23/6.7.3.4.1	Line 23: Please correct the paragraph spacing.
9/6-24/Figure 6-4	Figure 6-4: Under the "POTENTIAL RECEPTORS", are the dark colored squares the Potential Receptors or are the white squares? Please clarify.
10/Attach 6-1	Attachment 6-1, Page 3, Table 1: This table has blank spaces. Please explain why the spaces are blank or add necessary information. What does "-" represent under "OA#"?
11/Attach 6-1	Attachment 6-1, Page 6, Table 2: This table has blank spaces. Please explain why the spaces are blank or add necessary information.
12/Attach 6-1	Attachment 6-1, Page 8, Table 2A: For the FWENC SECTOR "M3-3H" and "M4-2H", please quantify "(numerous)." Is the number in the 10's, 100's, 1000's, etc.?
13/Attach 6-1	Attachment 6-1, Appendix A, Page A-3, Last Paragraph, First Sentence: Percentages of terrain are suggested (39 percent of the terrain is flat, 57 percent is hilly, and 4 percent is mountainous). What are the slopes in degrees that separate the types of terrain? Please clarify.
14/Attach 6-1	Attachment 6-1, Appendix C, Page C-2, Table C1: Under "Parcel", what is "+"? According to Figure 2-2, the Parcel should be "FWS."
15/7-6/7.1.3.1	Lines 29-31: Please give examples of culturally significant UXO items. How do you determine when an UXO item is culturally significant? Please clarify.
16/Section 8	Section 8: This section should include discussions of biological hazards.
	Section 8: This section should have an emergency evacuation plan and Hospital route map with directions specific to the Alpha Area.
	Section 8: Check all the personnel noted in this section to make sure that the list is complete and up-to-date.

End of Comments

FOSTER WHEELER ENVIRONMENTAL'S RESPONSES TO ADEM's COMMENTS ON THE DRAFT SITE-SPECIFIC WORK PLAN ALPHA AREA EE/CA

General Comments - Responses

1. Document has been proofed to correct typos and format for better readability.

2. Section 2.5.2 now addresses water bodies.

3. There were no indications from historical records or from Foster Wheeler's reconnaissance activities that ordnance items were disposed of in landfills at the installation. Landfills generally contain numerous metallic objects of non-OE origin and do not lend themselves to OE characterization using geophysical methods. Within the Alpha Area sampling sectors, no known landfill areas are being excluded from geophysical sampling activities. The only areas being excluded from consideration for sampling are those that are currently off-limits to contractor personnel (ex. – Chemical Decontamination Training Facility).

   If other fill areas are present within sampling sectors, anomalies found in those areas will be evaluated along with anomalies in other areas, and a subset will be excavated during the data validation phase of the investigation.

Specific Comments - Responses

#/Page/Section	Comment Response
1/ 2-1/ 2.1	Text added in Section 2.1 to clarify location of Charlie Area EE/CA.
2/ 2-4/ 2.5.1	Text added to Section 2.5.1 to address roads. Foster Wheeler will have equipment capable of going through asphalt.
3/ Table 3-1	In response to CEHNC comments, Table 3.1 and Table 8.1 were combined to create a single table for historical ordnance information. The new Table 3.1 corrected the earlier omissions.
4/ Attach. 5-1a	In response to CEHNC comments, Attachment 5-1a is no longer included in this document.
5/ Attach. 5-1a	(see #4)
6/ Attach. 5-1a	(see #4)

7/ Attach. 5-1b	Attachment 1 to Attachment 5-1b was the itemized cost estimate for the project. That item is not appropriate for inclusion in this Work Plan. The reference to that Attachment has been removed to avoid further confusion.
8/ 6-23/6.7.3.4.1	Spacing has been corrected.
9/ 6-24/Figure 6-4	Text modified to clarify this.
10/ Attach. 6-1	"OA" stands for Ordnance Area and OA #s were assigned to areas of concern for ordnance in the ASR. In some cases, areas were not assigned an OA # if there was no ordnance concern (ex.-bivouac area), or if a range was already covered by another OA or several other OAs. Table 3.1 in the Final Alpha Area Work Plan includes the pertinent information in a more reader-friendly format.
11/ Attach. 6-1	Blank areas in the ordnance found column means that no ordnance were found in that group of ranges during reconnaissance. Blanks in the FWENC Sector column were due to ambiguity about which sampling sector contained a given range or, as with R24A, that range is purposely not assigned an EE/CA Sampling Sector since it is being handled in the CWM EE/CA. As part of the process of historical records search activities, ambiguity concerning range locations has been largely corrected since Attachment 6-1 was written.
12/ Attach. 6-1	Numerous refers to 10's.
13/ Attach. 6-1	A quantitative slope analysis was not performed for this estimate. These estimates were based on professional judgement following field observations during reconnaissance activities and the relation of field observations to the topographic map. The categories were selected to provide guidance for using various field instrument types during EE/CA sampling, and qualitative judgements as to whether the combination of terrain and vegetation in a given area would indicate the "grid" method or "transect" method of data collection.
14/ Attach. 6-1	This is a typo. Sector designation should be FWS.
15/ 7-6/ 7.1.3.1	Not currently well-defined. Once grid locations are finalized in this Work Plan, Archeologist will be consulted prior to sampling activities to define any potential archeological concerns, ordnance or otherwise. Any concerns, and the grids which may be affected, will be briefed to the field personnel for avoidance and/or reporting.

16/ Section 8

Biological hazards have now been addressed in the Activity Hazard Analysis, Attachment 8-1.

A map to hospital has now been included as Attachment 8-2. Emergency evacuation plans are very specific to the grid being surveyed at any given time, and will coordinated with local EMS on an ongoing basis during sampling.

List has been checked and modified where necessary.