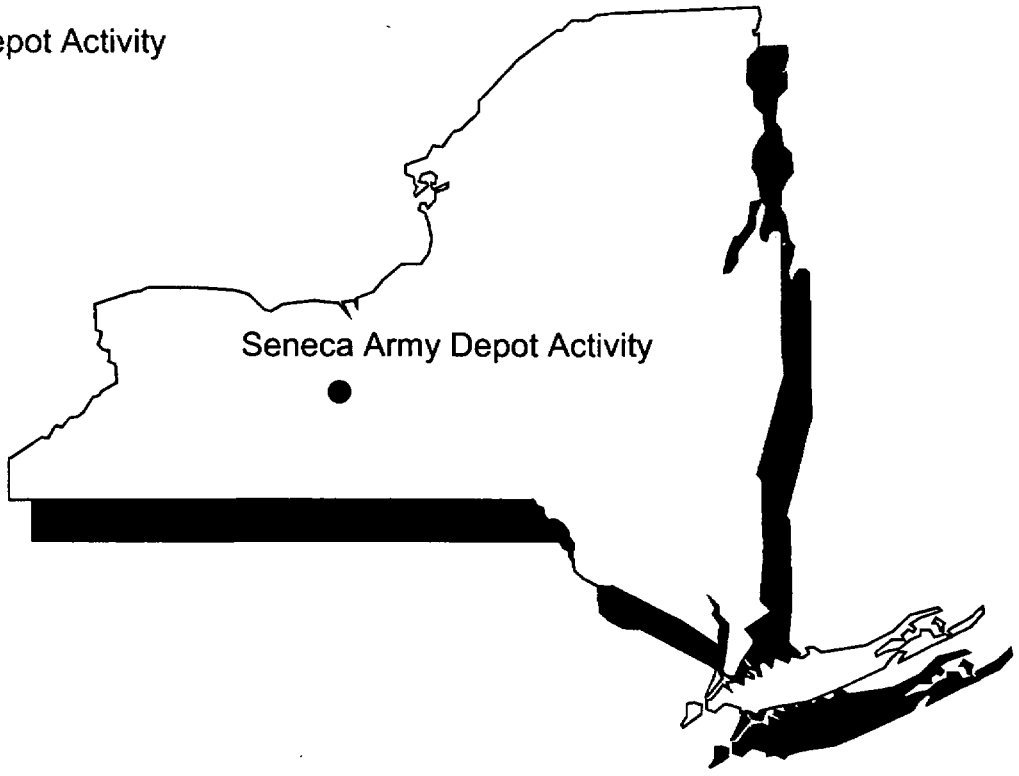
01457

US Army, Engineering & Support Center
Huntsville, AL

Seneca Army Depot Activity
Romulus, NY



Final

February 2004

Ordnance and Explosives Engineering Evaluation Cost Analysis Report

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February 17, 2004

Mr. Julio Vasquez
USEPA, Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

SUBJECT: Submittal of the Final Ordnance and Explosive Engineering Evaluation / Cost Analysis Report, Seneca Army Depot, Romulus, Seneca County, New York.

Dear Mr. Vasquez:

Parsons Engineering Science, Inc. is pleased to submit the Final Ordnance and Explosives Engineering Evaluation / Cost Analysis report for various sites within the Seneca Army Depot Activity located in Romulus, New York.

This Final OE EE/CA includes revisions in response to EPA comments dated February 21, 2003. The response to comments was previously submitted.

Parsons appreciates the opportunity to provide you with this report. Should you have any questions please feel free to call me at (617) 457-7859.

Sincerely,

PARSONS

James Lowerre
Project Manager

cc: Mr. S. Absolom, SEDA
Mr. B. Railey, CEHNC-IS-FS
Mr. R. Battaglia, USACE, NY District
Mr. C. Smith, CEHNC-PM-EO
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FINAL

ORDNANCE AND EXPLOSIVES ENGINEERING EVALUATION/ COST ANALYSIS REPORT

SENECA ARMY DEPOT ROMULUS, SENECA COUNTY, NEW YORK

Prepared For:

SENECA ARMY DEPOT ACTIVITY
and
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
and
HUNTSVILLE CENTER

Contract No. DACA87-95-D-0018
Delivery Order No. 0052

Prepared By:

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JANUARY 2004

EXECUTIVE SUMMARY

ES1 The 10,587-acre Seneca Army Depot Activity (SEDA) facility was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army since that date. From its inception in 1941 until 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the Seneca Army Depot under its Base Realignment and Closure (BRAC) process. This recommendation to close Seneca Army Depot Activity was approved by Congress on September 28, 1995 and the Depot was officially closed in July 2000.

ES2 In accordance with the requirements of the BRAC process, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for Seneca Army Depot was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified as to their most likely future use. These areas included: housing, institutional, industrial, an area for the existing navigational LORAN transmitter, recreational/conservation, and an area designated for a future prison.

ES3 In July of 1998, the U.S. Army Corps of Engineers (USACE) conducted a site visit and historical data collection effort. The findings are documented in the Archives Search Report (ASR). The ASR initially subdivided the depot into 27 Areas of Interest (AOIs) for ordnance contamination based on physical attributes, homogeneity, and current and historical land use. The ASR evaluated each AOI to determine whether the area should or should not be investigated for ordnance and explosives/ unexploded ordnance (OE/UXO). Each AOI was classified as requiring further investigation or not requiring further investigation based on a review of historical documents, aerial photography, and employee interviews. Most of the AOIs were also visited by USACE to determine whether any traces of OE were readily apparent.

ES4 The ASR classified 15 of the areas as uncontaminated. Subsequently, one of the areas recommended for further investigation, SEAD-43, was classified as a no further action site after a geophysical and intrusive investigation in 1999. The remaining 11 AOIs discussed in the ASR were classified as sites where OE might present a safety risk. This Engineering Evaluation and Cost Assessment project was undertaken in order to determine the nature and extent of possible OE contamination at these sites.

ES5 The EE/CA fieldwork used geophysical survey techniques and intrusive investigations to estimate the density of the ordnance in different areas, which was then compared with the current and future activities and anticipated users. Data collected from this characterization project were also used to develop alternatives designed to reduce the risk of possible exposure to UXO within AOIs. These alternatives were then evaluated to determine their effectiveness, implementability, and cost.

ES6 Results of this comparison indicate that there are portions of SEDA where alternatives requiring removal of UXO will be necessary to ensure public safety. The results also indicate that implementation of site-wide institutional controls will be necessary to manage residual risk. Several AOIs within SEDA will not require any OE removal operations to make the property safe for the proposed future uses.

ES7 OE response action alternatives were evaluated for each of the 11 AOIs at SEDA that were investigated during this EE/CA investigation. Each potential alternative was initially screened against the general evaluation criteria of effectiveness, implementability, and cost. The screening of alternatives was used to identify candidate OE response alternatives for further qualitative evaluation. Each of the alternatives remaining after this screening were then compared to each other as far as effectiveness, implementability, and cost. Once the remaining alternatives at each AOI had been compared, one alternative was chosen as the most appropriate response to the existing OE hazard.

ES8 The following response actions have been chosen for the AOIs investigated during the Seneca OE EE/CA:

- NFA – SEAD-53 (Igloo Area) ditches, Demo Range, Indian Creek Burial Area. These sites are no longer under consideration as ordnance sites
- Institutional Controls – Base wide, no individual areas
- Clearance to Depth of 6" – SEADs-16 and –17 (Deactivation Furnaces), EOD Area #2
- Clearance to Depth of Instrument Detection – EOD Area #3, SEAD-44A (QA Function Test Area), SEAD-46 (3.5" Rocket Range), Grenade Range
- Clearance to Depth by Means of Excavation and Mechanical Sorting – SEAD-45 (Open Detonation Area), SEAD-57 (Former EOD Range)

Complete descriptions of each of these alternatives are contained in Section 7.

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SECTION 1

INTRODUCTION

1.1 BACKGROUND

The 10,587-acre Seneca Army Depot Activity (SEDA) facility was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army from then until it's closure in July of 2000 July of 2000. From its inception in 1941 until 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. Ordnance stored at SEDA included all classes of ammunition and explosives except chemical ammunition other than smoke. The potential OE in the Area Of Investigation (AOIs) included small arms, 40mm rifle-fired grenades, practice grenades, fuzes, flares, various sizes of High Explosive projectiles, 3.5-inch rockets, detonation cord, blasting caps, and demolition materials. The AOIs that have been selected as part of this EE/CA are based upon recommendations from the Archive Search Report (ASR). However, some of the sites within this EE/CA can be covered by more than one set of criteria. For example, a site could be recognized by the ASR, be operating under an interm RECRA permit, awaiting Comprehensive Environmental Response Compensation and Liability Act (CERCLA) closure and listed as a Solid Waste Management Unit (SWMU); although, not all AOIs in this EE/CA are under multiple criteria, as some appear in the ASR and in no other documentation.

1.1.1 COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT

Management of waste materials produced from these operations has been in accordance with the requirements of the Resource Conservation Recovery Act (RCRA). As part of the requirements of RCRA, the Depot identified 72 Solid Waste Management Units (SWMUs). In 1990, the Depot was included in the federal section of the National Priority List (NPL). As a federal facility listed on the NPL, provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA - 42 USC § 9620e) required that the US Army investigate the sites known to exist at the Depot and complete all necessary remedial investigations and actions at the facility. In accordance with this stipulation, the US Army, the US Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation (NYSDEC) negotiated and finalized a Federal Facility Agreement (FFA) that outlines the administrative process and the procedures that will be followed to comply with CERCLA.

1.1.2 FEDERAL FACILITY AGREEMENT

1.1.2.1 Subsequent to SEDA's placement on the NPL, representatives of the US Army, US EPA, and NYSDEC negotiated a Federal Facility Agreement (Docket Number: II-CERCLA-FFA-00202) to govern and coordinate necessary remedial investigations/feasibility studies (RI/FS) and necessary corrective actions. The general purposes of the Federal Facility Agreement (FFA) are to:

- "Ensure that the environmental impacts associated with past and present activities at the Site are thoroughly investigated and that appropriate remedial action is taken to protect the public health, welfare and the environment;
- Establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, Superfund guidance and policy, RCRA, RCRA guidance and policy and applicable State law; and,
- Facilitate cooperation, exchange of information and participation on the Parties in such actions."

1.1.2.2 With specific reference to the procedural framework, terms of the FFA stated that all of the signatory parties intended "to integrate the Army's CERCLA response obligations and RCRA corrective action obligations which relate to the release(s) of hazardous substances, hazardous wastes, pollutants, or contaminants covered by" the Agreement. Therefore, requirements of RCRA were deemed to be an applicable or relevant and appropriate requirement (ARAR) under CERCLA, and actions selected, implemented and completed must be protective of human health and the environment such that remediation of releases shall obviate the need for further corrective action under RCRA. The FFA was finalized in January of 1993.

1.1.3 SOLID WASTE MANAGEMENT UNITS

The US Army identified all of the SWMUs at the Depot as those sites that would potentially need to be investigated and provided this list to USEPA and NYSDEC. Following the initial identification of sites, the Army ranked each site for investigation based upon that site's projected risk. The goal of the initial categorization of SWMUs was to prioritize the pending investigations and remedial actions so that those sites with the greatest risk would be addressed first. The assigned rankings divided the 72 identified SWMUs into 5 groups (i.e., No Further Action, High Priority, Moderate Priority, Moderately Low Priority, and Low Priority SWMUs). Subsequent to the US Army's proposal of the priority rankings, all parties met to review and discuss the available information for the identified SWMUs, and to finalize priority-ranking assignments. The consensus of all parties was to mount necessary investigations and possible actions at those SWMUs of concern and identify the SWMUs for which no investigations would be required.

1.1.4 BASE REALIGNMENT AND CLOSURE

The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the Seneca Army Depot under its Base Realignment and Closure (BRAC) process. This recommendation was approved by Congress on September 28, 1995 and the Depot was officially closed in July 2000. With SEDA's inclusion on the BRAC list, the US Army's emphasis expanded from expediting necessary investigations and remedial actions at the High and Moderately High Priority sites. It was changed to include the release and reuse of non-affected portions of the depot to the surrounding community for non-military (i.e., industrial, municipal and residential) purposes. Thus, BRAC sites may be released for non-military use.

1.1.5 SENECA COUNTY LOCAL REDEVELOPMENT AUTHORITY

In accordance with the requirements of the BRAC process, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for Seneca Army Depot was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified as to their most likely future use. These areas included: housing, institutional, industrial, an area for the existing navigational LORAN transmitter, recreational/conservation, and an area designated for a future prison.

1.1.6 ARCHIVE SEARCH REPORT

In July of 1998, the U.S. Army Corps of Engineers (USACE) conducted a site visit and historical data collection effort. The findings are documented in the Archives Search Report (ASR). Based on the findings, portions of the property within the former facility boundary were recommended for an ordnance and explosives (OE) investigation (USACE, 1998). Based on the ASR recommendations, an Engineering Evaluation/Cost Analysis (EE/CA) was conducted at the site. The EE/CA focused on characterizing OE contamination, analyzing risk management alternatives, and recommending feasible OE exposure reduction alternatives for eleven areas of interest (AOIs). This report presents the findings and recommendations of the EE/CA investigation.

1.2 PROJECT AUTHORIZATION

Parsons Inc. received Contract No. DACA87-95-D-0018, Delivery Order No. 52, from the U.S. Army Corps of Engineers, Huntsville Center (USAESCH), to conduct an Engineering Evaluation/Cost Analysis (EE/CA) at the former Seneca Army Depot in Seneca County, New York. The EE/CA implemented ordnance and explosives (OE) risk management actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and in substantial compliance with the National Contingency Plan (NCP). In accordance with the NCP, on-site actions did not require Federal, State, or local permits. The EE/CA adhered to the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) and relevant U.S. Army regulations and guidance for OE programs.

1.3 PURPOSE AND SCOPE

The purpose of this EE/CA was to characterize OE concentrations and locations, identify potential safety problems associated with the OE, and study risk management alternatives at the various AOIs. The project Scope of Work is contained in Appendix A.

1.4 PROJECT TEAM

The technical project team consisted of SEDA, U.S. Army Engineering and Support Center, Huntsville (USAESCH); Parsons Engineering Science, Inc. (Parsons); and USA Environmental, Inc. (USA). The roles of these team members are described below and shown in Figure 1.1.

1.4.1 SENECA ARMY DEPOT ACTIVITY

SEDA is the lead agency for this project. SEDA's responsibilities include review of project plans and documents, obtaining rights-of-entry to properties in the investigation areas, working with the news media and the public, and coordinating with state and local regulatory agencies on issues pertaining to protection of the ecological and cultural resources.

1.4.2 U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

The USAESCH provided technical expertise and day-to-day project management for the EE/CA delivery order. The USAESCH was responsible for the review and approval of all project plans and documents. The USAESCH was also responsible for approving requests for scope and budget amendments.

1.4.3 PARSONS ENGINEERING SCIENCE, INC.

Parsons was the prime contractor to USAESCH to provide overall engineering support and services for the EE/CA. Parsons was responsible for routine day-to-day performance of the scope of work. Parsons was also responsible for schedule and budget control.

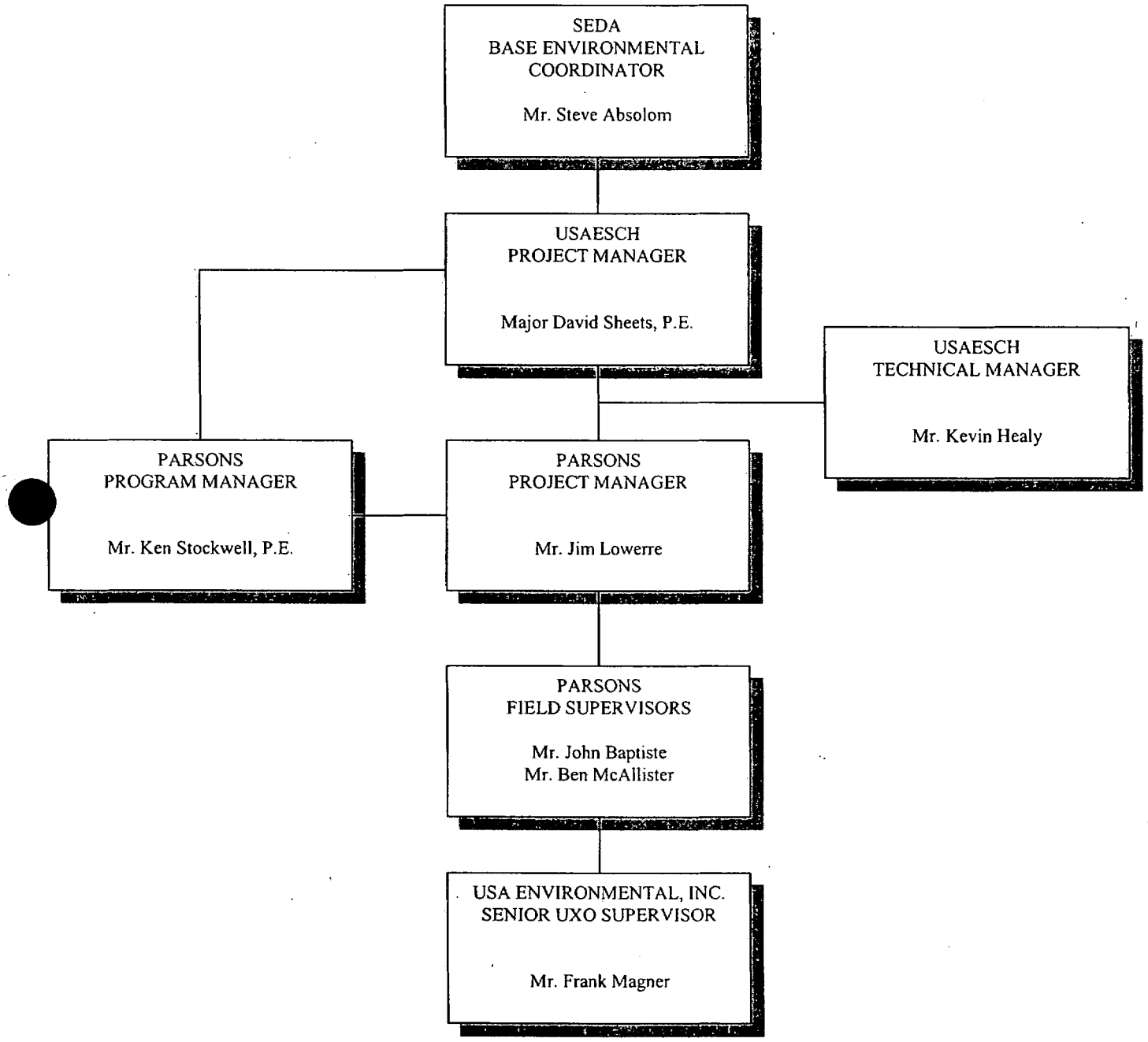
1.4.4 USA ENVIRONMENTAL, INC.

USA, under subcontract to Parsons, provided escort to geophysical teams, limited brush clearance, and intrusive investigation services. USA provided properly trained UXO experts for the transportation and disposal of UXO.

1.5 PROJECT OBJECTIVES

The objective of this project was to prepare an EE/CA that develops and justifies appropriate OE response alternatives for identified AOIs at SEDA. This objective was accomplished by characterizing OE contamination and developing and analyzing risk management alternatives.

FIGURE 1.1
Project Team Organization
Seneca Army Depot Activity, Romulus, New York



SECTION 2

SITE DESCRIPTION AND HISTORY

2.1 LOCATION

SEDA is located in Seneca County, Romulus, New York (Figure 2.1) The site is situated approximately 40 miles south of Lake Ontario. The facility is situated in an uplands area, at an elevation of approximately 600 feet above Mean Sea Level (MSL), on a divide separating two of the New York Finger Lakes: Cayuga Lake on the east and Seneca Lake on the west. Sparsely populated farmland covers most of the surrounding area. New York State Highways 96 and 96A adjoin SEDA on the east and west boundaries, respectively.

2.2 PHYSICAL DESCRIPTION

2.2.1 SITE DESCRIPTION

2.2.1.1 SEDA consists mostly of former farmland that has been overgrown by dense underbrush between buildings and within the igloo area. Woodlands predominate in most of the areas that are not immediately associated with a former facility or building complex, there is slight change in topographic relief trending towards Seneca Lake to the west.

2.2.1.2 SEDA is located within one distinct unit of glacial till that covers the entire area between the western shore of Lake Cayuga and the eastern shore of Lake Seneca. The till is consistent across the entire depot although it ranges in thickness from less than 2 feet to as much as 15 feet with the average being only a few feet thick. A zone of gray weathered shale of variable thickness is present below the till in almost all locations at SEDA. This zone is characterized by fissile shale with a large amount of brown interstitial silt and clay. Underlying the weathered shale are one of two bedrock formations, the Ludlowville on the western side of the Depot and the Moscowville on the eastern side. Both formations are characterized by gray, calcareous shales, mudstones and thin limestones with numerous zones of abundant invertebrate fossils.

2.2.1.3 The depot had been divided into three areas, the Main Post, the North Post and the South Post areas. The Main Post accounted for 9,832 acres and consisted of an exclusion area that contained partially buried, reinforced, concrete igloos, general storage magazines, and warehouses. The cantonment areas of the facility consisted of the North and South Posts. The North Post, at the north end of the Main Post, included former troop housing, troop support and community service facilities. The South Post was located in the southeastern portion of the facility near Rt. 96 and was in a developed area containing warehouses, administration buildings, quarters, and community services.

2.2.2 ARCHIVE SEARCH REPORT SECTORIZATION

The ASR initially subdivided the depot into 27 AOIs based on physical attributes, homogeneity, and current and historical land use. The ASR evaluated each AOI to determine whether the area should or should not be investigated for OE/UXO. Each AOI was classified as requiring further investigation or not requiring further investigation based on a review of historical documents, aerial photography, and employee interviews. Most of the AOIs were also visited by USACE to determine whether any traces of OE were readily apparent.

2.2.2.1 No Further Action Areas

The ASR classified 15 of the 27 identified AOIs as not requiring further investigation. These areas and the reasons that they were categorized as no further action are summarized in Table 2.1.

TABLE 2.1
NO FURTHER ACTION AREAS

Area of Interest	Reason for Classification as No Further Action
Areas around Ordnance Related Buildings	Only spent small arms discovered. Previous geophysical investigation found no evidence of ordnance.
Small Arms Ranges	Only spent small arms discovered.
Storage Pads and X Sites	Only spent small arms and packing materials found.
Landing Zones	No evidence of ordnance.
Suspect Rail Car and Truck Areas	No evidence of ordnance.
Berms (no description of use)	No evidence of ordnance.
Area with reported drums	Only one drum discovered during inspection.
Powder Burn Area (SEAD-24)	No evidence of open burn operations or ordnance.
Loading/unloading Platforms	Only spent fuzes and small arms found.
Propellant Charge Burn Area	No evidence of burning activities.
Ammo Disassembly Plant	No evidence of ordnance.
Detonator Destruction Furnace	No evidence of ordnance.

Area of Interest	Reason for Classification as No Further Action
Explosive Scrap Furnace	No evidence of ordnance.
Berm near the Bundle Ammo Buildings	No evidence of berm on aerial photography.
R&D Area/Fuze Storage (SEAD-44B)	No evidence of ordnance.

2.2.2.2 Areas Requiring Further Investigation

It was determined that 12 of the AOIs identified in the ASR would need further investigation to determine the exact nature of possible ordnance contamination (Figure 2.2). Of these 12 acres, 11 were investigated during the EE/CA. The last area, the Liquid Propellant Storage Area (SEAD-43) was declared a No DOD Action Indicated (NDAI) site in a memorandum by the Director of the Huntsville Corps of Engineers Ordnance and Explosive Team based on the results of a 1999 investigation (Appendix B). The physical characteristics of the 11 areas included in the EE/CA surveys are described below.

2.2.2.2.1 Geologic Characteristics – All 11 Sites

Characteristics specific to each site, such as topography and vegetation, are described below. However, the geologic characteristics of the 11 sites are fairly similar. As described in Section 2.2.1, the shale bedrock at SEDA is overlain by highly weathered shale and glacial till. Soil borings conducted during previous investigations at a number of the areas included in the OE EE/CA show that the till is typically 5 to 10 feet deep, with only 1 to 2 feet of weathered shale below. None of the components of the till are particularly iron rich, and the effects of native soil on geophysical instruments is minimal. Finally, frost depths in New York State can reach to 4 feet, meaning that frost heaving of any OE remaining in the ground is a concern at all of the sites discussed below.

2.2.2.2.2 SEADs-16 and -17 - Deactivation Furnaces

SEADs-16 and -17 are former popping plants that had been used for ammunition disassembly and demilitarization. The areas comprised of approximately five acres surrounding each of the buildings (Figure 2.2). The main concern at these areas is the possible presence of 20mm rounds, which may have been demilled here as at other similar popping plants. A visual inspection showed spent small arms ammunition of various sizes lying on the surface over much of the area. In addition, large piles of metallic debris, railroad tracks, and drum staging pads are scattered at various locations within the fence surrounding SEAD-16.

2.2.2.2.3 SEAD 44A - QA Function Test Area

At the time of the ASR site visit; SEAD-44A was an approximately 15-acre site that had been used for the QA testing of 40mm rifle-fired grenades, fire devices, and pyrotechnics. The remains of 40mm grenades and spent small arms were evident throughout the area. Subsequent to the ASR visit, most of the land surrounding SEAD-44A was turned over for use as the site for a new prison. A 25-acre fence was put in place in order to segregate the 15 acres of SEAD-44A, as well as a 100-foot buffer zone surrounding the site (Figure 2.2). A project was later undertaken to scrape 1-foot of soil off of that area enclosed by the fence that was believed to have been the former function test range. The soil was put through a sifter in order to remove any OE present and was replaced after the scraped area was geophysically mapped and all anomalies investigated to verify the removal of all OE.

2.2.2.2.4 SEAD-45 - Open Detonation Area

SEAD-45 consists of a large open area approximately 60-acres in size (Figure 2.2) surrounding a large berm that was used to suppress the effects of ordnance demolition activities. Aerial photographs from 1954 show there may have been burn pads that were covered by 1978. A variety of ordnance was destroyed by detonation at this area, including explosives, rockets, and heavy artillery. The blast radius shown on old drawings included in the Archive Search Report is 1800 feet from the center of the demolition berm. OE scrap and fragments of demolished ordnance are prevalent throughout this area.

2.2.2.2.5 SEAD-46 - 3.5" Rocket Range

This site covers approximately 40 acres situated to the northeast of the center of the Depot (Figure 2.2). Depot personnel reported that they have seen spent rocket motors on the ground, although none was noticed during the ASR site visit. Aerial photos taken in 1954 show the site as a long open area in which 3.5" rockets were apparently fired. It is believed that a large berm at the north end of the area was a target berm, into which the rockets were fired. Subsequent to Army use of SEAD-46, a number of small trees have grown up in the area.

2.2.2.2.6 SEAD-53 - Igloo Area

SEAD-53, which incorporates approximately 6,000 acres of the Depot (Figure 2.2), contains over 500 igloos that were once used to house the majority of the munitions stored on base. Most of the land in SEAD-53 is wooded; however, paths have generally been cleared around the igloos themselves. Drainage ditches on either side of most of the igloo access roads are also relatively free of woods or heavy brush. No ordnance was seen during the ASR site visit; although, a Schonstedt magnetometer examination of one of the drainage ditches adjacent to an access road did result in the discovery of several magnetometer hits. The Schonstedt hits are indicative of buried metal, but the actual cause was not examined during the ASR site visit.

2.2.2.2.7 SEAD-57 - Former EOD Range

This area consists of approximately 58 acres northwest of the center of the depot (Figure 2.2). According to former Depot employees, SEAD-57 was used as a demolition range with an

explosive limit of 10 pounds. The primary focus of the investigation in this area is a berm approximately 30 feet in diameter and 6 feet high near the center of the of the 58 acres. This berm does not appear in aerial photos until after 1978. The site visit conducted for the ASR in 1998 found the remains of many flares in and around this berm and in shot holes directly across an access road from the berm. Other shot holes were located at the south side of the access road, and are visible on aerial photographs taken in 1955. As with the SEAD-45 demolition area, it was believed that OE might be encountered as far as 1800 from the berm in SEAD-57.

2.2.2.2.8 Demo Range

The demolition range is a 40-acre wooded lot immediately to the southeast of SEAD-57 (Figure 2.2). It is assumed that this area was used for projectile demolition at some point. A 1963 aerial photograph shows the majority of the area as an open area; however, most of the site has subsequently become fairly heavily wooded. A split-open 75mm projectile was found in this area during the ASR site visit.

2.2.2.2.9 EOD Area #2

A 1963 aerial photo shows EOD Area #2 as a small open area approximately ½-mile to the west of EOD Area #3. Since this photo was taken, the area has been flooded and has become known as the "duck pond" (Figure 2.2). Originally, the area was rumored to be an EOD range where explosive devices were used. Subsequent to the flooding of the area it has been rumored that non-explosive metal projectiles were thrown into the water. Based on comparison of the 1963 aerial photograph with a 1991 photograph, the area occupied by EOD Area #2 should actually be to the northwest of the position indicated in the ASR. This revised location was the one surveyed during the EE/CA fieldwork.

2.2.2.2.10 EOD Area #3

This area is located directly to the north of SEAD-46 (Figure 2.2). The most obvious feature in the approximately 5 acres that make up this site is a 150-foot diameter pit that was reported to be an EOD disposal area. Early photos show the pit and the area surrounding it as clear. While the pit itself was still open at the time of the ASR site visit, large trees and thick brush had grown up around it. No evidence of ordnance was discovered in the visit.

2.2.2.2.11 Grenade Range

The former grenade range consists of approximately 30 acres at which 40mm rifle-fired grenades were used (Figure 2.2). The grenade range is a large open area still containing a number of mannequins, wooden structures, and armored vehicles used as targets during firing exercises at the range. It was assumed that the majority of the 40mm grenades fired at the range were practice grenades, as none of the targets show any evidence of having been damaged by HE. A number of intact 40mm grenades were also found during the ASR site visit.

2.2.2.2.12 Indian Creek Burial Area

This area consists of two acres at the junction of Indian Creek Road and the West Patrol Road in the southwest portion of the Depot (Figure 2.2), visible as a small open area from aerial photographs. Supposedly, ammunition and non-ordnance items were buried here; the ASR examination of the area showed no visible ordnance.

2.3 HISTORY

2.3.1 Construction of the Seneca Ordnance Depot began in June 1941, and two years later, in 1943, the Depot began its mission of receipt, storage, maintenance, and supply of military items, including munitions and equipment. As the amount of ammunition on base increased following World War II, the mission of the base shifted from the supply of ordnance to the storage and disposal of it.

2.3.2 Most of the igloos in SEAD-53, the Demolition Pits (SEAD-45), the Burn Pads (SEAD-23), and one EOD Area, EOD Area #1 (SEAD-57) had all been established in the first phase of construction in 1941. The original popping plant at SEAD-16 was constructed to demilitarize cartridges containing live primer in 1942 and 1943. The second popping plant at SEAD-17 was constructed in 1961 and began operation in 1962. Throughout the 1940s, 50s, and 60s, more storage and demolition/demilitarization facilities were constructed at various areas across the Depot. These facilities included a number of warehouses, a new magazine area, storage sheds, and an Ammunition Disassembly Plant near SEAD-57. Various other buildings including ammunition workshops and ordnance testing and QA facilities were also constructed at this time (USACE, 1998). The Grenade Range, QA Function Test Area (SEAD-44A), and 3.5" Rocket Range were all established over this period.

2.3.3 The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of SEDA under its Base Realignment and Closure (BRAC) process. Congress approved this recommendation on September 28, 1995 and the Depot was officially closed in July 2000. Many of the facilities listed above were active until the recommendation that the Depot be closed, and some, including SEADs-23, -45, -57, and some of the igloos, were active for a few years afterwards. The Depot was also used for training by National Guard units after the recommendation.

2.4 DEMOGRAPHIC PROFILE

2.4.1 A large portion of Seneca Army Depot is undeveloped property with no economic value other than timber harvest. Currently the timber production on the property is very small scale however this may change in the future. The remainder of the property is predetermined as naturally forested or proposed for use as agriculture.

2.4.2 U.S. Highway 96 and 96A run along the east and west boundaries of the Depot running north south along the length of the county. The County occupies 350 square miles and is approximately 35 miles long and ten miles wide. Agriculture is the predominant land

use producing 3,130,100 bushels of corn and 286,000 bushels of oats according to the 1998 census.

2.4.3 The 1999 Census estimates the population of Seneca County, New York at 31,925 persons. The county has seen a decrease in population of 1,158 since the 1990 census was taken. The1990 census for the County indicates that the ratio of men to women is nearly equal, Caucasian is the predominant race, average household size is two persons, and the majority of the population is between 25 and 74 years of age. Agriculture, retail sales, waste management and industrial manufacturing account for majority of the industry in the area. 1997 Census estimates put 11.9 % of the population below the poverty level with the median household income being $35,650.

2.5 CURRENT AND FUTURE SITE USE

In accordance with the requirements of the BRAC process, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for Seneca Army Depot was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified as to their most likely future use. These areas included: housing, institutional, industrial, an area for the existing navigational LORAN transmitter, recreational/conservation and an area designated for a future prison (Figure 2.3). As of September 2000, the housing, institutional, and LORAN transmitter sites were already being used as anticipated. The prison had also begun operations and was utilizing the area expected exclusive of that covered by SEAD-44A, which still had not been cleared for OE. Portions of the planned industrial area had also been leased.

2.6 ANALYSIS OF HISTORICAL RECORDS

Existing historical records were reviewed in support of a number of investigations that have taken place at SEDA. Between 1987 and 1991, a number of agencies, including the Army Environmental Hygiene Agency (AEHA), New York State Department of Environmental Conservation (NYSDEC), and SEDA, performed record reviews as well as field studies to identify areas for classification as solid waste management units (SWMUs). Further reviews were performed by the Environmental and Energy Services Company, Inc. (ERCE) and Engineering Science, Inc. (ES) to evaluate and prioritize each of the SWMUs. Finally, historical records were checked in support of the ASR in 1998.

2.7 PREVIOUS INVESTIGATIONS

2.7.1 SWMU CLASSIFICATION REPORT

Engineering Science, Inc. (ES) classified each of the previously identified solid waste management units (SWMUs) at SEDA (ES, Sept. 1994). ES used existing records and a limited sampling program to classify each SWMU as No Action, a High Priority Area of Concern (AOC), a Moderate Priority AOC, a Moderately Low Priority AOC, or a Low Priority AOC. In this report, SEADs-53 was classified as No Action. SEADs-16, -17, and -45 were classified as High Priority AOCs, SEAD-57 was classified as Moderate Priority, and SEAD-44A was classified as Moderately Low Priority. Other OE EE/CA sites were not considered in this document.

2.7.2 EXPANDED SITE INSPECTION, SEVEN HIGH PRIORITY SWMUS

Expanded Site Inspections (ESIs) were performed at SEADs-16, -17, and -45 as part of the investigation of the High Priority SWMUs (Parsons, 1995a). These ESIs were undertaken to determine the nature and extent of possible contamination at each of the AOCs investigated. Fieldwork for the ESIs was begun in November of 1993, and the report detailing the results of the High Priority AOCs was issued in 1994.

2.7.3 EXPANDED SITE INSPECTION, THREE MODERATE PRIORITY SWMUS

An ESI was performed at SEAD-57 as part of the investigation of the Moderate Priority SWMUs (Parsons, 1995b). These ESIs were undertaken to determine the nature and extent of possible contamination at each of the AOCs investigated. Fieldwork for the ESIs was begun in November of 1993, and the report detailing the results of the Moderate Priority AOCs was issued in 1995.

2.7.4 EXPANDED SITE INSPECTION, EIGHT MODERATELY LOW PRIORITY SWMUS

An ESI was performed at SEAD-44A as part of the investigation of the Moderately Low Priority SWMUs (Parsons, 1995c). These ESIs were undertaken to determine the nature and extent of possible contamination at each of the AOCs investigated. Fieldwork for the ESIs was begun in November of 1993.

2.7.5 ENVIRONMENTAL BASELINE SURVEY

Woodward-Clyde Federal Services was retained to prepare an Environmental Baseline Survey for SEDA. Under this process, Woodward-Clyde was charged with the initial classification of discrete areas of the depot into one of seven standard environmental conditions of property area types consistent with the Community Environmental Response Facilitation Act (CERFA – Public Law 102-426), which amends Section 120 of CERCLA. The results of Woodward-Clyde's effort were documented in the U.S. Army Base Realignment and Closure 95 Program Report (Woodward-Clyde, 1997). This report served as part of the basis for subsequent decisions made regarding land use.

2.7.6 OE ARCHIVES SEARCH REPORT

The USACE St. Louis District conducted a site inspection and archives search of the Seneca Army Depot (USACE, 1998). The ASR listed a number of sites at SEDA that may have contained OE/UXO. The ASR concluded that the potential for ordnance contamination was highest at nine sites: SEADs-16 and -17 (Popping Plants), SEAD-43 (Liquid Propellant Storage), SEAD-44A (Function Test Area), SEAD-45 (Open Demolition Range), SEAD-46 (3.5" Rocket Range), SEAD-53 (Igloo Area), SEAD-57 (EOD Area #1), the Demo Range, and the Grenade Range. In addition to the nine higher potential ordnance areas, it was determined that one area near Indian Creek was also potentially contaminated; although, there was not as much evidence supporting the existence of OE at this site as there was for the other nine.

2.7.7 GEOPHYSICAL INVESTIGATION AT SEAD-43

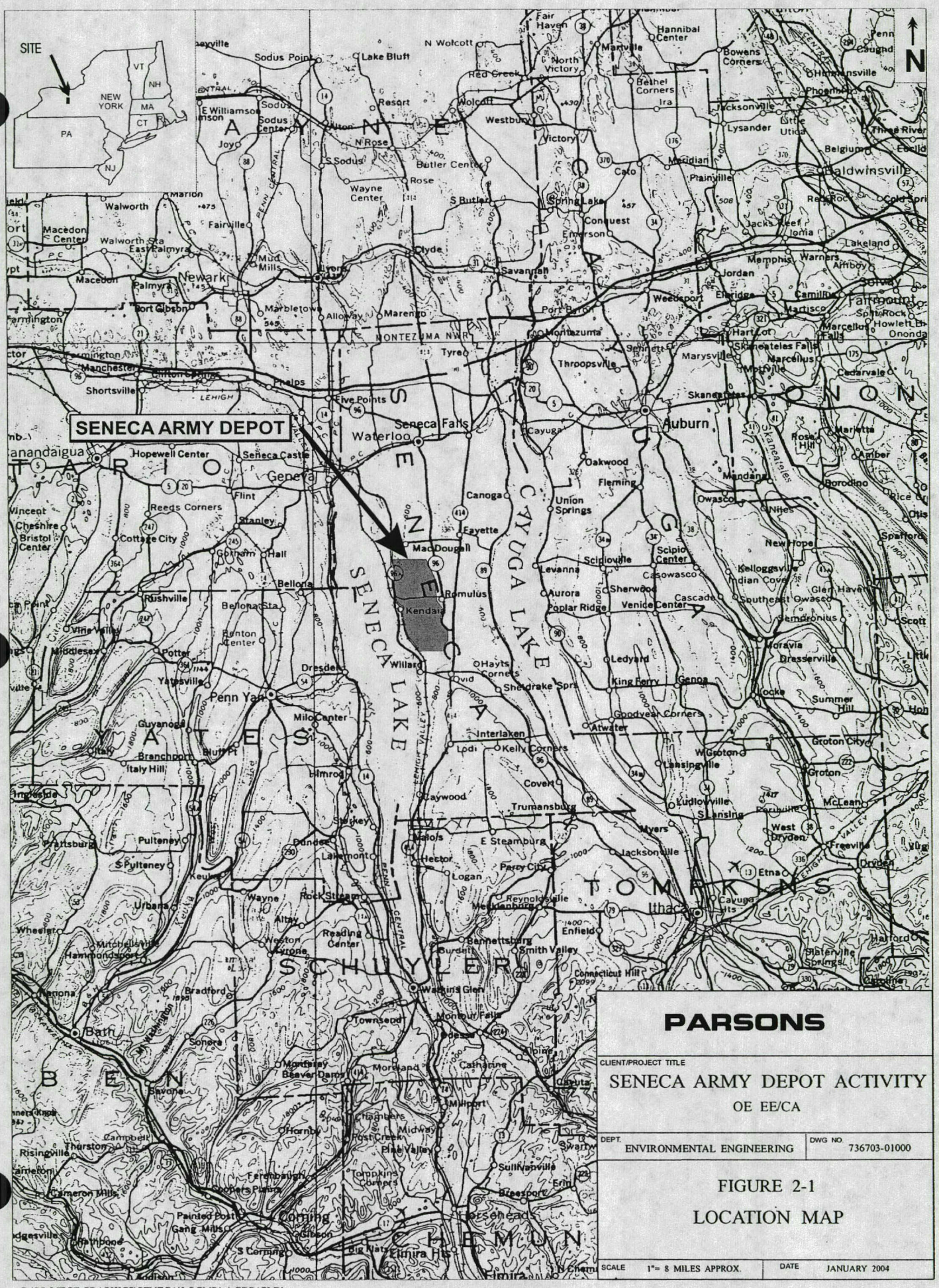
In June of 1999, EOD Technology, Inc. (EODT) conducted a geophysical survey in SEAD-43, the Liquid Propellant Storage Area. After the survey data had been processed, from this data 63 anomalies were detected during this survey and subsequently intrusively investigated by the supporting EODT personnel. As no OE was found during the intrusive survey, the site was declared an NDAI site and has been transferred as part of the land given over to the State of New York as a prison site. The NDAI memorandum prepared by USACE and the geophysical investigation report prepared by EODT are contained in Appendix B.

2.7.8 GEOPHYSICAL INVESTIGATION AT INDIAN CREEK BURIAL AREA

In January of 1999, NAEVA Geophysics, Inc. performed an EM-31 survey over the suspected Indian Creek Burial Area. The EM-31 is an instrument used primarily to detect changes in ground conductivity. Any conductivity anomalies present in a survey may indicate the existence of a contaminant plume, trench, pit, or other excavation, or buried metal. No significant anomalies were present in the area surveyed.

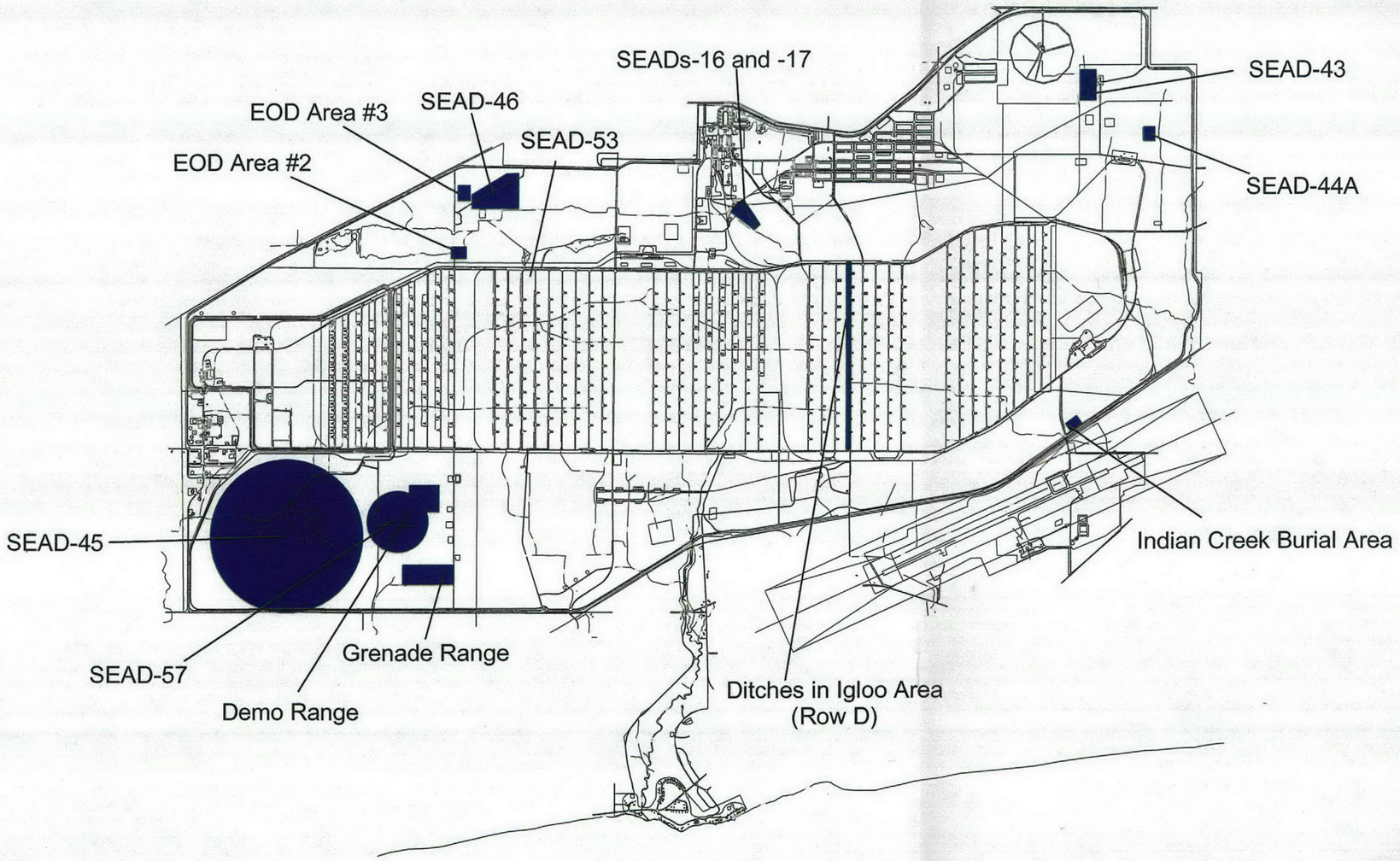
2.8 PREVIOUS REMOVAL ACTIONS

Removal actions for OE and UXO have previously occurred at both SEAD-44A, the QA Function Test Area, and at SEAD-23, the Open Burning Grounds.



PARSONS	
CLIENT/PROJECT TITLE	SENECA ARMY DEPOT ACTIVITY OE EE/CA
DEPT. ENVIRONMENTAL ENGINEERING	DWG NO. 736703-01000
FIGURE 2-1 LOCATION MAP	
SCALE 1"= 8 MILES APPROX.	DATE JANUARY 2004

R:\PROJECT-GRAPHICS\SENECA\LOCMP1-1.CDR(CLD)



SITE	DESCRIPTION
SEADs 16 and 17	Deactivation Furnaces
SEAD-43	Liquid Propellant Storage
SEAD-44A	QA Function Test Area
SEAD-45	Open Detonation Area
SEAD-46	Small Arms Range 3.5" Rocket Range
SEAD-53	Munitions Storage
SEAD-57	Former EOD Range
Demo Range	Demolition of Projectiles
EOD Area #2	Rumored EOD Range
EOD Area #3	Rumored EOD Range
Grenade Range	Grenade Training
Burial Area near Indian Creek	Rumored Burial

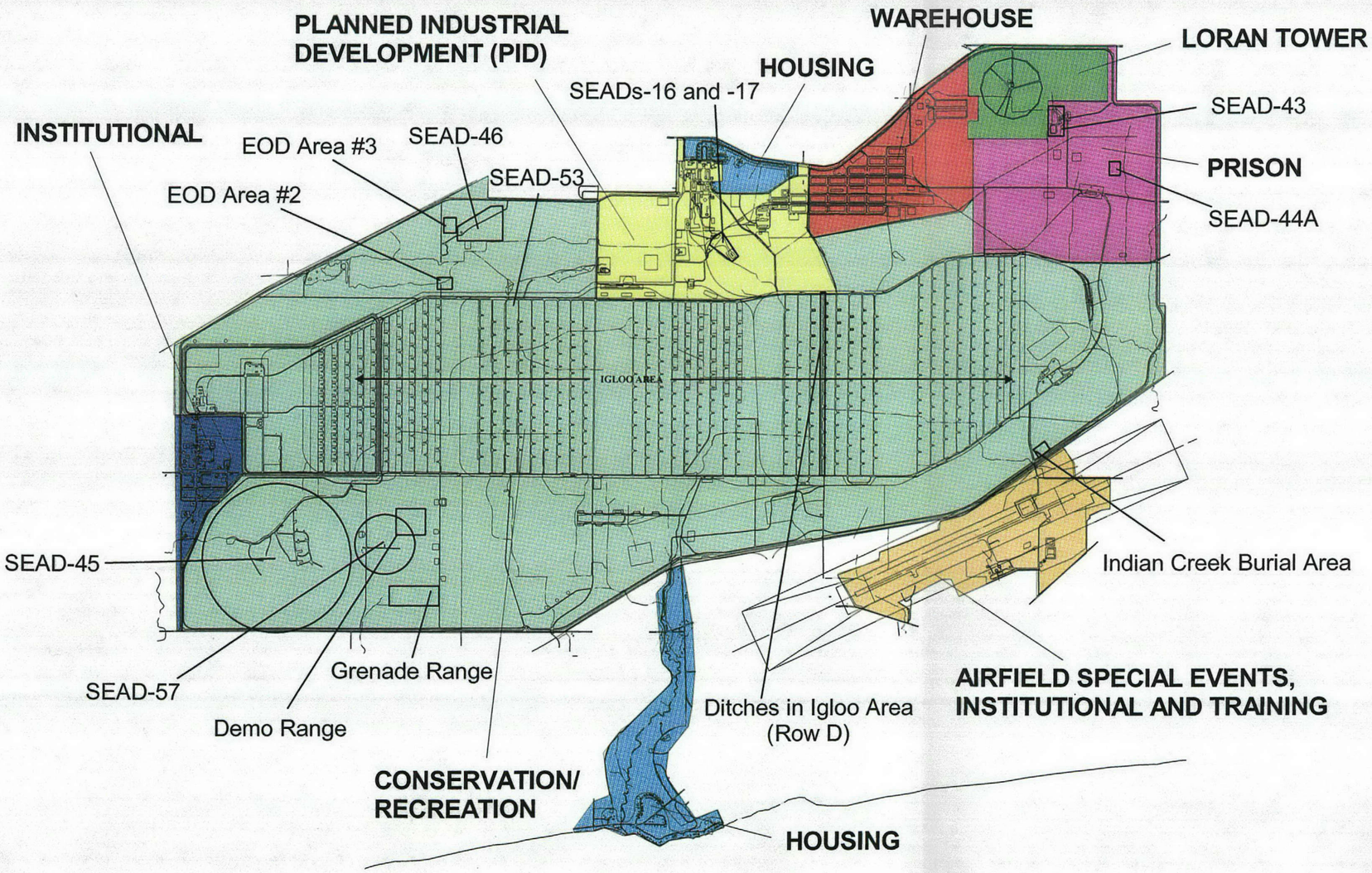
N

2000 0 2000 4000 6000 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 2.2 Seneca Army Depot Activity Areas of Interest	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:50000	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 2.2
	FILE: DEPOT.APR	



SITE	DESCRIPTION
SEADs 16 and 17	Industrial Development
SEAD-43	Prison
SEAD-44A	Prison
SEAD-45	Conservation/Recreation
SEAD-46	Conservation/Recreation
SEAD-53	Conservation/Recreation
SEAD-57	Conservation/Recreation
Demo Range	Conservation/Recreation
EOD Area #2	Conservation/Recreation
EOD Area #3	Conservation/Recreation
Grenade Range	Conservation/Recreation
Burial Area near Indian Creek	Conservation/Recreation

N

2000 0 2000 4000 6000 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 2.3 Seneca Army Depot Activity Intended Future Land Use
DRAWN BY: JEB	
CHECKED BY: BJM	SCALE: 1:50000
SUBMITTED BY: SAS	DATE: JAN 2004
	FILE: DEPOT.APR
	PROJECT NUMBER: 736703-01000
	PAGE NUMBER: Figure 2.3

SECTION 3

SITE CHARACTERIZATION

3.1 GEOPHYSICAL SURVEYS

3.1.1 INTRODUCTION

A geophysical survey was performed at SEDA for characterizing the horizontal and vertical extent of ordnance remaining at eleven SWMU's within Seneca Army Depot. This survey was conducted using geophysical equipment to detect ferrous and non-ferrous metal objects at the 11 SWMU's. This survey was performed between June 2000 and December 2000 as part of the Engineering Evaluation/Cost Analysis investigation. An EM-61 Time Domain Metal Detector (TDMD) and a Geometrics G-858 Gradiometer were used to collect both grid and "meandering path" surveys over approximately 100 combined test acres. The EM-61 was selected as the most appropriate geophysical instrument for the geophysical surveys at SEDA based on geology, terrain, proven technology, and other factors. However, the G-858 was used in areas that were saturated with small arms casings (non-ferrous metal) where it was assumed the EM-61 would detect a great deal of non-UXO clutter. In addition, "mag-and-flag" surveys were performed using a Foerster® hand-held magnetometer in thickly wooded areas and in one streambed.

3.1.2 GRID-BASED SURVEYS

3.1.2.1 Prior to the start of fieldwork, a system of 100-foot by 100-foot grids was developed for the majority of the AOIs to be surveyed. The size of the grid system for each AOI was determined by USACE based on historical records and an area delineated in the ASR. Each system of grids was, generally, centered on a prominent feature such as a detonation pit, building, or firing range. In order to calculate a statistically significant (90% confidence) UXO density for each AOI, only a percentage of the existing grids in each area needed to be surveyed. The number of grids to be surveyed was determined by USACE and supplied with the scope of work. Exactly which grids were to be surveyed was defined in the workplan. The workplan sought to ensure full representative coverage of the grids present in each AOI, from the immediate vicinity of the feature in question to the outskirts of the area identified in the ASR. Field crews made every effort to survey grids in patterns that allowed for the best coverage at concentric distances from the assumed point of detonation (building, berm, impact area). In some cases, investigation of the lateral extent of contamination was limited by site conditions in areas outside of those selected for investigation. Thick woods and standing water were generally the greatest impediments to the collection of truly representative grid patterns.

3.1.2.2 Grid-based geophysical data were collected along parallel survey lines spaced 2.5 feet apart in grids with dimensions of 100 feet by 100 feet. During the surveys, individual lines were traversed over a known distance with data being collected incrementally with distance (EM-61) or time (G-858). EM measurements were collected each time the instrument's tire rotated a specified distance, while magnetic measurements were collected every 0.2 seconds. Fiducial marks were inserted by the operator every 50 feet and were used in post processing to correct data line length by compressing or expanding the recorded measurement locations for each line so that the lines covered the actual distance traveled. This operation was required to compensate for variations in the terrain along the survey line in the case of the EM-61 or walking speed with the G-858. The survey data were then rotated and translated from the local coordinate system they were collected in (where the southwest corner of the grid surveyed was assigned a coordinate of 0E, 0N) to the New York State Plane coordinate system.

3.1.3 MEANDERING PATH SURVEYS

3.1.3.1 As previously stated, grid-based surveys were generally used to survey the area in the immediate vicinity of the feature being investigated. However, in SEADs-45 and –57, and in the Grenade Range, it was believed that OE may have been present, to a lesser degree, outside of the gridded areas. "Meandering path" geophysical surveys were conducted in SEADs-45 and –57 in an attempt to survey as far as the USACE provided kick-out radius of 1800 feet from the detonation berms. In both of these areas, transects were cut through moderately forested areas using a hydro-axe. Where possible, these transect were cut at 100-foot intervals; although, the actual location of many of the paths was determined by the density of trees and brush. Data were generally collected along the transects heading both away from and then back towards the detonation berms. At the Grenade Range, meandering path data were collected between the gridded area, which was believed to be the impact area, and the firing line of the range. Is this case, data were collected in a truly "meandering" path, with no set lines. There was only an attempt to collect data in a relatively uniform pattern across this area of the range.

3.1.3.2 These surveys were performed using EM-61 units in conjunction with Trimble® 4700 GPS units. During these surveys, the EM-61 was collecting data while the GPS recorded the location of the data collection points. Both the EM-61 and GPS data were time-stamped in order to combine the two in post-processing. A lag test was conducted each morning, evening, and at the beginning of each meandering path transect line surveyed to measure the difference between the center measuring point of the coil and the position recorded by the GPS. The lag test consisted of a cloverleaf pattern being run over a spike driven into the ground. As the spike does not move, all of the peaks in the recorded data should appear over the same location, so the data can be corrected by shifting the time synchronization forward or backward along the line in post-processing to adjust for the lag difference.

3.1.4 MAG-AND-FLAG SURVEY

"Mag-and-flag" geophysical surveys were conducted in SEAD-45 and the Demo Range, where thick woods prevented the use of the EM-61. A versatile, hand-held Foerster® metal-detector was used in these areas. All audibly discernable anomalies within selected 100-foot by 100-foot grids (regardless of magnitude) were pin-flagged by field personnel without screening by the project geophysicist.

3.2 INSTRUMENTATION

3.2.1 GEONICS® EM-61 TDMD

The majority of the data acquired at SEDA were collected using a Geonics® EM-61 TDMD. This instrument was chosen based on the results of the Geophysical Prove-out Survey conducted in January 2000. The EM-61 generates an electromagnetic pulse that triggers eddy currents in the subsurface. Decay of these eddy currents produces a secondary magnetic field that is monitored by a receiving coil and recorded by the attached data logger. The EM-61 instrument consists of a frame that contains both the transmitting and receiving coils, an electronics backpack, and a hand-held data logger. The transmitter and receiver electronics and controls are mounted in the backpack, which is connected to the hand-held data logger.

3.2.2 GEOMETRICS® G-858 GRADIOMETER

The G-858 instrument uses two cesium vapor magnetometer sensors incorporating miniature atomic absorption units, which measure the strength of the ambient magnetic field in a location. The two sensors on the gradiometer were separated by 1.5 vertical feet during the EE/CA, and the vertical gradient between the two sensors was used to determine the presence of buried metal. As the gradiometer is only sensitive to ferrous metal, this instrument was used in SEADs-16 and -17 where a large amount of non-ferrous cartridge casings were scattered. It was assumed that these casings would have led to a great deal of noise in any EM-61 data collected in these areas.

3.2.3 TRIMBLE® 4700 TOTAL STATION

The Trimble® 4700 Total Station is an integrated GPS receiver and radio modem used in conjunction with a base station that provided differential corrections to further refine the accuracy and precision of the system. GPS accuracy was obtained within a few centimeters using the DGPS system at SEDA. The GPS data was collected by a mobile controller and was downloaded directly to Trimble's Geomatics Office® program at the end of the workday.

3.2.4 SCHONSTEDT® AND FOERSTER MINEX® MAGNETOMETERS

3.2.4.1 Schonstedt® magnetometers are "flux-gate" ferrous metal locators and will only detect iron or magnetic materials. The size and orientation of the target and the soil characteristics of the work area limit the depth of detection. The instrument is not capable of classifying the anomaly; it will only show the presence or absence of a magnetic anomaly. The target must be excavated and investigated by a trained UXO Specialist.

3.2.4.2 The Foerster Minex® magnetometer is very similar to the Schonstedt®, however, it will detect non-ferrous as well as ferrous metals. Both Schonstedt® and Foerster® magnetometers were utilized by UXO-qualified personnel to prescreen anomaly locations prior to reacquisition using EM-61s. Foersters® were also used for some of the geophysical evaluation of SEAD-45 and the Demo Range.

3.3 INSTRUMENT CHECK

Prior to beginning each grid, the geophysical survey teams checked the EM-61 and G-858 instruments against a baseline to ensure that the equipment was operating properly. Metal spikes were driven into the ground to a prescribed depth, generally on the first line of the grid (line 0). At least 100 feet of the line was then collected in a check file. The manually operated EM-61 or G-858 was pulled directly over the line and the maximum spike response recorded on survey sheets and compared to initial responses (standard responses) established for each instrument. The entire grid was then collected, including the check line without the spike. Finally, after completion of the grid, the check line was collected, again with the spike included. Any discrepancies were investigated to ensure that the instruments were functioning properly. Grids with failed check files were re-surveyed later in the project.

3.4 GEOPHYSICAL INVESTIGATION FINDINGS

Investigation of SEDA focused on the AOIs identified in Section 2. The geophysical survey at SEDA resulted in the identification of a combined total of 11,564 anomalies in 11 intrusively investigated AOIs. The total area geophysically surveyed at the Depot was approximately 115 acres. A detailed summary of the geophysical findings by AOI is presented in Appendix C.

3.5 ANOMALY IDENTIFICATION

Once the geophysical surveys were downloaded from the field data recorder, the data was exported to ASCII format for processing by the Site Geophysicist. The data were either

combined with GPS data or translated using Geosoft® to convert them to New York State Plane (Central Grid) coordinates. Anomalies were selected based on observed peaks in the data for each grid or transect and comparison to background readings for each area. EM-61 peaks in the background noise level were not considered as anomalies.

3.6 ANOMALY REACQUISITION

The anomalies selected for investigation by the Site Geophysicist were uniquely numbered as per the approved Work Plan and depicted on Anomaly Dig Sheets for intrusive investigation. Coordinates for these anomalies were compiled into waypoint files and uploaded to the GPS for reacquisition by the field team. Reacquisition was performed by selecting a specific anomaly waypoint and physically marking it for the intrusive field team. Each waypoint location was first investigated using a Schonstedt® or Foerster® metal-detector and a pin-flag placed in the anomaly location. Anomaly reacquisition using the hand-held metal-detectors was followed by reacquisition with either the EM-61 or G-858, depending on which instrument was used to collect the original data. If the anomaly had been found using the Schonstedt® or Foerster® the value of the response of the EM-61 over the pin-flag was recorded on the dig sheet for comparison with the response value of the anomaly picked by the site geophysicist. If the anomaly had not been found with the Schonstedt® or Foerster® or if the response of the EM-61 over the pin-flag was not within approximately 80 percent of the signal response of the geophysicist's pick, an attempt was made to find the anomaly with the EM-61 or G-858. A radius of approximately 6 feet from the flagged location was surveyed in two perpendicular directions. If the corresponding anomaly was found with either of these instruments, the pin-flag was moved to what was assumed to be the correct location.

3.7 INTRUSIVE INVESTIGATIONS

3.7.1 INTRODUCTION

3.7.1.1 The intrusive investigation of the anomalies identified during the project took place concurrently with the geophysical work. The investigation was performed according to the procedures outlined in the approved WP (Parsons, 2000). Table 3.1 summarizes the results of the intrusive investigations. A total of 8,900 anomalies were intrusively investigated in the eleven AOIs.

3.7.1.2 During the EE/CA investigation at SEDA, each field team operated a single EM-61 to record geophysical data within each of the AOIs. Anomaly Dig Sheets were prepared from the data and provided to the intrusive teams following reacquisition flagging. Occasionally, anomalies identified on the Anomaly Dig Sheet could not be reacquired with the instrument that performed the survey. In such instances, the anomaly was flagged at the coordinate location and the inability to reacquire the anomaly was documented on the reacquisition team dig sheet. The intrusive teams would again geophysically search the immediate area around the flag using both Schonstedt® and Foerster® metal-detectors. If again no anomaly was identified, the location was

assumed to be a "false positive"; however, 10% of the "false positives" were excavated to 18 inches and re-checked using the Schonstedt® and Foerster for QC purposes. No OE was ever found in locations where "false-positive" digs were performed.

TABLE 3.1
SUMMARY OF UXO ENCOUNTERED

AOI	Grids Surveyed	Percent of Area	Anomalies Identified for Investigation	Anomalies Investigated	UXO Encountered	Expected UXO Density
Indian Creek	9	100%	17	17	0	None
SEAD-53	12.5	N/A[1]	273	269	0	None
Demo Range	83	48%	402	357	0	None
SEAD-17	10	28%	478	452	0	Low
EOD Area 3	16	80%	64	64	0	Low
EOD Area 2	10	46%	89	87	1	Low
SEAD-44A	60	55%	1,783	1,588	5	Low
SEAD-46	75	43%	1,291	1,155	10	Low
Grenade Range Grids	65	100%	1,394	865	102	High
Grenade Range Meandering Path	9	20%	95	76	1	Medium
SEAD-57 Grids	61	23%	2,951	1,700	3	Low
SEAD-57 Meandering Path	5.5	0.7%	420	417	0	Low
SEAD-45 Grids	57	24%	1,337	1,152	49	High
SEAD-45 Meandering Path	15	2%	970	701	21	High
TOTALS	**488**		**11,564**	**8,900**	**192**	

[1] SEAD-53 percent surveyed is not applicable, as the survey in SEAD-53 was performed to verify the specific targets located

3.7.1.3 Site wide the "false-positive" rate was 18%. The presence of some "false positives" is inherent in geophysical/intrusive investigations. Many reasons exist for the presence of "false positives" including residual rust in the soil, proximity of power lines, metallic surface debris, metal bearing rocks, rough terrain causing equipment jolts, etc. The high "false positive" rates in SEADs-46 and –57, the Demo Range, and EOD Area #2 were due to the extremely rough terrain created by brush cutting activities. The Hydro-Ax used to cut the thick brush in these areas left deep ruts in what was, predominantly, wet soil. When pulled over these ruts, even at slow speeds, the instrument was jolted and recorded a spike in the data that was could possibly be interpreted as an anomaly.

3.7.1.4 Table 3.1 shows that the number of anomalies identified typically exceeds the number of anomalies intrusively investigated. There are two reasons for this difference. Firstly, as described above, the anomalies that could not be reacquired were not intrusively investigated. Secondly, due to the large numbers of anomalies and apparent high density of UXO present in the Grenade Range (grids), an amended excavation plan was adopted for that area. At the direction of USAESCH, intrusive investigations were halted in Grenade Range grids with more than 50 anomalies as soon as enough UXO items were recovered to classify the grid as a high UXO density grid. Density determinations were made using USACE's UXO Calculator, and high density was defined as greater than 10 anomalies/acre. Identification of at least two UXO items in a 100-foot by 100-foot grid was generally sufficient to characterize the UXO density as "high" within the grid. Also, 11% of the anomalies identified in SEAD-44A were not investigated due to safety concerns of excavating in frozen ground or in areas covered by standing water or ice.

3.7.1.5 After an anomaly was intrusively investigated, the intrusive investigation team recorded the anomaly type based on six predetermined categories:

- **Unexploded ordnance (UXO)** - Military munitions that have been primed, fuzed, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or materiel and remain unexploded either by malfunction, design or any other cause (40 CFR 266.201). Live fuzes have been included in this category, as they are very dangerous and highly unstable.

- **Intact OE items (OE)** - Ammunition, ammunition components, chemical or biological warfare materiel or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. This category included anything recognizable as a specific type of ordnance, including non-fuzed, high explosive (HE) - filled items.

- **OE-related scrap (S)** - Pieces of ordnance that are no longer recognizable as a specific ordnance item. Ordnance parts and fragments of exploded or detonated ordnance are included in this category.

- **Non-OE related scrap (NS)** - Any item that caused a geophysical anomaly but was not related to ordnance (buried metal, hot rocks, etc.)

- **Not investigated (X)** - Anomalies that were not investigated during the EE/CA investigation, due to either physical conditions (water covering anomaly location, frozen ground) or the decision to terminate excavation in a grid with an established *high* UXO density.

- **False positive (FP)** – The cause or source of the geophysical anomaly was not determined.

3.7.1.6 Following the intrusive investigation of a grid, a QC check was performed by the UXO QC Specialist (UXOQCS). The UXOQCS re-investigated 10% of the anomalies

that had been dug to ensure that the identified anomalies had been found during the intrusive investigation. Many of the grids investigated were also re-checked using the instrument that had collected the geophysical data. Ten percent of each grid included in this QC check was resurveyed with the EM-61. Anomalies identified in the QC survey were compared to anomalies identified in the original survey. Any QC anomalies that could not be matched to original anomalies or could be matched anomalies that should have been removed were intrusively investigated.

3.7.2 INTRUSIVE EXCAVATION

Geophysical data was evaluated by the Site Geophysicist and the anomalies were selected for intrusive investigation. Anomaly Dig Sheets were prepared and provided to the reacquisition teams with location coordinates. The reacquisition teams flagged the individual anomaly locations in the field. Intrusive investigation teams, comprised of qualified UXO personnel, subsequently excavated the flagged anomalies and documented the findings. Each anomaly was treated as a suspect UXO until it was determined otherwise. Following the identification and removal of the item, the excavation area was re-checked with a Schonstedt® magnetometer to ensure that all anomalous material had been removed. Once a hole was cleared, it was backfilled and restored to its original pre-intrusive condition. All excavated material was segregated and stored onsite pending disposal via a local scrap metal dealer. All UXO discovered within the AOIs was disposed of following protocol outlined in the approved WP.

3.7.3 INTRUSIVE INVESTIGATION FINDINGS

USA Environmental personnel discovered 192 UXO items during the intrusive investigation. UXO were encountered in six of the eleven areas investigated, SEADs-44A, 45, 46, 57, the Grenade Range, and EOD Area #2. Appendix C summarizes the UXO and OE found during the EE/CA project. Twenty-five of the anomalies investigated by USA personnel were ordnance items filled with high explosive (HE); however, these intact items (OE) were unfuzed and, therefore, classified as non-UXO. Over 1,800 non-HE-filled, intact items were also recovered during the project and classified as OE. OE was not found in the Indian Creek, SEAD-53, and Demo Range AOIs. OE-related scrap was found in every area investigated during the EE/CA. A detailed list of all anomalies and their associated intrusive results are listed in Appendix C.

3.7.4 RECOVERED ORDNANCE ITEMS

3.7.4.1 Introduction

3.7.4.1.1 A variety of OE-related items were recovered during the EE/CA investigation of SEDA. A complete list of these items can be found in Appendix C. As SEDA

was an ammunition storage depot, a large variety of ordnance was stored there over the years. None of the items recovered during the project were inconsistent with the activities that took place at the Depot as reported in the ASR. However, a number of items found in SEAD-46 were somewhat inconsistent with the activities that were reported to have taken place in that AOI. This fact will be addressed further in the discussion of the OE recovered from SEAD-46 (Section 3.9.8).

3.7.4.1.2 Most of the OE items recovered were significantly deteriorated, therefore distinguishable marks pertaining to Army or Navy delineated Mark (Mk) and Model (Mod) number were no longer present. Instead these items were categorized by the size of the OE item (i.e., 3.5-inch rockets, 60mm mortar, 75mm projectile, etc.). In some instances, USA personnel were able to infer the Mk and Mod numbers for the recovered item. These inferred ordnance characterizations are included in the OE descriptions found in Figures 3.1 through 3.9. These figures were taken from ORDATA II (NAVEODTECHDIV, 1999).

3.7.4.1.3 The following paragraphs provide brief descriptions of ordnance items similar to those recovered during the EE/CA intrusive investigation at the Depot. At the completion of the EE/CA field effort, all OE items were certified as non-hazardous scrap by USA and disposed of through a local scrap recycler (Appendix D).

3.7.4.2 35mm Subcaliber Rocket: Practice, M73

Approximately 190, 35mm rounds were recovered during the project, all within the Grenade Range. One hundred and five of these rounds were believed to be live and, as such, were BIP. Figure 3.1 shows the dimensions of a 35mm rocket and gives a short description of the round. Appendix E contains documentation of the BIP efforts.

3.7.4.3 37mm Projectile: APHE, M80

Thirteen 37mm projectiles were found during the EE/CA intrusive investigation, all in SEAD-45. Only one of these was fuzed, although four of the others did contain HE. All of the recovered items were detonated with other HE filled items from SEAD-45. Appendix E contains documentation of the demolition efforts. Figure 3.2 shows the dimensions of the 37mm and gives a short description of the round.

3.7.4.4 40mm Grenade: Practice, M385

Three versions of the 40mm rifle-fired grenade (practice) were recovered during the project. The M385 version is the only one that contains no high explosive (HE). Approximately 200 grenades of this type were recovered at SEDA in SEADs-44A and -46 and in the Grenade Range. Figure 3.3 shows the dimensions of the M385 grenade and gives a short description of the round.

3.7.4.5 40mm Grenade: Practice, M382 and M407A1

These two versions of the 40mm grenade both contain 6g of RDX (HE) used as a spotting charge, and were classified as UXO. Five of these items were recovered during the

project, four in SEAD-44A and one in the Grenade Range. All of the live 40mm grenades were BIP. Appendix E contains documentation of the BIP efforts. Figure 3.4 shows the dimensions of the M385 grenade and gives a short description of the round.

3.7.4.6 75mm Projectile: APHE, M61A1

Eighty-two 75mm projectiles were found during the EE/CA intrusive investigation, all in SEAD-45. None of these were fuzed, however, 12 were recognized as containing HE. These 12 rounds were detonated with other HE items recovered in SEAD-45. Appendix E contains documentation of the demolition efforts. Figure 3.5 shows the dimensions and gives a short description of one of the APHE rounds recovered.

3.7.4.7 105mm Projectile: WP, M60 Series

Eight 105mm projectiles were found during the EE/CA intrusive investigation. Seven were recovered at SEAD-45 and one in SEAD-57. Only one, a white phosphorous (WP) round recovered in SEAD-45, was fuzed. This item was BIP. Appendix E contains documentation of the demolition efforts. Figure 3.6 shows the dimensions and gives a short description of the round that was BIP.

3.7.4.8 CS Hand/Rifle Grenade

Five CS Grenades were found during the EE/CA intrusive investigation, four in SEAD-44A and one in SEAD-57. All of these items were unfuzed and empty of any hazardous substance, however. As all were empty, the CS Grenades recovered were all classified as inert and sent to the scrap dealer. Figure 3.7 shows the dimensions of a CS Grenade and gives a short description of the item.

3.7.4.9 Hand Grenade: MK 2

One MK 2 fragmentation grenade was recovered in SEAD-46. This item was unfuzed. Another grenade, found on the surface in SEAD-57, was live, however. This item was believed to be a French fragmentation grenade similar to the MK 2, and it was BIP. Appendix E contains documentation of the BIP efforts. Figure 3.8 shows the dimensions of the MK 2 grenade and gives a short description of this item.

3.7.4.10 4lb. Fragmentation Bomb: M83 (Butterfly)

One fuzed M83 was recovered in SEAD-46, and a number of pieces recognizable as portions of M83 bombs were found in SEAD-45. The M83 in SEAD-46 was BIP. Appendix E contains documentation of the BIP efforts. Figure 3.9 shows the dimensions of the M83 bomb and gives a short description of this item.

3.7.4.11 .50-Caliber Cartridge Small Arms Ammunition

Numerous .50-caliber bullets and clips were recovered during the intrusive investigation. These small arms do not represent a threat to public safety and were therefore not considered OE for this EE/CA project.

3.7.4.12 Fuzes

Many different types of fuze were recovered during the EE/CA, including point-detonating (PD), base-detonating (BD), variable time (VT), and chemical long delay anti-withdrawal. Each of these was checked carefully in an attempt to determine whether or not there was a possibility that it was still live. All that were possibly live were BIP. Appendix E contains documentation of the BIP efforts, and Appendix C contains a list of the fuzes located in each area.

3.7.4.13 20mm Projectiles

20mm projectiles were recovered from SEADs-17, -45, and -57. The two live items found in SEAD-57 were BIP, as were a number of live ones found in SEAD-45. The two rounds found in SEAD-17 were classified as inert. Appendix E contains documentation of the BIP efforts.

3.7.4.14 57mm Projectiles

A variety of 57mm projectiles were found in SEAD-45. Seven of these items were fuzed and were BIP, and 13 HE filled items were collected and detonated with other HE filled items recovered from SEAD-45. Appendix E contains documentation of the demolition efforts.

3.7.4.15 81mm Mortar Round

Two 81mm mortar rounds were found in SEAD-45. Only one of these was live, and it was BIP. The other was classified as inert and disposed of as scrap. Appendix E contains documentation of the demolition efforts.

3.7.4.16 90mm Projectile

Seven 90mm projectiles were recovered from SEAD-45. Six of these were empty, however, one was HE filled. The HE filled item was detonated with other similar items recovered from SEAD-45. Appendix E contains documentation of the demolition efforts.

3.7.4.17 120mm Projectile

Two empty 120mm projectiles were recovered from SEAD-45. These were disposed of as scrap.

3.7.4.18 250lb Bomb

Three concrete-filled 250lb bomb bodies were recovered from SEAD-45. There was nothing inherently dangerous about the bodies themselves; so, due to the extreme weight of these objects, they were left in place.

3.7.5 QC OF SURVEYED AREAS

3.7.5.1 An effort was made to check the quality of both the geophysical data collected during the project and the ability of the dig teams to identify and remove source of the anomalies selected from the geophysical data. To accomplish this goal, it was intended that 10% of the area surveyed during the EE/CA would be resurveyed via EM-61 meandering path surveys. Given time and weather constraints during the fieldwork, the QC surveys were not completely carried out. However, QC checks were completed in 220 of the grids surveyed during the EE/CA and in at least 10% of the area surveyed in the SEAD-53 ditches.

3.7.5.2 After the QC data was processed, anomalies in this data were compared to anomalies picked in the original data sets. Investigation of QC anomalies was performed if the QC anomaly did not exist at all in the original data set or if the QC anomaly corresponded to an anomaly from the original data set that was supposed to have been investigated and removed. A number of UXO and OE items were recovered during the investigation of the QC picks in the Grenade Range. Nine live 35mm subcaliber rounds and 24, 40mm rifle-fired grenades (practice) were recovered. However, 8 of the 35mm rounds were mistakenly picked in the QC data, as they actually corresponded to original targets that had not been investigated. The same is true for 14 of the 24, 40mm practice grenades recovered. The majority of the other recovered items were found near locations where the intrusive investigation failed to recover the entire source of the anomaly. No OE or UXO was recovered from QC target locations in any area other than the Grenade Range.

3.8 SOURCE, NATURE, AND EXTENT OF OE

3.8.1 INTRODUCTION

3.8.1.1 Construction of the Seneca Ordnance Depot began in June 1941, and two years later, in 1943, the Depot began its mission of receipt, storage, maintenance, and supply of military items, including munitions and equipment. As the amount of ammunition on base increased following World War II, the mission of the base shifted from the supply of ordnance to the storage and disposal of it. The Depot's mission changed again in early 1995 when the Department of Defense (DOD) recommended closure of SEDA under its Base Realignment and Closure (BRAC) process. Congress approved this recommendation on September 28, 1995 and the Depot was officially closed in July 2000. Many of the facilities used for ammunition

disposal were active until the recommendation that the Depot be closed, and some, including SEADs-23, -45, -57, and some of the igloos, were active for a few years afterwards. The Depot was also used for training by National Guard units after the recommendation.

3.8.1.2 The following section describes the OE findings of the EE/CA investigation by AOI and provides a summary of statistical factors. Each of the areas investigated, except for the ditches examined in SEAD-53 and the Demo Range, contained at least one OE-related item, with positively identified UXO items present in SEADs-44A, -45, -46, and -57, as well as in EOD Area #2 and the Grenade Range.

3.8.2 INDIAN CREEK BURIAL AREA

As the area covered by the 1999 EM-31 investigation described in Section 2.7.8 (Figure 3.10A) did not contain any large anomalies that appeared to be trenches or burial pits in the vicinity of Indian Creek Road, it was decided to use the EM-61 survey to investigate further to the south of this area. Nine 100-foot by 100-foot grids were surveyed in this AOI using the EM-61 (Figure 3.10B). This represents all of the suspected burial area. Seventeen anomalies were identified in this area, and all were investigated. Only one was determined to be a "false positive". The only ordnance related item found at the Indian Creek Burial Area was an M-16 magazine most likely due to the National Guard activities that take place at SEDA. There is no evidence that any large-scale burial of ordnance in this AOI.

3.8.3 SEAD-53 - IGLOO AREA

Approximately 2.9 acres of meandering path data were collected in SEAD-53 using the EM-61. This data was collected in ditches adjacent to both sides of an igloo access road in Igloo Area D (Figure 3.11) in order to determine the nature of Schonstedt® hits that were delineated but not investigated during the ASR site visit. Of the 273 anomalies identified in the SEAD-53 data, only four were not investigated. Thirty of the investigated anomalies (11%) were "false positives", and none of the anomalies investigated were OE related.

3.8.4 DEMO RANGE

3.8.4.1 Sixty-three 100-foot by 100-foot grids were surveyed in the Demo Range using the EM-61. Twenty grids in heavily wooded areas were also investigated via "mag and flag" surveys. The combined acreage of these surveys represents 47.7% of the 40-acre AOI (Figure 3.12) to the southwest of SEAD-57. A total of 402 anomalies were identified in the grids surveyed with the EM-61. Out of the 357 anomalies investigated (89% of the total), 193 (54.1%) were considered "false positives". As stated previously (Paragraph 3.7.3) brush cutting activities in the Demo Range contributed to the large number of "false positives" present in this AOI. Four

of the "mag and flag" surveyed grids were also intrusively investigated, although no statistics are available for these grids.

3.8.4.2 No UXO or OE was recovered in the Demo Range. In the geophysically surveyed grids, 27 fragments indicative of demolition activities were recovered. However, proximity of this AOI to SEAD-57 as well as the lack of complete OE items suggests that these pieces could have come from SEAD-57.

3.8.5 SEADS-16 AND -17 – DEACTIVATION FURNACES

3.8.5.1 Approximately 10, 100-foot by 100-foot grids (2.3 acres) were surveyed using the G858 gradiometer in SEAD-17 (Figure 3.13). This acreage represents 28% of the 8.1 acres contained in the AOI. A total of 478 anomalies were identified from the geophysical data, 95% of which were intrusively investigated. Fifty-two (11.5%) of the anomalies were considered "false positives" as no discernable metallic debris was located.

3.8.5.2 Various OE and OE scrap were recovered from many of the anomaly locations (117 or 25.9%) including a spent fuze and two inert 20mm (Appendix C). The majority of the OE scrap was small arms ammunition (5.56mm, 7.62mm, .30 cal, and .50 cal), which is consistent with the small arms demolition activities that took place at the furnace. No UXO was detected within SEAD-17. The three OE items were all discovered within 5 inches of the ground surface. The intrusive investigation also determined that the linear anomaly seen trending NW to SE across grids 17A-3 and 17B-2 in Figure 3.13 is an underground water line. The distribution of the OE findings within SEAD-17 is depicted on Figure 3.14.

3.8.5.3 While the entire area inside the fence surrounding SEAD-16 was scheduled for survey during the EE/CA, there was concern that the many cultural features present within the fence might affect the geophysical data collected there. Rather than surveying the entire site, east-west trending transect lines spaced 10 feet apart were collected across the area inside the fence. These data were then examined to see if geophysical data collected in SEAD-16 would be useful in detecting OE in this area. Survey results suggested that drums, scrap-metal, railroad tracks, the perimeter fence, and the deactivation furnace building itself had very noticeable effects of the gradiometer data collected in this area. It was decided that collecting any more data in this area would not be worthwhile due to the large amounts of cultural interference.

3.8.6 EOD AREA #3

3.8.6.1 Sixteen 100-foot by 100-foot grids were surveyed in EOD Area #3 using the EM-61 (Figure 3.15). This acreage represents 80% of the 5-acre AOI. Four grids in this area, including the actual location of the suspected disposal pit, were not surveyed due to thick woods that could not be cleared using the brush cutting tools available. A total of 64 anomalies were identified in the area surveyed, all of which were investigated. Nine (14.1%) of these anomalies were designated as "false positives".

3.8.6.2 Thirteen of the anomalies investigated (20%) were OE related, although none were classified as UXO. Two of the recognizable items were expended rifle grenades (illumination), one was an expended slap flare, and the other was a fuze lighter. All of these items were within 12 inches of the ground surface. The distributions of the OE findings within EOD Area #3 are depicted on Figure 3.16.

3.8.6.3 EOD Area #3 is adjacent to the northern border of SEAD-46. As a relatively small amount of OE was found in EOD Area #3, it is believed that the items that were found may be due to activities in SEAD-46. Three of the items that were found, the two rifle grenades and the slap flare, are also consistent with OE that was prevalent in SEAD-46.

3.8.7 EOD AREA #2

3.8.7.1 Approximately 10, 100-foot by 100-foot grids were surveyed in EOD Area #2 using the EM-61 (Figure 3.17). This acreage represents 46% of the 5-acre AOI. Dense woods and standing water prevented complete geophysical coverage of EOD Area #2. A total of 89 anomalies were identified in the area surveyed, all of which were investigated. Forty-three (48.3%) of the anomalies were designated as "false positives". Due to the thick woods present in this area, grids surveyed were cleared with the Hydro-Ax prior to the geophysical investigation. As stated in Paragraph 3.7.1.3, brush-cutting activities typically contributed to the large number of "false positives" in some areas. The large, linear anomalies seen in this area were not intrusively investigated; however, all of them either connect to each other or lead to a fire hydrant that was present in this area. It is assumed that they are underground water lines.

3.8.7.2 Six of the anomalies investigated were OE related. One UXO item was found (fuze with booster). The other three recognizable items were expended slap flares. All of these items were within 3 inches of the ground surface. The fuze was BIP. The distributions of UXO and OE findings within EOD Area #2 are depicted on Figures 3.18 and 3.19.

3.8.8 SEAD-44A – QA FUNCTION TEST AREA

3.8.8.1 Approximately 60, 100-foot by 100-foot grids were surveyed using the EM-61 (Figure 3.20). This acreage represents 55% of the 25 acres inside the fence surrounding the AOI. The 55% of the area surveyed was skewed to the northern half of the site, which was where any former range present at the site would have been located. The rest of the area surveyed would have been outside or on the boundaries of the 15 acre site described in the ASR. A total of 1,783 anomalies were identified in the geophysical data, 89% of which were intrusively investigated. The remaining anomalies were not investigated due to safety concerns associated with excavating in frozen ground or beneath standing water or ice. Four hundred and thirty-nine (27.6%) of the anomalies were considered "false positives" as no discernable metallic debris was located. The "false positive" rate at SEAD-44A was relatively high, as the geophysical investigation in this AOI performed as a confirmation sampling for the scrape and sift removal operation being performed concurrently with the investigation.

3.8.8.2 Geophysical data were collected in SEAD-44A immediately after 1-foot of soil was scraped off of sections of the AOI. Geophysical anomalies were intrusively investigated in an effort to remove any possible UXO below the foot of soil that had been scraped off. In portions of the site, the sifted soil was replaced after all geophysical anomalies were investigated. However, at the time of completion of the EE/CA fieldwork, large piles of scraped soil were still present on site needing to be sifted

3.8.8.3 Heavy rains as well as snowfall and subsequent melting combined with a completely barren dirt area resulted in an extremely muddy site. In order to dry the mud, the contractor that performed the scraping operation pulled a harrow across the area. The harrowing of the site resulted in large-scale clumping of dirt, resulting in an extremely uneven site that caused a number of small anomalies in the geophysical data. As the geophysical surveys performed were to be the final investigation of the AOI, Parsons was directed to remove all possible ordnance as small as a 20mm down to a 4-foot depth. A 20mm at four feet would, at best, produce an anomaly barely above background. As a result, every anomaly that stood out at all from background was picked including the many small anomalies caused by surface irregularities, resulting in the high "false positive" rate.

3.8.8.4 Various UXO and OE scrap were recovered from many of the anomalies (732 or 46.1%), including four live 40mm rifle-fired grenades (practice) containing an HE spotting charge and a live slap flare. Over 240, 40mm practice grenades (no HE) were recovered, as well as six expended slap flares. Both types of ordnance recovered are consistent with the activities that were supposed to have taken place at the Function Test Area. OE recovery depths ranged from surface to a maximum depth of 12 inches below the scraped surface, and the UXO items encountered were BIP. The distributions of the UXO and OE findings within SEAD-44A are depicted on Figures 3.21 and 3.22.

3.8.9 SEAD-46 – 3.5" ROCKET RANGE

3.8.9.1 Seventy-five 100-foot by 100-foot grids were surveyed in SEAD-46 using the EM-61 (Figure 3.23). This acreage represents 43.1% of the 40 acres contained in the AOI. A total of 1,291 anomalies were identified in the SEAD-46 data. Out of the 1,155 anomalies investigated (89% of the total), 253 (21.2%) were considered "false positives". As stated previously (Paragraph 3.7.1.3) brush cutting activities in SEAD-46 contributed to the large number of "false positives" present in this AOI.

3.8.9.2 Ordnance-related items were recovered from 478 of the anomalies investigated (41%), and 10 of these were UXO items. Appendix C lists the types and amounts of UXO and OE recovered in SEAD-46. All of the UXO items detected within SEAD-46 were BIP. The OE recovery depths ranged from surface to a maximum depth of 12 inches. The distributions of the UXO and OE findings within SEAD-46 are depicted on Figures 3.24 and 3.25.

3.8.9.3 Although the ASR described this AOI as a 3.5" Rocket Range, no rockets or rocket motors were found during the EE/CA investigation. While the suspected target berm was not investigated due to the thick brush covering it, the lack of any rockets or rocket parts in the immediate vicinity suggests that it is unlikely that the predominant use of this AOI was as a rocket range. None of the OE pieces recovered during the project (fuzes, 40mm rifle grenades, flares, a CS grenade, a cluster bomb, and a mortar shell) were related to 3.5" rockets.

3.8.10 GRENADE RANGE GRIDS

3.8.10.1 Sixty-five 100-foot by 100-foot grids were surveyed using the EM-61 (Figure 3.26). This acreage represents all of the 15-acre area that was designated as the target area in the Grenade Range. A total of 1,394 anomalies were identified in the geophysical data, 865 (62%) of which were intrusively investigated. Fifty-six (6.6%) of the anomalies investigated were considered "false positives" as no discernable metallic debris was located.

3.8.10.2 Ordnance-related items were recovered from 683 of the anomalies investigated (79%), and 102 of the items recovered were classified as UXO. All but one of these live items were M73 35mm subcaliber rounds. The other was a practice 40mm rifle-fired grenade containing a spotting charge. All of the live items were BIP. The rest of the items were all inert items found within the first 12 inches of the ground surface. The distributions of UXO and OE findings within the Grenade Range are depicted on Figures 3.27 and 3.28.

3.8.11 GRENADE RANGE MEANDERING PATH

3.8.11.1 Approximately 2 acres of meandering path data were collected in the Grenade Range using the EM-61 (Figure 3.26). This data was collected between the firing line for the range and the gridded target area. This area encompassed approximately 10 acres, so the area investigated corresponds to 20% of the total area. Of the 95 anomalies picked from the meandering path data, 76 (80%) were reacquired and investigated. Of these, 10 (13.1%) were "false positives" as no discernable metallic debris was located.

3.8.11.2 Ordnance-related items were recovered from 28 of the anomalies investigated (37%). One of these, a live 35mm subcaliber round, was classified as UXO and was BIP. As with the Grenade Range grids, all of the OE recovered were either 35mm subcaliber rounds or 40mm rifle-fired grenades. OE recovery depths outside of the gridded area of the Grenade Range ranged from surface to a maximum depth of 5 inches. The distributions of UXO and OE findings within the Grenade Range are shown on Figures 3.27 and 3.28.

3.8.12 SEAD-57 – FORMER EOD RANGE GRIDS

3.8.12.1 Sixty-one 100-foot by 100-foot grids were surveyed in SEAD-57 using the EM-61 (Figure 3.29). These grids included both the berm and the suspected shot holes present in this area and represent 23.3% of the 60 acres contained in the AOI. Of the 2,951 anomalies picked from the SEAD-57 grid data, 1,700 (58%) were intrusively investigated. Of these, 328 (19.3%) were "false positives" as no discernable metallic debris was located. As stated previously (Paragraph 3.7.1.3) brush cutting activities in SEAD-57 contributed to the large number of "false positives" present in this AOI. The large, linear anomalies seen away from the berm in this area (grids E-17 and K-17) were not intrusively investigated. However, it is apparent that they are due to a large, reinforced concrete bunker (E-17) and a utility line; most likely an electric line (K-17).

3.8.12.2 Ordnance-related items were recovered from 954 of the anomalies investigated (56%), and 3 of these were UXO items. Appendix C lists the types and amounts of UXO and OE recovered in SEAD-57. The recovered grenade was blown in place, and the two 20mm rounds were detonated later with similar items. OE recovery depths in SEAD-57 ranged from surface to a maximum depth of 6 inches. The distributions of the UXO and OE findings within SEAD-57 are depicted on Figures 3.30 and 3.31.

3.8.13 SEAD-57 – FORMER EOD RANGE MEANDERING PATH

3.8.13.1 Approximately 1.3 acres of meandering path data were collected in SEAD-57 using the EM-61. This data was collected to the north of the grids surveyed in the AOI. Assuming that SEAD-57 encompasses the area within an 1800-foot radius of the demolition berm, the meandering path data collected represents 0.7% of the 174-acre area outside of the 60-acre area investigated by the grid surveys. Of the 420 anomalies identified from the meandering path data, all but three were intrusively investigated. Of these, 171 (41%) were "false positives" as no discernable metallic debris was located. As all of the meandering path data was collected in thickly wooded areas that were Hydro-Axed before the investigation, this high "false positive" rate is not surprising.

3.8.13.2 Ordnance-related items were recovered from 198 of the anomalies investigated (47%); however, no UXO was found in this area. Appendix C lists the types and amounts of UXO and OE recovered in SEAD-57. The anomalies in the table with an "MP" designation before the anomaly number were anomalies picked from the meandering path data sets. OE recovery depths outside of the gridded area of SEAD-57 ranged from surface to a maximum depth of 6 inches. The distribution of the OE findings within SEAD-57 is depicted on Figure 3.31.

3.8.13.3 All of the UXO and OE recovered at SEAD-57, in both the grid and meandering path data, is within the 10-pound explosive limit rumored to have been in effect for demolition activities in this AOI. However, there is a larger concentration of OE to the north of the area, especially in the meandering path area. It is believed that the OE recovered in this area

may be due to activities in SEAD-45 or SEAD-23 (Open Burning Grounds) rather than activities at SEAD-57.

3.8.14 SEAD-45 – OPEN DETONATION AREA GRIDS

3.8.14.1 Fifty-seven 100-foot by 100-foot grids were surveyed in SEAD-45 using the EM-61. Six grids in heavily wooded areas were also investigated by "mag and flag" surveys. The combined acreage represents 24.2% of a 60-acre area centered on the berm used for ordnance detonation (Figure 3.32). In the majority of the grids surveyed with the EM-61, so much buried metal was detected that background in these grids was above the range of values (-2 to 6 mV) that was typically used to contour EM-61 data. In each of these cases, the contouring range was increased as needed, and the 20 highest amplitude anomalies were picked for each grid in the grid block. For example, if there were two 100-foot by 100-foot grids surveyed together, 40 anomalies were picked (20 in each grid). Of the 1,337 anomalies identified in the EM-61 surveyed grids, 86% were intrusively investigated. Eight of these (0.7%) were considered "false positives" as no discernable metallic debris was located. Two of the "mag and flag" surveyed grids were also intrusively investigated, although no statistics are available for these grids.

3.8.14.2 Ordnance-related items were recovered from 1,075 of the anomalies investigated (93%), and 49 of these were UXO items. Appendix C lists the types and amounts of UXO and OE recovered in SEAD-45. Many of the UXO items detected within SEAD-45 were BIP. The OE recovery depths ranged from surface to a maximum depth of 48 inches, and the distributions of the UXO and OE findings within SEAD-45 are depicted on Figures 3.33 and 3.34.

3.8.15 SEAD-45 - OPEN DETONATION RANGE MEANDERING PATH

3.8.15.1 Approximately 3.5 acres of meandering path data were collected in SEAD-45 using the EM-61 (Figure 3.32). This data was all collected to the west and north of the grids surveyed in SEAD-45. Due to extremely thick brush and forest to the east of the gridded area of SEAD-45 no meandering path data were collected in this direction. No data were collected to the south of the grids as that area, SEAD-23 (the Open Burning grounds), was already undergoing an OE removal action. Assuming that SEAD-45 encompasses the area within an 1800-foot radius of the demolition berm, the meandering path data that was collected represents 2% of the 174-acre area outside of the 60-acre area investigated by the grid surveys. Of the 970 anomalies selected from the meandering path data, 72% were intrusively investigated. Of these, 19 (2.7%) were "false positives" as no discernable metallic debris was located.

3.8.15.2 Ordnance-related items were recovered from 666 of the anomalies investigated (95%), and 21 of these were UXO items. Appendix C lists the types and amounts of UXO and OE recovered in SEAD-45. The anomalies with an "MP" designation before the anomaly number are anomalies picked from the meandering path data sets. As SEAD-45 was the main Open Detonation Area for SEDA, the large array of OE and UXO found in this area is still

consistent with the activities that took place there. Many of the UXO items detected within the AOI were blown in place (BIP), although those that could be transported were collected and burned in a portable furnace supplied for the task. OE recovery depths outside of the gridded area of SEAD-45 ranged from surface to a maximum depth of 36 inches. The UXO and OE distributions in SEAD-45 are shown on Figures 3.33 and 3.34.

Munition Information: Description

U.S. ROCKET, 35-MM, SUBCALIBER, PRACTICE, M73

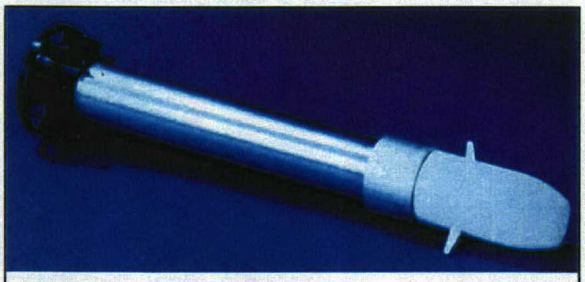


Image 1

Country of Origin	United States
Diameter/Width	35.00 mm
Length	225.00 mm
Weight	145.00 g
Explosive Type	Propellant, Rocket,
Net Explosive Weight	10.00 g

Special instructions required for transportation.

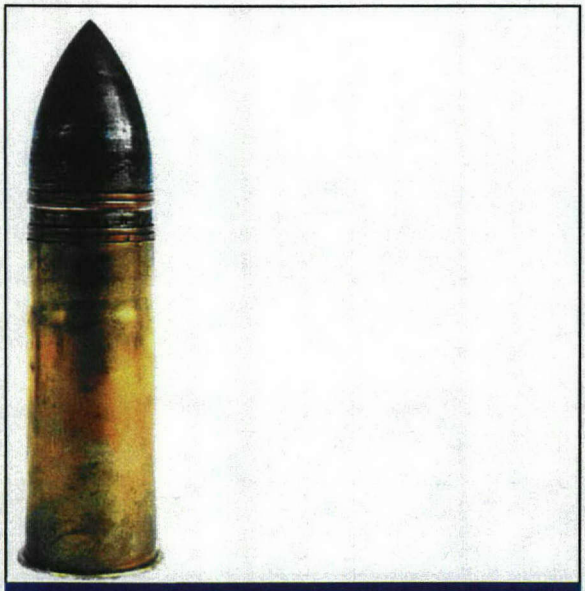
Disposal by detonation.

This is a subcaliber practice rocket incorporating an integral, impact-inertia fuze. It is used for training and simulates the rocket for the light antitank weapon (LAW) system. The rocket is fired from a practice M190 launcher (a modified M72A1 LAW launcher). The figure shows the appearance and dimensions of the M73 practice rocket and M190 launcher. The spotting head and fins are painted black; the remainder of the rocket is olive drab. A blue band appears on the forward end of the rocket motor. On later production rockets, the spotting head is painted blue and the fins are painted brown. The rocket motor section is olive drab with white markings. A metallic foil covered tape is attached around the forward end of the rocket motor for weight adjustment. The spotting head and fins are plastic; flash tube and primer block are a white semitranslucent plastic. The rocket motor is steel. The rocket weighs 145 grams (5.1 ounces) before firing and approximately 136 grams (4.8 ounces) after firing.

FIGURE 3.1. 35-MM SUBCLIBER ROCKER, PRACTICE, M73

Munition Information: Description

U.S. PROJECTILE, 37-MM, AP, M80



External View

Country of Origin	United States
Diameter/Width	37.00 mm
Length	107.44 mm
Weight	752.98 g
Explosive Type	NONE
Net Explosive Weight	Not Available

You can transport the munition to the disposal area.

Detonation not required.

This is a spin stabilized, armor piercing projectile. The M80 is very similar to the M74 Armor-piercing. Shot which is fired from the M1A2 antiaircraft gun. The main differences are in the cartridge case and propelling charge. The two projectiles are of similar construction, but the M80 is lighter in weight. This is accomplished by shortening the projectile. The M80 is 4.23 inches long and weighs 1.66 pounds, while the M74 is 4.84 inches long and weighs 1.92 pounds. The aircraft round also has a slightly greater radius of ogive (2.35 inches as compared to 2.205 inches). The Aircraft Round M80 may be distinguished as 37-mm ammunition by its size, and for the aircraft group by the length (5.69 inches) and flange of its cartridge case. The complete round is 9.34 inches long and weighs 2.25 pounds. The projectile is painted black with white stencil. Armor-piercing projectiles consist essentially of a steel shell to which is attached, usually by crimping, a steel armor piercing cap, and to this cap is attached, by screw threads or crimping, a windshield for ballistic purposes. The projectile may be either filled with explosive D or may be inert. A very important part of the modern armor-piercing projectile is the cap. Against face-hardened armor, projectiles which would be useless without the cap are, with its assistance, able to penetrate in bursting condition. The cap is made of high-carbon chrome steel and heat treated so that the portion directly in front of the point of the projectile is very hard while the skirt is very tough. The projectile is made of steel.

FIGURE 3.2. 37-MM PROJECTILE, ARMOR PIERCING, M80

Munition Information: Description

U.S. PROJECTILE, 40-MM, PRACTICE, M385

Image 2

Country of Origin	United States
Diameter/Width	40.00 mm
Length	81.00 mm
Weight	350.00 g
Explosive Type	NONE
Net Explosive Weight	Not Available

You can transport the munition to the disposal area.

Detonation not required.

This is a spin stabilized projectile fired from 40-MM automatic Grenade Launchers. The projectile is anodized blue with black markings. The projectile is solid aluminum with a copper rotating band.

FIGURE 3.3. 40-MM PROJECTILE, PRACTICE, M385

Munition Information: Description

U.S. CARTRIDGE, 40-MM, PRACTICE, M382 & M407A1

Image 1

Country of Origin	United States
Diameter/Width	40.00 mm
Length	78.00 mm
Weight	227.00 g
Explosive Type	RDX
Net Explosive Weight	6.00 g

Do not transport.

Disposal by detonation.

These are practice rounds with smoke spotting charges. The fuzes are point-detonating (PD) and graze-sensitive. The M551 is setback and centrifugally armed; the M552 is centrifugally armed. Figure shows the appearance, dimensions, and general arrangement of the cartridges. The M382 uses the M552 fuze; the M407A1 uses the M551 fuze. The M382 cartridge case and projectile are chemically finished to obtain an olive-drab color. The ogive is gray. Identification markings are yellow. The M407A1 cartridge case is olive drab; the projectile is blue. Markings are white. The cartridge cases and projectiles are aluminum.

FIGURE 3.4. 40-MM PROJECTILE, PRACTICE, M382 & M407A1

Munition Information: Description

U.S. PROJECTILE, 75-MM, APC & APC-T, M61A1

Image 1

Country of Origin	United States
Diameter/Width	75.00 mm
Length	279.40 mm
Weight	Not Available
Explosive Type	Explosive D
Net Explosive Weight	Unknown

Do not transport.

Disposal by detonation.

This is an Army gun fired armor piercing capped projectile. APC-T (Army) and AP (Navy). These projectiles have a hardened AP cap over the nose of the body to which the windshield is secured. The AP cap increases the penetration ability of the projectile. Most APC-T projectiles, and all Navy AP projectiles 3 inches and larger, incorporate a small HE main charge in the base with a BD fuze which detonates after the projectile penetrates a target. The projectile is steel.

FIGURE 3.5. 75-MM PROJECTILE, M61A1

Munition Information: Description

U.S. CARTRIDGE, 105-MM, SMOKE, WP, M60 SERIES

Image 1

Country of Origin	United States
Diameter/Width	105.00 mm
Length	399.00 mm
Weight	19.50 kg
Explosive Type	Tetryl
Net Explosive Weight	1.90 kg

Do not transport.

Disposal by detonation.

These are Army, spin-stabilized, bursting smoke projectiles fired from howitzers to produce screening smoke, the WP also has a limited incendiary effect. The projectile is painted light green with a yellow band and light red markings, older manufactured rounds were painted gray with yellow markings. The projectile is steel with a gilded metal rotating band.

FIGURE 3.6. 105-MM PROJECTILE, WHITE PHOSPHOROUS, M60 SERIES

Munition Information: Description

U.S. GRENADE, HAND/RIFLE, M7A1, ABC-M7A2, M7A3, & M54 (CS) (OBSOLETE)

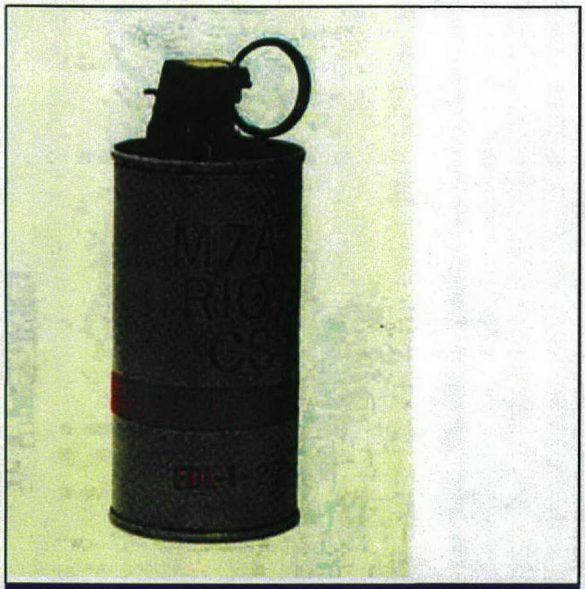


Image 1

Country of Origin	United States
Diameter/Width	64.00 mm
Length	145.00 mm
Weight	454.00 g
Explosive Type	BZ
Net Explosive Weight	354.00 g

Do not transport.

Disposal by detonation.

These are hand-thrown or rifle-launched, vapor-emission riot-control grenades. In addition, the M54 may be dispensed from airborne launchers. The body is painted gray, with a red band and red designation markings. The safety lever may be painted gray or unpainted. Fuze markings may be stamped or stenciled on top of the safety lever. ABC-M7A2 and ABC-M7A3 have 3 emission holes on top and 1 on bottom. The M6 & M7 have 6 emission holes on top and 1 on the bottom. The M6A1 & M7A1 have 4 emission holes on the top and one on the bottom. The grenades are steel.

FIGURE 3.7. HAND/RIFLE GRENADE, RIOT CONTROL

Munition Information: Description

U.S. GRENADE, HAND, FRAG, MK 2

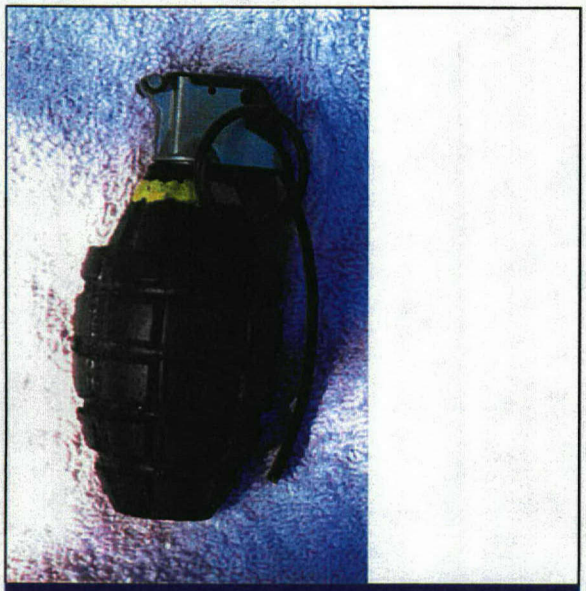


Image 1

Country of Origin	United States
Diameter/Width	57.00 mm
Length	114.00 mm
Weight	589.68 g
Explosive Type	TNT, Flaked
Net Explosive Weight	56.70 g

Do not transport.

Disposal by detonation.

The Mk 2 is a fragmentation (frag), antipersonnel, delay-detonating hand grenade which is commonly referred to as "pineapple" because of its shape and external serration. The Mk 2 grenade is painted olive drab, with a yellow band around the top of the fuze well. The grenade bodies are heavily serrated cast iron.

FIGURE 3.8. FRAGMENTATION HAND GRENADE, MK 2

Munition Information: Description

U.S. BOMB, 4-POUND, FRAG, M83 (BUTTERFLY)

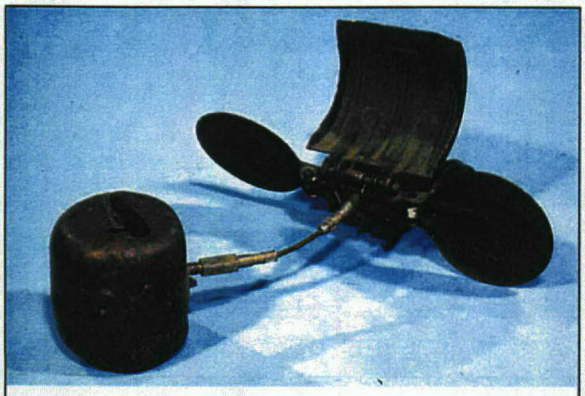


Image 1

Country of Origin	United States
Diameter/Width	79.00 mm
Length	282.00 mm
Weight	1.70 kg
Explosive Type	Composition B
Net Explosive Weight	227.00 g

Do not transport.

Disposal by detonation.

The bomb may be internally fuzed with any one of these fuzes; M129 series, M130 series, or M131 series. A loaded bomb cluster usually contains bombs with fuzes from each of the three series. This is an aerial delivered fragmentation (frag) cluster bomb which functions by the type of fuzing employed. The spring-loaded butterfly wings and disk vanes slide down the arming cable, and are folded around the bomb body when the bomb is in the clustered position. Once the fuze is installed in the bomb, there are no features to distinguish between the M130 series clockwork-long-delay fuzes and the M131 series antidisturbance fuzes. The bomb body, arming cable, butterfly wings, and disk vanes are steel. The M83 bomb is olive drab with a yellow band. Identifying nomenclature is stenciled in yellow or black. The markings GROUND and AIR are on the top surface of the fuze cap near the selector on the M129 and M129A1 fuzes. The M130 series and M131 series fuzes have no markings. The fuzes are aluminum.

FIGURE 3.9. 4-LB FRAGMENTATION CLUSTER BOMB, M83

Approximate Location of EM-31 Survey

997750 + 748750 Grid Coordinates (New York State Plane, Central)

50 0 50 Feet

N

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DESIGNED BY: JEB	Figure 3.10A Location of EM-31 Survey Indian Creek Burial Area		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:600	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 3.10A
	FILE: IN_CRK.APR		

742700 742800 742900 743000

987800 987700 987600 987500 987400 987300

Indian Creek Road

IC-1 IC-2 IC-3 IC-4 IC-5 IC-6 IC-7 IC-8 IC-9

West Patrol Road

742700 742800 742900 743000

Indian Creek Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

50 0 50 Feet

N

EM-61 Response (mV)

6 4 2 0 -2

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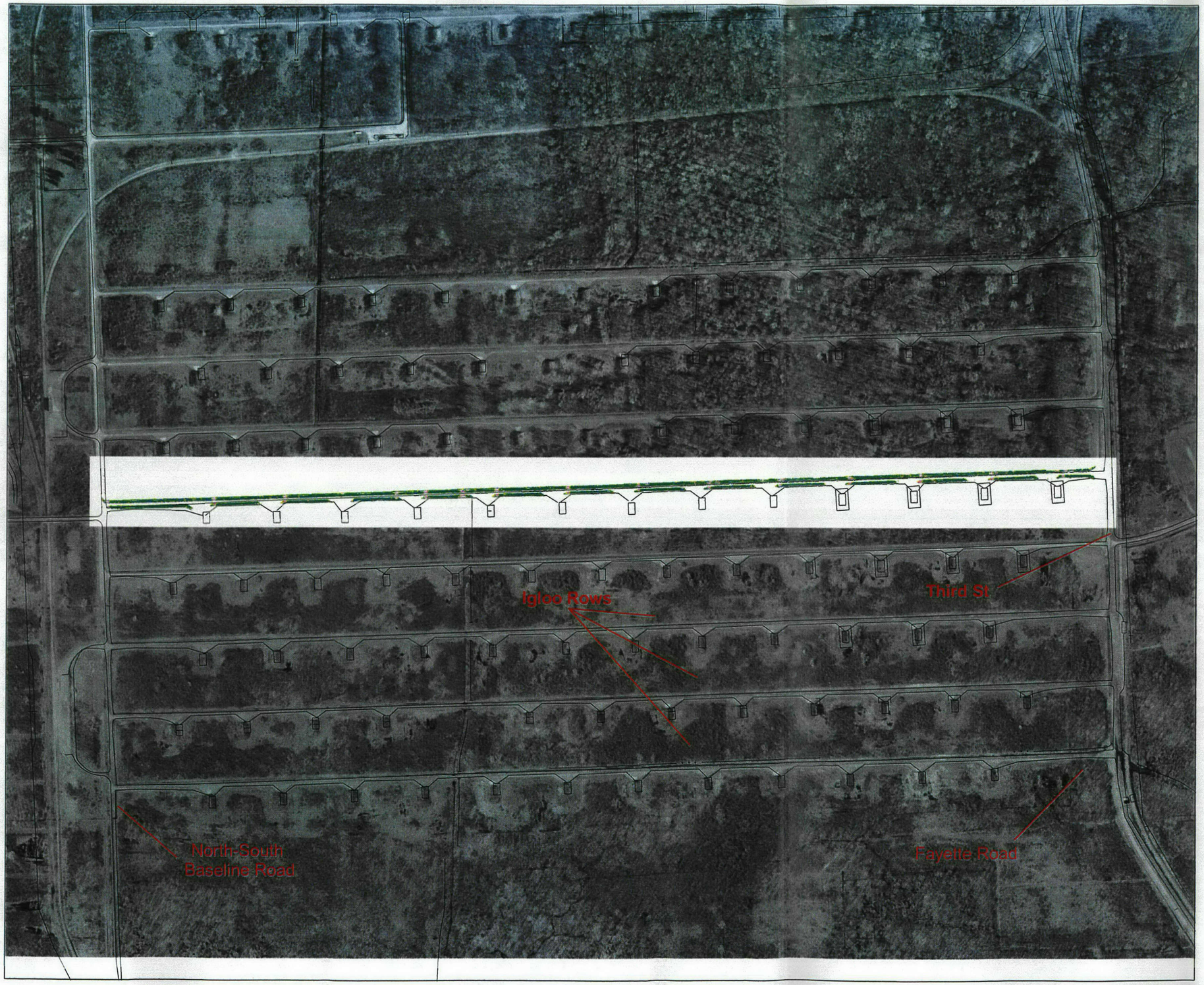
DESIGNED BY: JEB	Figure 3.10B EM-61 Data Collected in Indian Creek Burial Area	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:600	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.10
	FILE: IN_CRK.APR	



EM-61 Response (mV)

6
4
2
0
-2

N

400 0 400 800 Feet

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U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.11 EM-61 Data Collected in SEAD-53 (Igloo Area)
DRAWN BY: JEB	
CHECKED BY: SAS	SCALE: 1:7200 — PROJECT NUMBER: 736703-01000
SUBMITTED BY: BJM	DATE: JAN 2004 — PAGE NUMBER: Figure 3.11
	FILE: SEAD_53.APR

739000 739500 740000 740500

1009500 1009000 1008500 1008000 1007500

SEAD-57
Former EOD Range

DRA-12	DRB-12	DRC-12	DRD-12	DRE-12	DRF-12	DRG-12	DRH-12	DRI-12	DRJ-12	DRK-12	DRL-12	DRM-12	DRN-12
DRA-11	DRB-11	DRC-11	DRD-11	DRE-11	DRF-11	DRG-11	DRH-11	DRI-11	DRJ-11	DRK-11	DRL-11	DRM-11	DRN-11
DRA-10	DRB-10	DRC-10	DRD-10	DRE-10	DRF-10	DRG-10	DRH-10	DRI-10	DRJ-10	DRK-10	DRL-10	DRM-10	DRN-10
DRA-9	DRB-9	DRC-9	DRD-9	DRE-9	DRF-9	DRG-9	DRH-9	DRI-9	DRJ-9	DRK-9	DRL-9	DRM-9	DRN-9
DRA-8	DRB-8	DRC-8	DRD-8	DRE-8	DRF-8	DRG-8	DRH-8	DRI-8	DRJ-8	DRK-8	DRL-8	DRM-8	DRN-8
DRA-7	DRB-7	DRC-7	DRD-7	DRE-7	DRF-7	DRG-7	DRH-7	DRI-7	DRJ-7	DRK-7	DRL-7	DRM-7	DRN-7
DRA-6	DRB-6	DRC-6	DRD-6	DRE-6	DRF-6	DRG-6	DRH-6	DRI-6	DRJ-6	DRK-6	DRL-6	DRM-6	DRN-6
DRA-5	DRB-5	DRC-5	DRD-5	DRE-5	DRF-5	DRG-5	DRH-5	DRI-5	DRJ-5	DRK-5	DRL-5	DRM-5	DRN-5
DRA-4	DRB-4	DRC-4	DRD-4	DRE-4	DRF-4	DRG-4	DRH-4	DRI-4	DRJ-4	DRK-4	DRL-4	DRM-4	DRN-4
DRA-3	DRB-3	DRC-3	DRD-3	DRE-3	DRF-3	DRG-3	DRH-3	DRI-3	DRJ-3	DRK-3	DRL-3	DRM-3	DRN-3
DRA-2	DRB-2	DRC-2	DRD-2	DRE-2	DRF-2	DRG-2	DRH-2	DRI-2	DRJ-2	DRK-2	DRL-2	DRM-2	DRN-2
DRA-1	DRB-1	DRC-1	DRD-1	DRE-1	DRF-1	DRG-1	DRH-1	DRI-1	DRJ-1	DRK-1	DRL-1	DRM-1	DRN-1

East-West Baseline Road

739000 739500 740000 740500

Demo Range Grids

Mag and Flag Investigated

997750 748750 Grid Coordinates (New York State Plane, Central)

100 0 100 200 Feet

N

EM-61 Response (mV)

6
4
2
0
-2

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DESIGNED BY: JEB	Figure 3.12 EM-61 Data Collected in the Demo Range		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:2400	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 3.12
	FILE: DEMO_RNG.APR		

748750 749000 749250 749500

998500 998250 998000 997750 997500

Unnamed Stream

17A-7	17B-7	17C-7	17D-7	17E-7
17A-6	17B-6	17C-6	17D-6	17E-6
17A-5	17B-5	17C-5	17D-5	17E-5
17A-4	17B-4	17C-4	17D-4	17E-4
17A-3	17B-3	17C-3	17D-3	17E-3
17A-2	17B-2	17C-2	17D-2	17E-2
17A-1	17B-1	17C-1	17D-1	17E-1

SEAD-17
Deactivation Furnace

748750 749000 749250 749500

SEAD-17 Grids

997750
748750 Grid Coordinates (New York State Plane, Central)

100 0 100 Feet

N

G-858 Response
(nanoTeslas/ft)

8
4
0
-4

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HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.13 G-858 Data Collected in SEAD-17 (Deactivation Furnace)		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 3.13
	FILE: SEAD_17.APR		

748750 749000 749250 749500

998500 998250 998000 997750 997500

Unnamed Stream

17A-7	17B-7	17C-7	17D-7	17E-7
17A-6	17B-6	17C-6	17D-6	17E-6
17A-5	17B-5	17C-5	17D-5	17E-5
17A-4	17B-4	17C-4	17D-4	17E-4
17A-3	17B-3	17C-3	17D-3	17E-3
17A-2	17B-2	17C-2	17D-2	17E-2
17A-1	17B-1	17C-1	17D-1	17E-1

SEAD-17
Deactivation Furnace

748750 749000 749250 749500

OE Items Recovered in SEAD-17
- 20mm
- Fuze

SEAD-17 Grids

997750 Grid Coordinates (New York State Plane, Central)
748750

N

100 0 100 Feet

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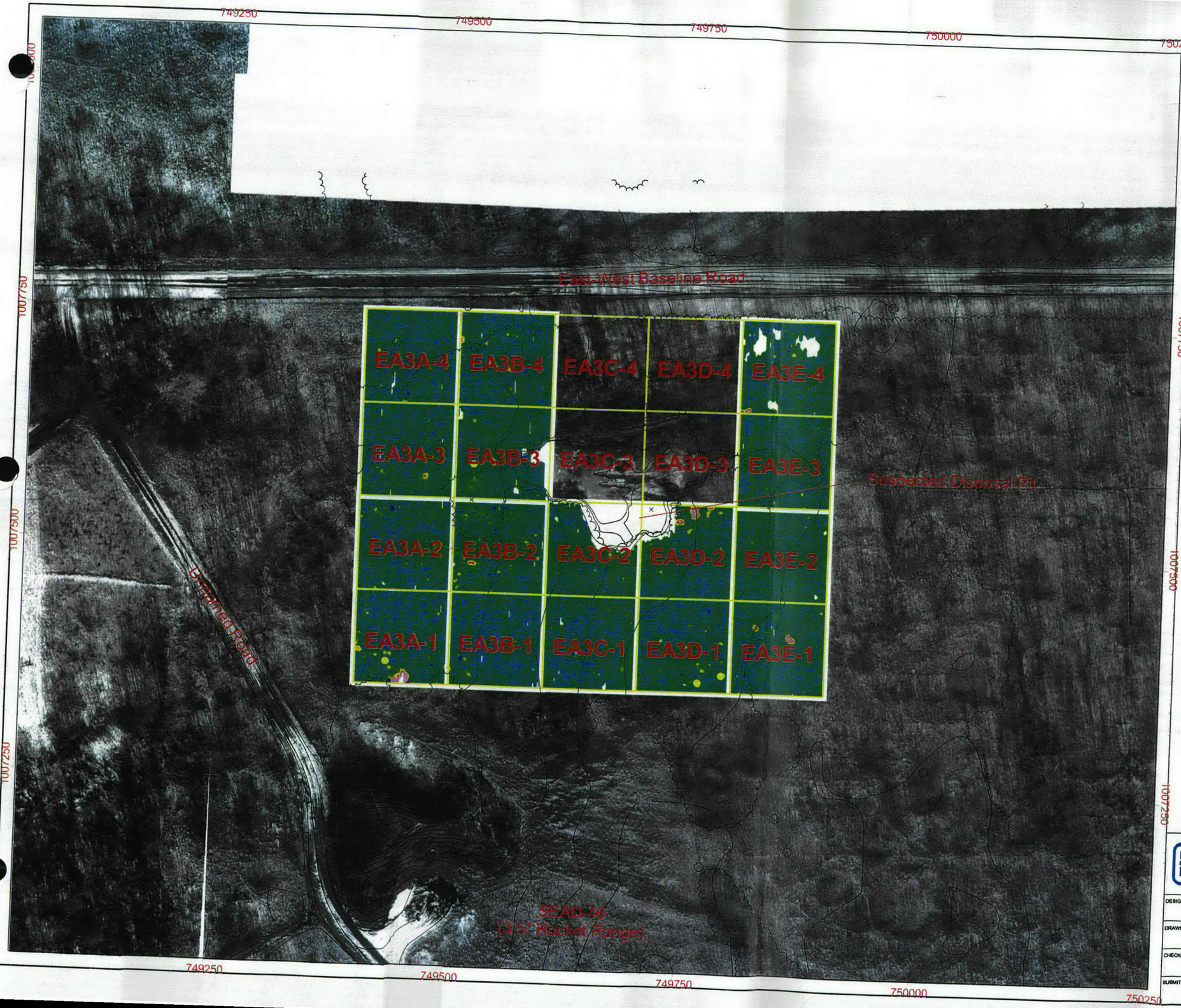
U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.14 OE Recovered In SEAD-17 (Deactivation Furnace)		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 3.14
	FILE: SEAD_17.APR		



EOD 3 Grids

997750
748750
Grid Coordinates
(New York State Plane, Central)

EM-61 Response (mV)

6
4
2
0
-2

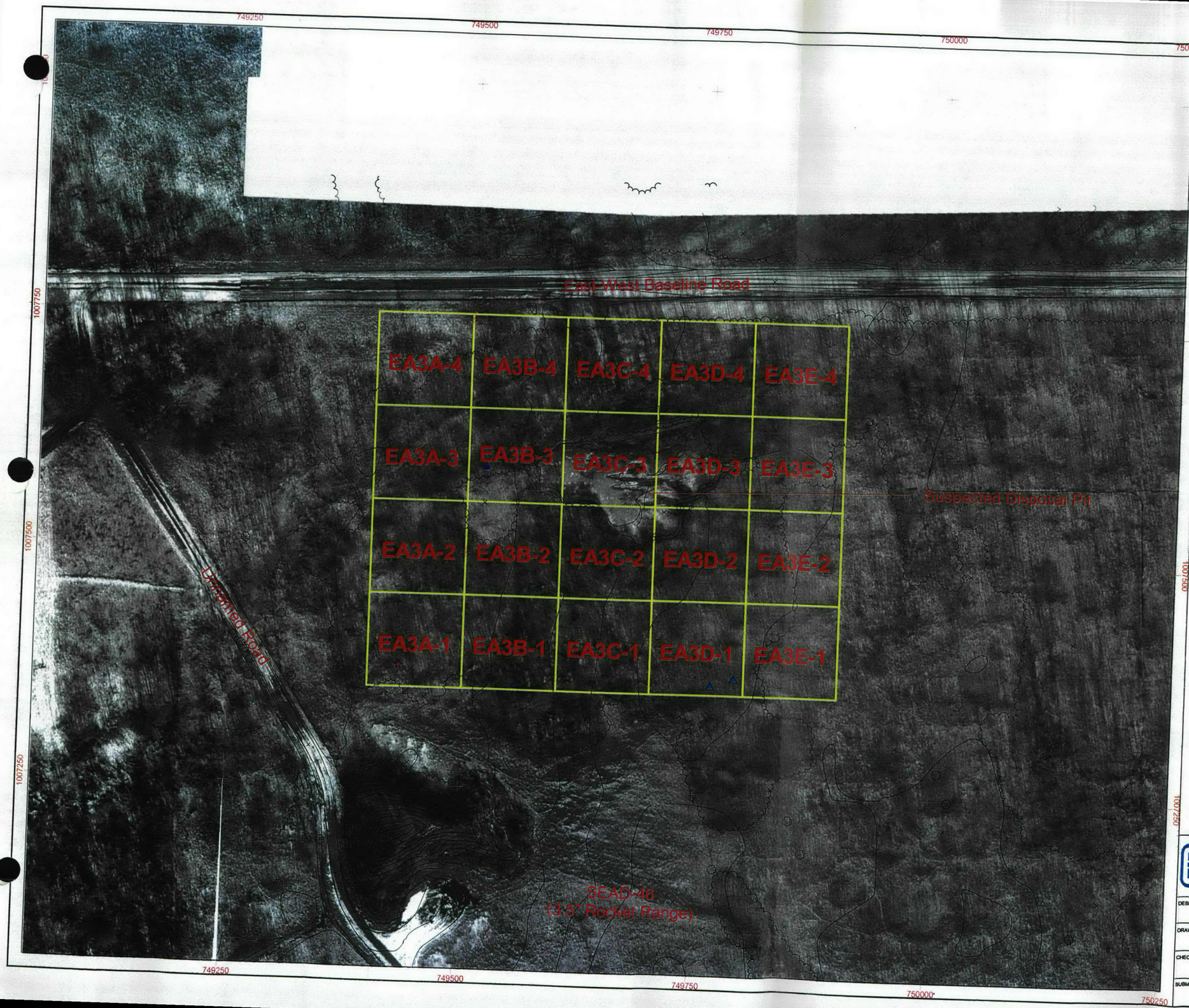
N

100 0 100 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.15 EM-61 Data Collected in EOD Area 3	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.15
	FILE: EOD3.APR	



OE Items Recovered in EOD 3
- M2-Fuze lighter
- Rifle grenade - illum. (Expended)
- Slap Flare -(Illumination)

EOD 3 Grids

997750 / 748750 Grid Coordinates (New York State Plane, Central)

N

100 0 100 Feet

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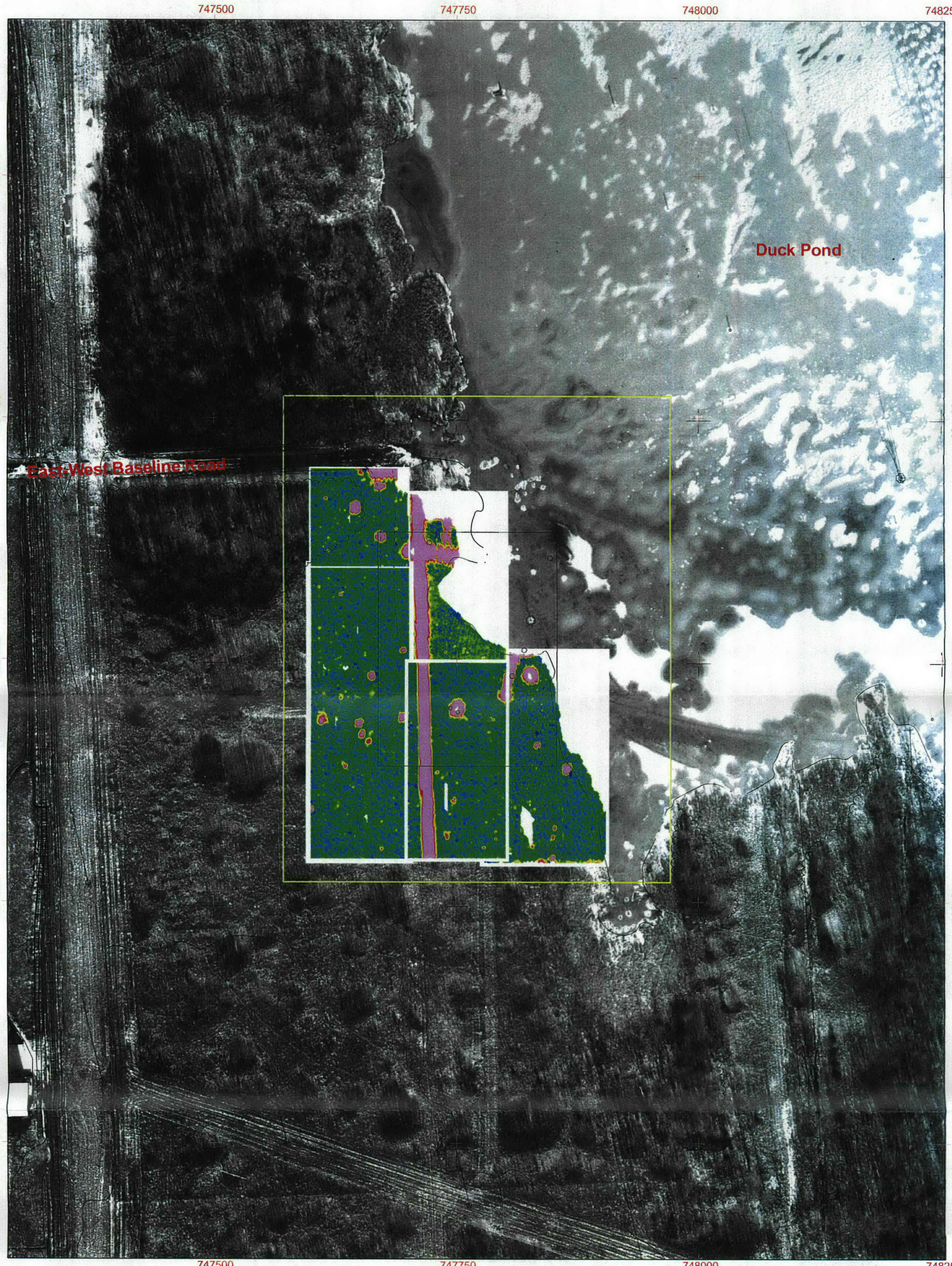
DESIGNED BY: JEB	Figure 3.16 OE Recovered in EOD Area #3	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.16
	FILE: EOD3.APR	



997750 + 748750 Grid Coordinates (New York State Plane, Central)

EOD 2 Area

100 0 100 Feet

N

EM-61 Response (mV)

6
4
2
0
-2

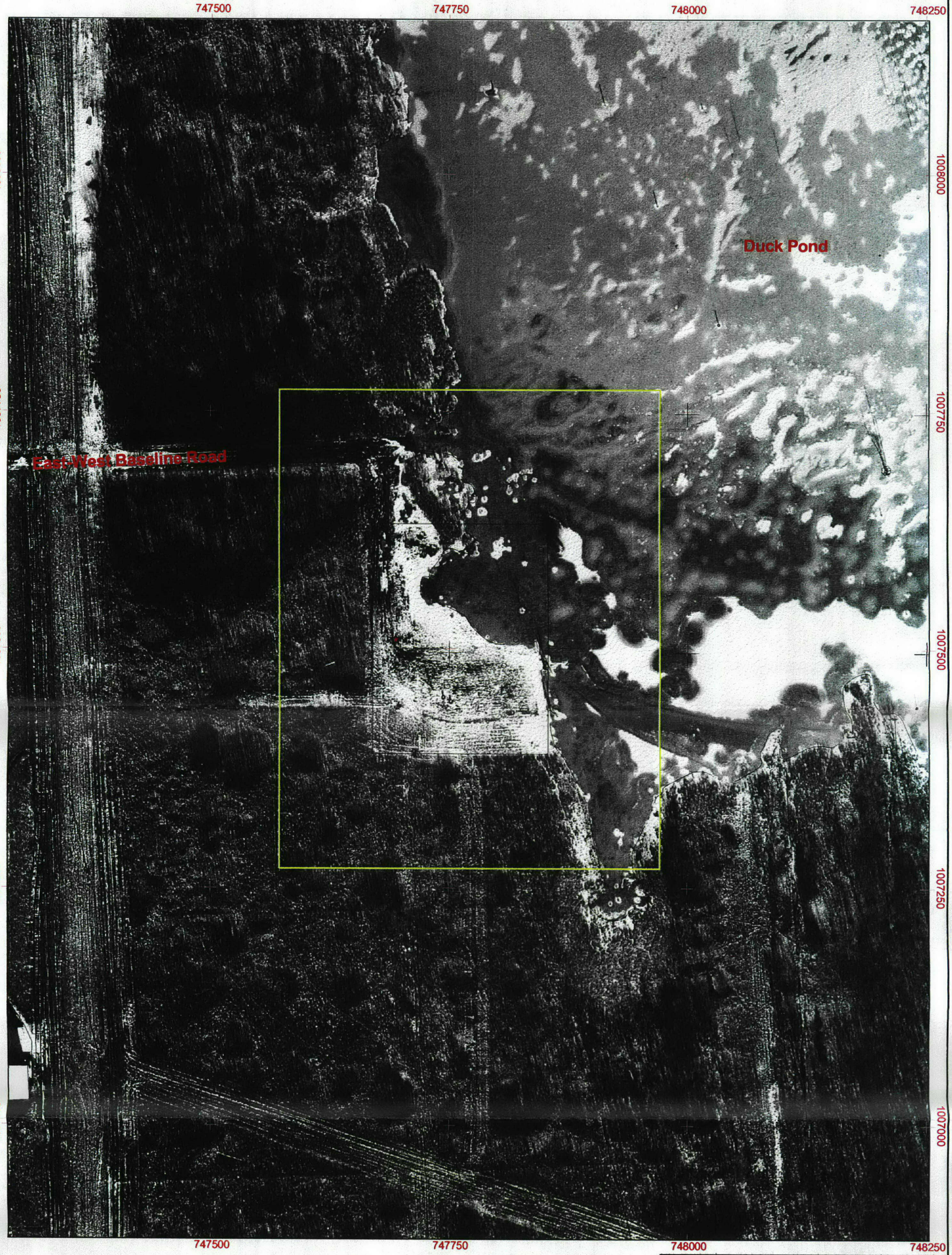
PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.17 EM-61 Data Collected in EOD Area #2	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.17
	FILE: EOD2.APR	

747500 747750 748000 748250

1008000 1007750 1007500 1007250 1007000



747500 747750 748000 748250

UXO Recovered in EOD 2
★ Fuze and booster
EOD 2 Area
997750 + Grid Coordinates (New York State Plane, Central)
748750

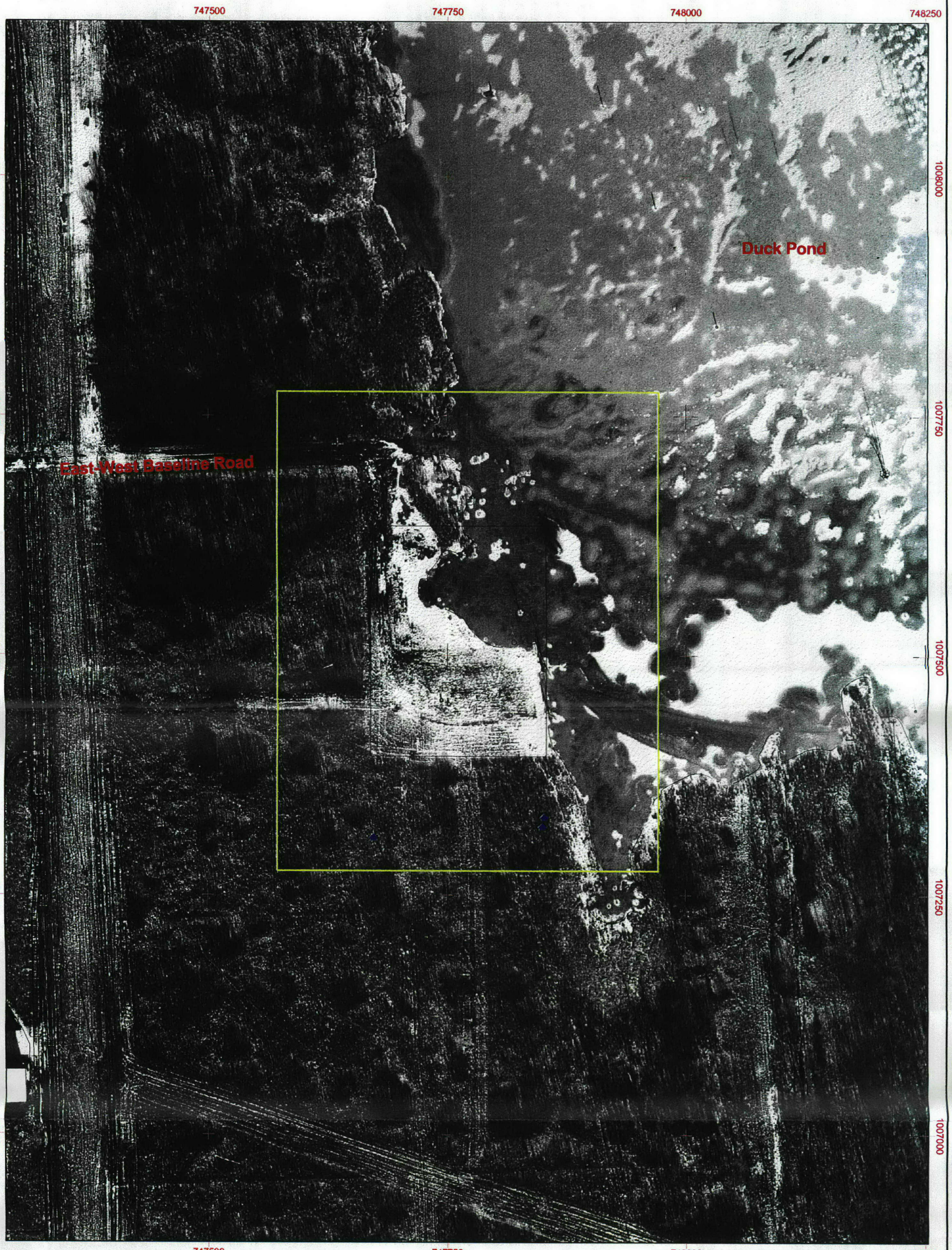
N

100 0 100 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.18 UXO Recovered in EOD Area 2	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.18
	FILE: EOD2.APR	



OE Items Recovered in EOD 2

- Illumination Flare
- EOD 2 Area
- 997750 / 748750 Grid Coordinates (New York State Plane, Central)

N

40 0 40 80 120 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.19 OE Recovered in EOD Area 2	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.19
	FILE: EOD2.APR	

752250 752500 752750 753000 753250 753500 753750

986000 985750 985500 985250 985000 984750

44A-7 44B-7 44C-7 44D-7 44E-7 44F-7 44G-7 44H-7 44I-7 44J-7 44K-7 44L-7

44A-6 44B-6 44C-6 44D-6 44E-6 44F-6 44G-6 44H-6 44I-6 44J-6 44K-6 44L-6

44A-5 44B-5 44C-5 44D-5 44E-5 44F-5 44G-5 44H-5 44I-5 44J-5 44K-5 44L-5

44A-4 44B-4 44C-4 44D-4 44E-4 44F-4 44G-4 44H-4 44I-4 44J-4 44K-4 44L-4

44A-3 44B-3 44C-3 44D-3 44E-3 44F-3 44G-3 44H-3 44I-3 44J-3 44K-3 44L-3

44A-2 44B-2 44C-2 44D-2 44E-2 44F-2 44G-2 44H-2 44I-2 44J-2 44K-2 44L-2

44A-1 44B-1 44C-1 44D-1 44E-1 44F-1 44G-1 44H-1 44I-1 44J-1 44K-1 44L-1

752250 752500 752750 753000 753250 753500 753750

Contour Map Represents 44A in Pre Removal Condition

Fence Surrounding SEAD-44A

SEAD-44A Grids

Approximate Extent of Stream and Ponded Water

748750 Grid Coordinates (New York State Plane, Central)

997750

EM-61 Scale (mV)

6
4
2
0
-2

N

150 0 150 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB
DRAWN BY: JEB
CHECKED BY: BJM
SUBMITTED BY: SAS

Figure 3.20
EM-61 Data Collected in SEAD-44A

SCALE: 1:1800
PROJECT NUMBER: 736703-01000
DATE: JAN 2004
PAGE NUMBER:
FILE: SEAD_44A.APR

Figure 3.20

752250 752500 752750 753000 753250 753500 753750

986000 985750 985500 985250 985000 984750

44G-10 44H-10 44I-10 44J-10 44K-10 44L-10

44D-9 44E-9 44F-9 44G-9 44H-9 44I-9 44J-9 44K-9 44L-9

44B-8 44C-8 44D-8 44E-8 44F-8 44G-8 44H-8 44I-8 44J-8 44K-8 44L-8

44A-7 44B-7 44C-7 44D-7 44E-7 44F-7 44G-7 44H-7 44I-7 44J-7 44K-7 44L-7

44A-6 44B-6 44C-6 44D-6 44E-6 44F-6 44G-6 44H-6 44I-6 44J-6 44K-6 44L-6

44A-5 44B-5 44C-5 44D-5 44E-5 44F-5 44G-5 44H-5 44I-5 44J-5 44K-5 44L-5

44A-4 44B-4 44C-4 44D-4 44E-4 44F-4 44G-4 44H-4 44I-4 44J-4 44K-4 44L-4

44A-3 44B-3 44C-3 44D-3 44E-3 44F-3 44G-3 44H-3 44I-3 44J-3 44K-3 44L-3

44A-2 44B-2 44C-2 44D-2 44E-2 44F-2 44G-2 44H-2 44I-2 44J-2 44K-2 44L-2

44A-1 44B-1 44C-1 44D-1 44E-1 44F-1 44G-1 44H-1 44I-1 44J-1 44K-1 44L-1

752250 752500 752750 753000 753250 753500 753750

OE Items Recovered in SEAD-44A

- Illumination Flare
- M54 Chemical Smoke Grenade
- M385 40mm Pratice Grenade
- SEAD-44A Fence
- SEAD-44A Grids
- Approximate Extent of Stream and Ponded Water
- 753750 / 985750 Grid Coordinates (New York State Plane, Central)

All of the OE and UXO items recovered by Parsons on the north side of the stream in SEAD-44A were items left after the 1-foot scrape performed by EODT and Sessler

N

150 0 150 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.21 OE Items Recovered in SEAD-44A
DRAWN BY: JEB	
CHECKED BY: BJM	SCALE: 1:1800 — PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004 — PAGE NUMBER: Figure 3.21
	FILE: SEAD_44A.APR

752250 752500 752750 753000 753250 753500 753750

986000 985750 985500 985250 985000 984750

44G-10 44H-10 44I-10 44J-10 44K-10 44L-10

44D-9 44E-9 44F-9 44G-9 44H-9 44I-9 44J-9 44K-9 44L-9

44B-8 44C-8 44D-8 44E-8 44F-8 44G-8 44H-8 44I-8 44J-8 44K-8 44L-8

44A-7 44B-7 44C-7 44D-7 44E-7 44F-7 44G-7 44H-7 44I-7 44J-7 44K-7 44L-7

44A-6 44B-6 44C-6 44D-6 44E-6 44F-6 44G-6 44H-6 44I-6 44J-6 44K-6 44L-6

44A-5 44B-5 44C-5 44D-5 44E-5 44F-5 44G-5 44H-5 44I-5 44J-5 44K-5 44L-5

44A-4 44B-4 44C-4 44D-4 44E-4 44F-4 44G-4 44H-4 44I-4 44J-4 44K-4 44L-4

44A-3 44B-3 44C-3 44D-3 44E-3 44F-3 44G-3 44H-3 44I-3 44J-3 44K-3 44L-3

44A-2 44B-2 44C-2 44D-2 44E-2 44F-2 44G-2 44H-2 44I-2 44J-2 44K-2 44L-2

44A-1 44B-1 44C-1 44D-1 44E-1 44F-1 44G-1 44H-1 44I-1 44J-1 44K-1 44L-1

752250 752500 752750 753000 753250 753500 753750

UXO Items Recovered in SEAD-44A

- M382 40mm Pratice Grenade
- Illumination Flare (live)
- Contour Map Represents 44A in Pre Removal Condition
- SEAD-44A Fence
- SEAD-44A Grids
- Approximate Extent of Stream and Ponded Water
- 997750 / 748750 Grid Coordinates (New York State Plane, Central)

All of the OE and UXO items recovered by Parsons on the north side of the stream in SEAD-44A were items left after the 1-foot scrape performed by EODT and Sessler

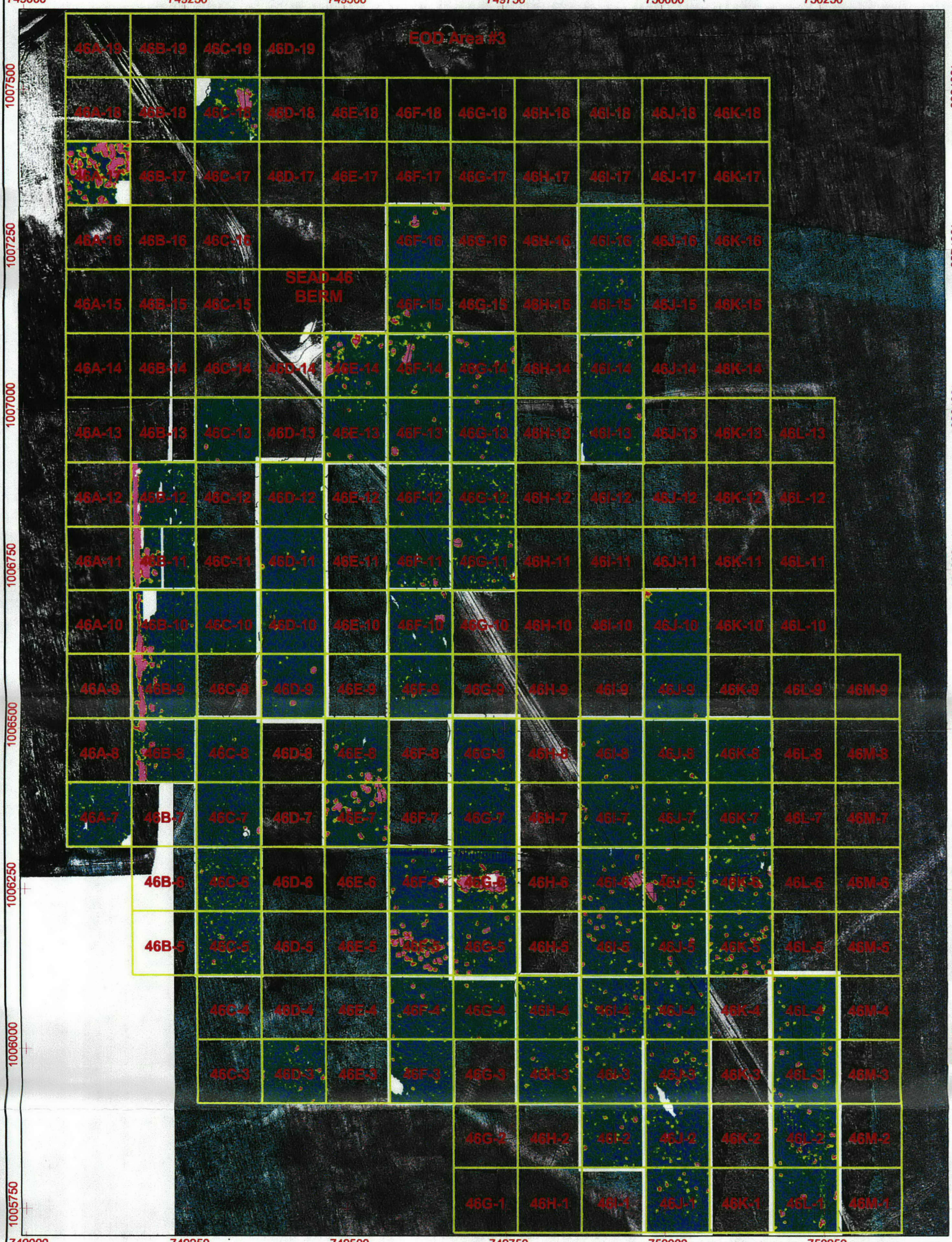
N

150 0 150 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.22 UXO Items Recovered in SEAD-44A
DRAWN BY: JEB	
CHECKED BY: BJM	SCALE: 1:1800 — PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004 — PAGE NUMBER: Figure 3.22
	FILE: SEAD_44A.APR



SEAD-46 Grids

997750 / 748750 Grid Coordinates (New York State Plane, Central)

80 0 80 160 240 Feet

N

EM-61 Response (mV)

6
4
2
0
-2

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.23 EM-61 Data Collected in SEAD-46 (3.5" Rocket Range)	
DRAWN BY: JEB		
CHECKED BY: SAS	SCALE: 1:1800	PROJECT NUMBER: 736703-01000
SUBMITTED BY: BJM	DATE: JAN 2004	PAGE NUMBER: Figure 3.23
	FILE: SEAD_46.APR	

749250 749500 749750 750000 750250

1007500 1007250 1007000 1006750 1006500 1006250 1006000 1005750

EOD Area #3

SEAD-46 BERM

46A-19	46B-19	46C-19	46D-19								
46A-18	46B-18	46C-18	46D-18	46E-18	46F-18	46G-18	46H-18	46I-18	46J-18	46K-18	
46A-17	46B-17	46C-17	46D-17	46E-17	46F-17	46G-17	46H-17	46I-17	46J-17	46K-17	
46A-16	46B-16	46C-16			46F-16	46G-16	46H-16	46I-16	46J-16	46K-16	
46A-15	46B-15	46C-15			46F-15	46G-15	46H-15	46I-15	46J-15	46K-15	
46A-14	46B-14	46C-14	46D-14	46E-14	46F-14	46G-14	46H-14	46I-14	46J-14	46K-14	
46A-13	46B-13	46C-13	46D-13	46E-13	46F-13	46G-13	46H-13	46I-13	46J-13	46K-13	46L-13
46A-12	46B-12	46C-12	46D-12	46E-12	46F-12	46G-12	46H-12	46I-12	46J-12	46K-12	46L-12
46A-11	46B-11	46C-11	46D-11	46E-11	46F-11	46G-11	46H-11	46I-11	46J-11	46K-11	46L-11
46A-10	46B-10	46C-10	46D-10	46E-10	46F-10	46G-10	46H-10	46I-10	46J-10	46K-10	46L-10
46A-9	46B-9	46C-9	46D-9	46E-9	46F-9	46G-9	46H-9	46I-9	46J-9	46K-9	46L-9	46M-9
46A-8	46B-8	46C-8	46D-8	46E-8	46F-8	46G-8	46H-8	46I-8	46J-8	46K-8	46L-8	46M-8
46A-7	46B-7	46C-7	46D-7	46E-7	46F-7	46G-7	46H-7	46I-7	46J-7	46K-7	46L-7	46M-7
	46B-6	46C-6	46D-6	46E-6	46F-6	46G-6	46H-6	46I-6	46J-6	46K-6	46L-6	46M-6
	46B-5	46C-5	46D-5	46E-5	46F-5	46G-5	46H-5	46I-5	46J-5	46K-5	46L-5	46M-5
		46C-4	46D-4	46E-4	46F-4	46G-4	46H-4	46I-4	46J-4	46K-4	46L-4	46M-4
		46C-3	46D-3	46E-3	46F-3	46G-3	46H-3	46I-3	46J-3	46K-3	46L-3	46M-3
						46G-2	46H-2	46I-2	46J-2	46K-2	46L-2	46M-2
						46G-1	46H-1	46I-1	46J-1	46K-1	46L-1	46M-1

749250 749500 749750 750000 750250

UXO Items Recovered in SEAD-46

- ★ M123 Fuze
- ▲ M382 40mm Pratice Grenade
- ▲ Chemical Smoke Grenade
- ◎ M83 Cluster Bomb
- ◆ Illumination Flare
- SEAD-46 Grids
- 997750 / 748750 Grid Coordinates (New York State Plane, Central)

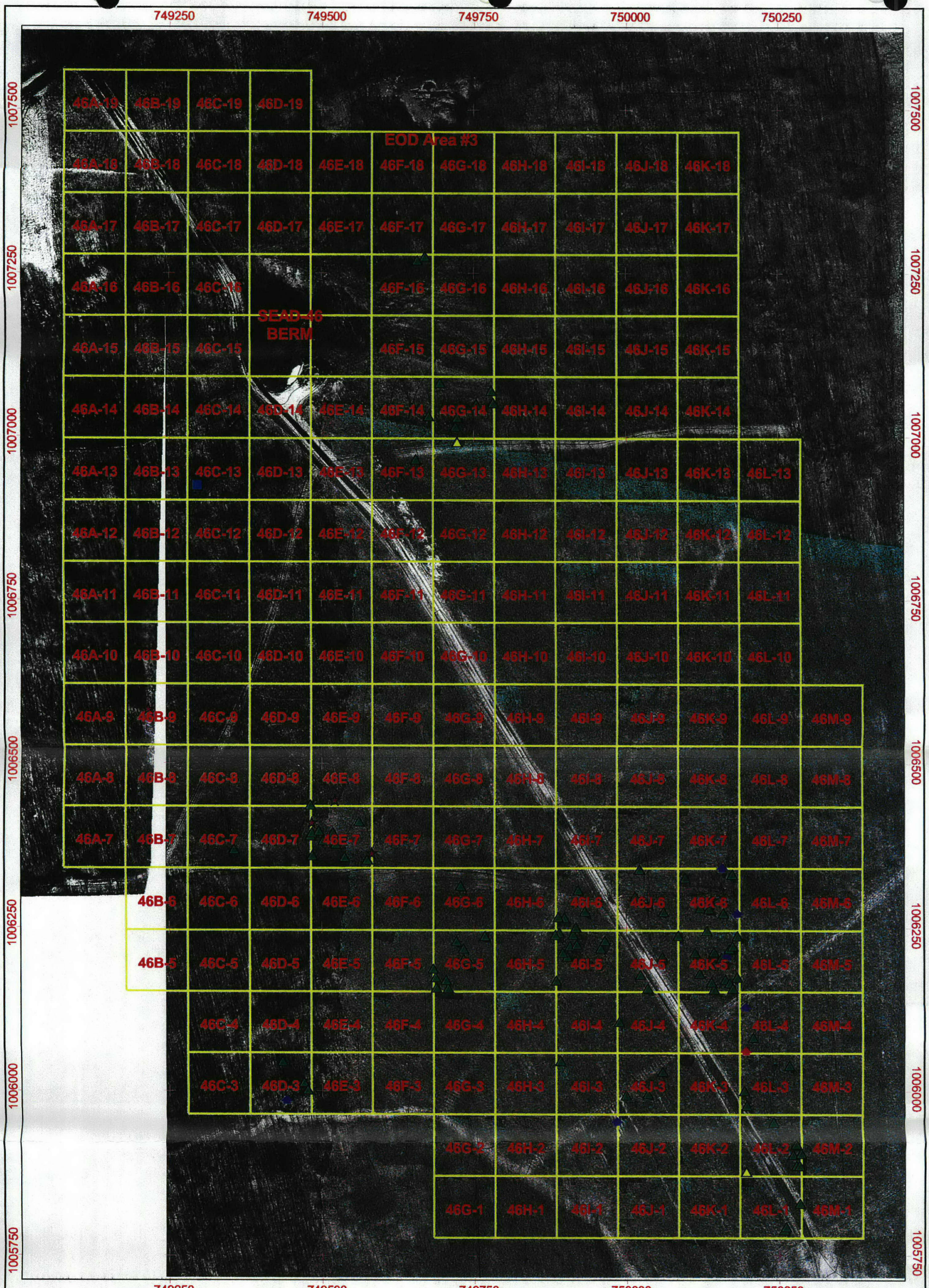
N

100 0 100 200 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.24 UXO Items Recovered in SEAD-46 (3.5" Rocket Range)		
DRAWN BY: JEB			
CHECKED BY:	SCALE: 1:1800	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: JEB	DATE: JAN 2004	PAGE NUMBER:	Figure 3.24
	FILE: SEAD_46.APR		



OE Items Recovered in SEAD-46

- ★ M 904 or M123 Fuze
- ▲ M385 40mm Pratice Grenade
- △ MK2 grenade
- ⬟ 40mm Illumination Flare
- ⬟ Illumination Flare
- ■ 60mm mortar body
- SEAD-46 Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

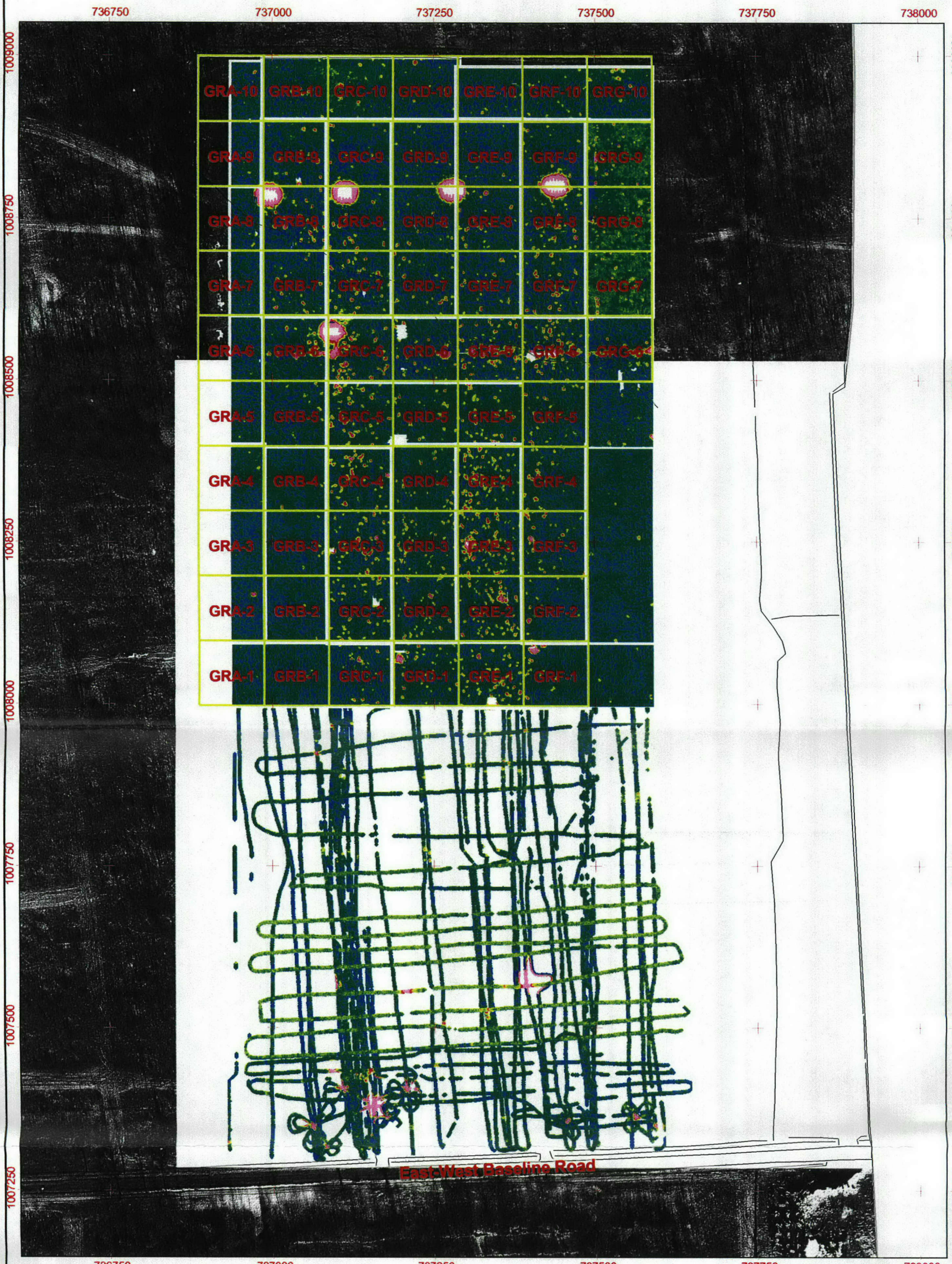
N

80 0 80 160 240 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.25 OE Items Recovered in SEAD-46 (3.5" Rocket Range)	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1800	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.25
	FILE: SEAD_46.APR	



Grenade Range Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

200 0 200 Feet

N

EM-61 Response (mV)

6
4
2
0
-2

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.26 EM-61 Data Collected in Grenade Range		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:1800	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 3.26
	FILE: GR_RNG.APR		

736750 737000 737250 737500 737750 738000

1009000 1008750 1008500 1008250 1008000 1007750 1007500

GRA-10 GRB-10 GRC-10 GRD-10 GRE-10 GRF-10 GRG-10

GRA-9 GRB-9 GRC-9 GRD-9 GRE-9 GRF-9 GRG-9

GRA-8 GRB-8 GRC-8 GRD-8 GRE-8 GRF-8 GRG-8

GRA-7 GRB-7 GRC-7 GRD-7 GRE-7 GRF-7 GRG-7

GRA-6 GRB-6 GRC-6 GRD-6 GRE-6 GRF-6 GRG-6

GRA-5 GRB-5 GRC-5 GRD-5 GRE-5 GRF-5

GRA-4 GRB-4 GRC-4 GRD-4 GRE-4 GRF-4

GRA-3 GRB-3 GRC-3 GRD-3 GRE-3 GRF-3

GRA-2 GRB-2 GRC-2 GRD-2 GRE-2 GRF-2

GRA-1 GRB-1 GRC-1 GRD-1 GRE-1 GRF-1

East-West Baseline Road

736750 737000 737250 737500 737750 738000

UXO Itmes Recovered in Grenade Range

- M73 (35mm) Subcaliber Pratice Rocket
- M382 (40mm) Pratice Grenade

Grenade Range Grids

997750 / 748750 Grid Coordinates (New York State Plane, Central)

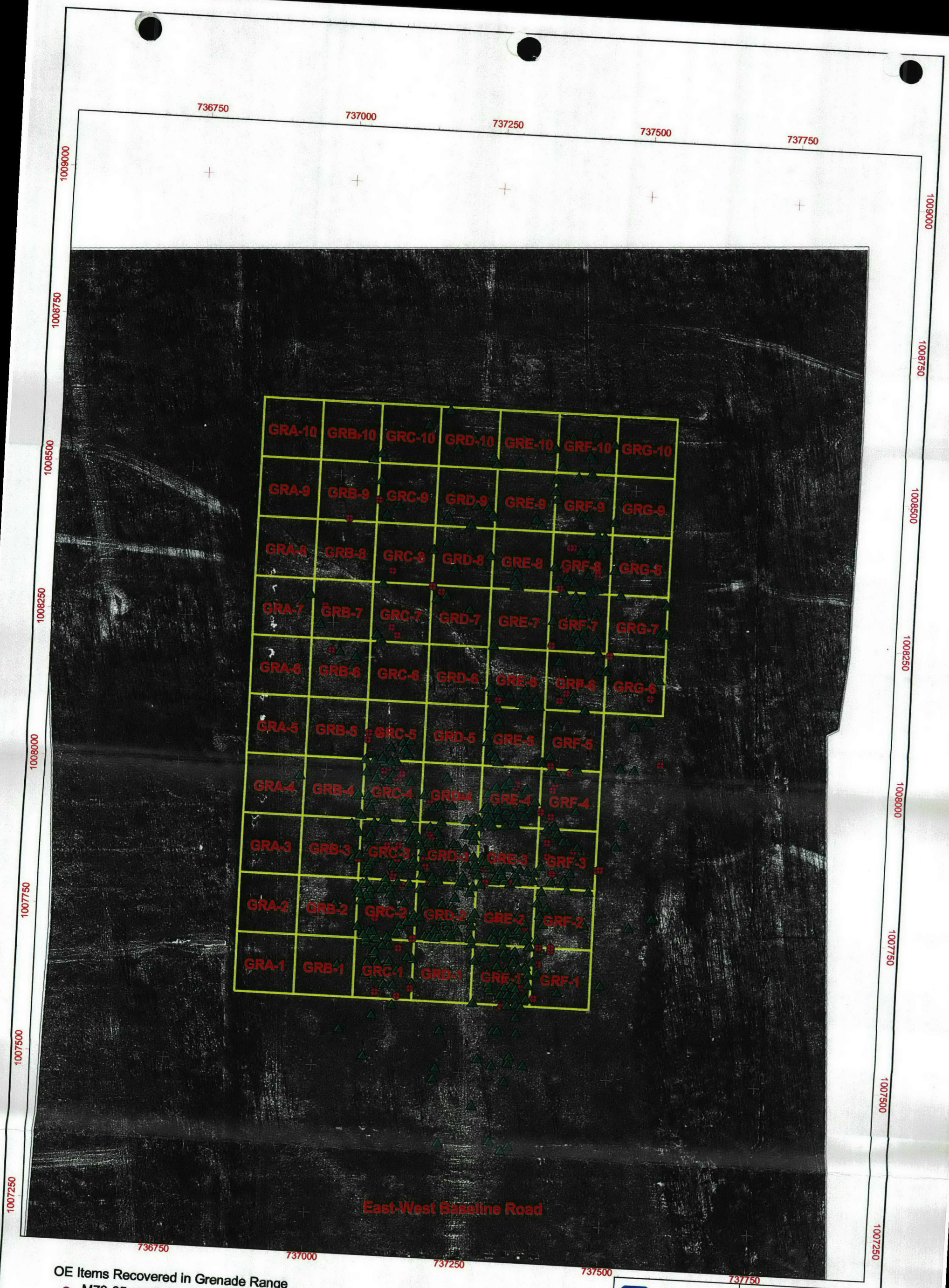
N

100 0 100 200 Feet

PARSONS

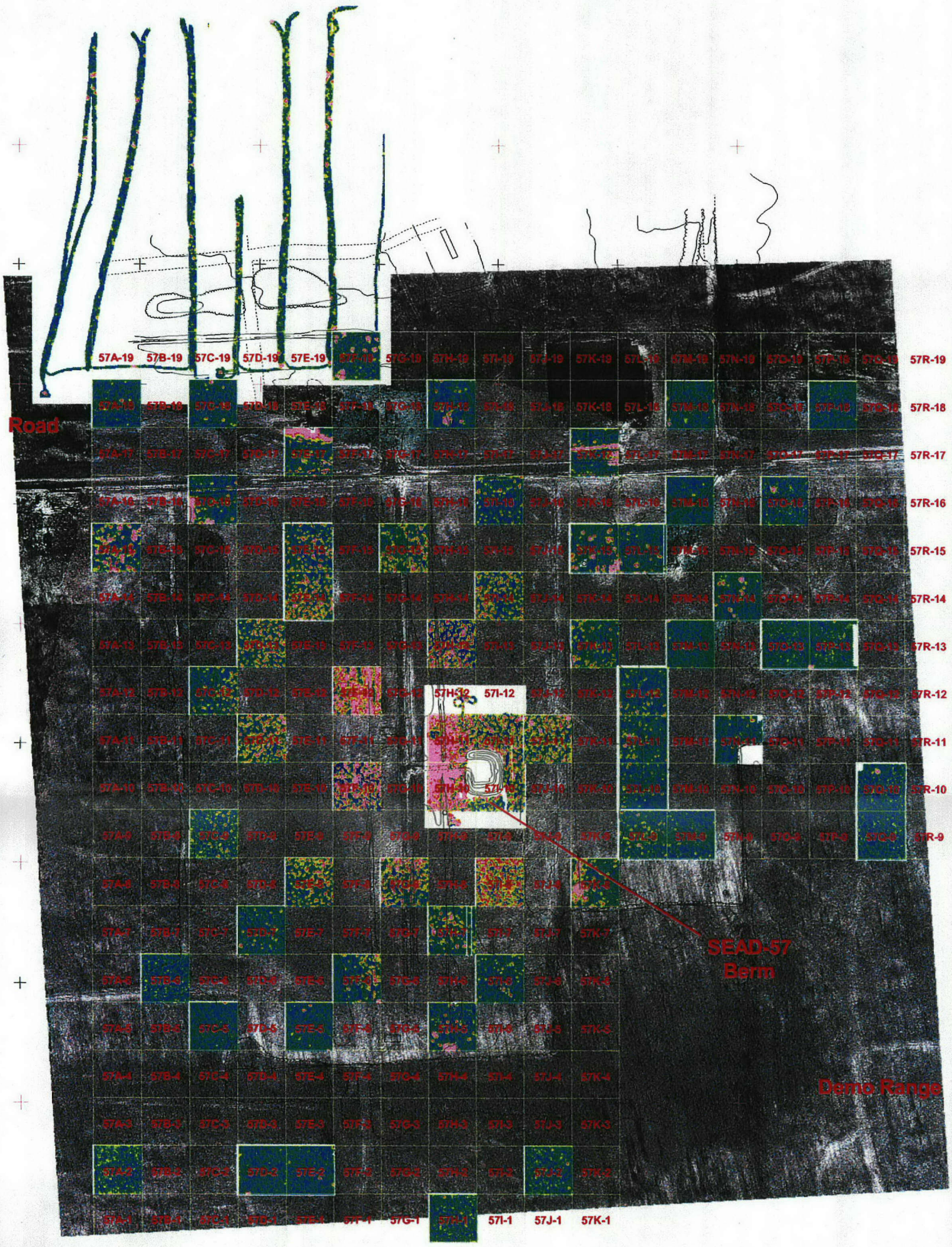
U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.27 UXO Recovered in Grenade Range	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1800	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.27
	FILE: GR_RNG.APR	


736750
737000
737250
737500
737750
1009000
1008750
1008500
1008250
1008000
1007750
1007500
1007250
GRA-10
GRB-10
GRC-10
GRD-10
GRE-10
GRF-10
GRG-10
GRA-9
GRB-9
GRC-9
GRD-9
GRE-9
GRF-9
GRG-9
GRA-8
GRB-8
GRC-8
GRD-8
GRE-8
GRF-8
GRG-8
GRA-7
GRB-7
GRC-7
GRD-7
GRE-7
GRF-7
GRG-7
GRA-6
GRB-6
GRC-6
GRD-6
GRE-6
GRF-6
GRG-6
GRA-5
GRB-5
GRC-5
GRD-5
GRE-5
GRF-5
GRA-4
GRB-4
GRC-4
GRD-4
GRE-4
GRF-4
GRA-3
GRB-3
GRC-3
GRD-3
GRE-3
GRF-3
GRA-2
GRB-2
GRC-2
GRD-2
GRE-2
GRF-2
GRA-1
GRB-1
GRC-1
GRD-1
GRE-1
GRF-1
East-West Baseline Road
OE Items Recovered in Grenade Range
M73-35mm Subcaliber Pratice Rocket
M385-40mm Pratice Grenade
Grenade Range Grids
997750
748750
Grid Coordinates (New York State Plane, Central)
N
100 0 100 200 Feet
PARSONS
U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER
DESIGNED BY: JEB
DRAWN BY: JEB
CHECKED BY: BJM
SUBMITTED BY: SAS
Figure 3.28
OE Recovered in Grenade Range
SCALE: 1:1800
PROJECT NUMBER: 736703-01000
DATE: JAN 2004
FILE: GR_RNG.APR
PAGE NUMBER:
Figure 3.28

738000 738500 739000 739500 740000

1010500 1010000 1009500 1009000 1008500 1008000



738000 738500 739000 739500 740000

SEAD-57 Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

100 0 100 200 Feet

N

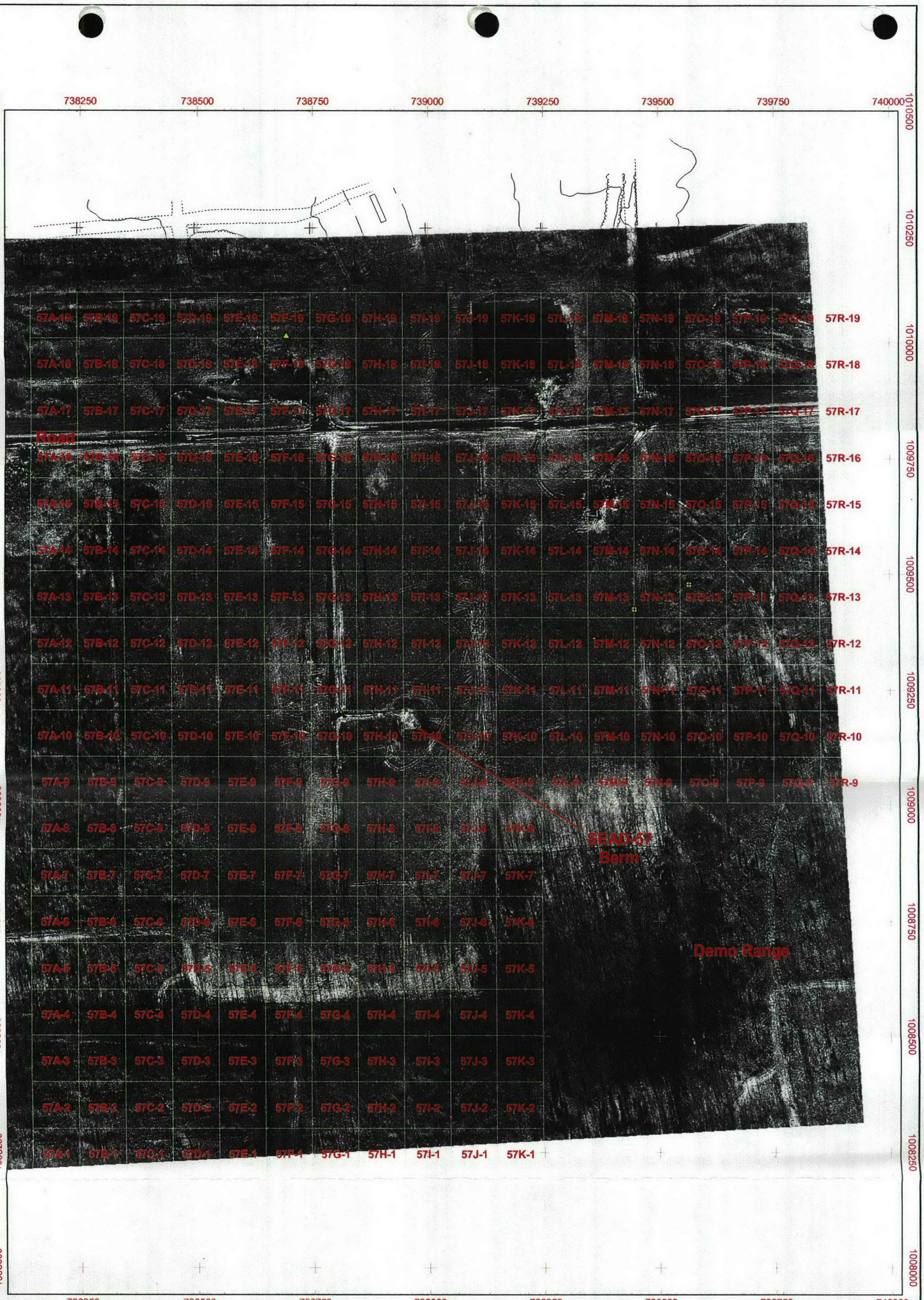
EM-61 Response (mV)

6
4
2
0
-2

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.29 EM-61 Data Collected in SEAD-57 (Former EOD Range)	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:3000	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.29
	FILE: SEAD_57.APR	



UXO Items Recovered in SEAD-57

- ⊕ 20mm
- △ MK2 Grenade
- SEAD-57 Grids
- 997750 / 748750 Grid Coordinates (New York State Plane, Central)

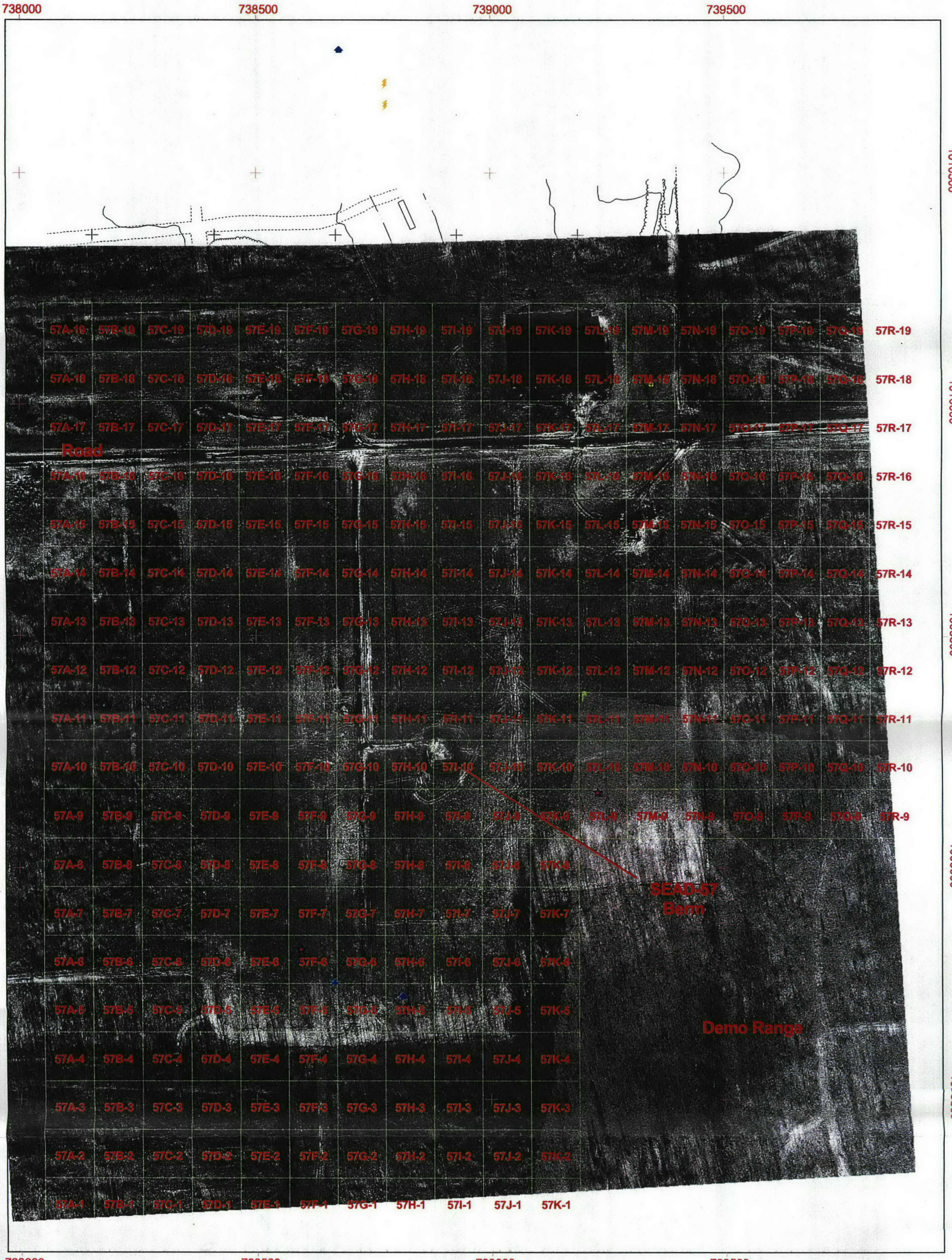
N

100 0 100 200 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.30 UXO Items Recovered in SEAD-57 (Former EOD Range)	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:2400	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.30
	FILE: SEAD_57.APR	



OE Items Recovered in SEAD-57

- ★ MK27 or MK75 Fuze
- \+ M60 Series (105mm) Projectile
- ⊕ 20mm Projectile
- ● 30mm Projectile
- ▲ M54 Chemical Smoke Grenade
- ◆ Illumination Flare
- ⚡ 2.36" Rocket Motor with Head
- ⚑ Other

SEAD-57 Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

100 0 100 200 Feet

N

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.31 OE Items Recovered in SEAD-57 (Former EOD Area)	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:2400	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.31
	FILE: SEAD_57.APR	

736000 736500 737000 737500 738000 738500 739000 739500

1014500 1014000 1013500 1013000 1012500 1012000

1800' radius from
center of OD berm

Reeder Creek

Open Detonation Area

SEAD-23
(Open Burning)

SEAD-45 Grids

Mag and Flag Grids

Grid Coordinates
748750 (New York State Plane, Central)

997750

EM-61 Response
(mV)

6
4
2
0
-2

N

300 0 300 600 Feet

PARSONS

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OF ENGINEERS
HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.32 EM-61 Data Collected in SEAD-45	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:3600	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 3.32
	FILE: SEAD_45.APR	

736000 736500 737000 737500 738000 738500 739000 739500

1014500 1014000 1013500 1013000 1012500 1012000

1800' radius from
center of OD berm

Reeder Creek

Open Demolition Berm

SEAD-23
(Open Burning)

UXO Items Recovered in SEAD-45

- ★ M123 Fuze
- ⊕ 20mm Round
- ● 37mm Round
- ■ 81mm mortar
- ✚ 57mm Projectile
- ✚ 105mm Projectile
- ϟ Other

SEAD-45 Grids

Mag and Flag Grids Investigated

997750 748750 Grid Coordinates
(New York State Plane, Central)

A number of OE items were recovered from the two mag and flag grids investigated. These items are too numerous to list.

Only the 20 higest amplitude anomalies were investigated in the majority of the grids.

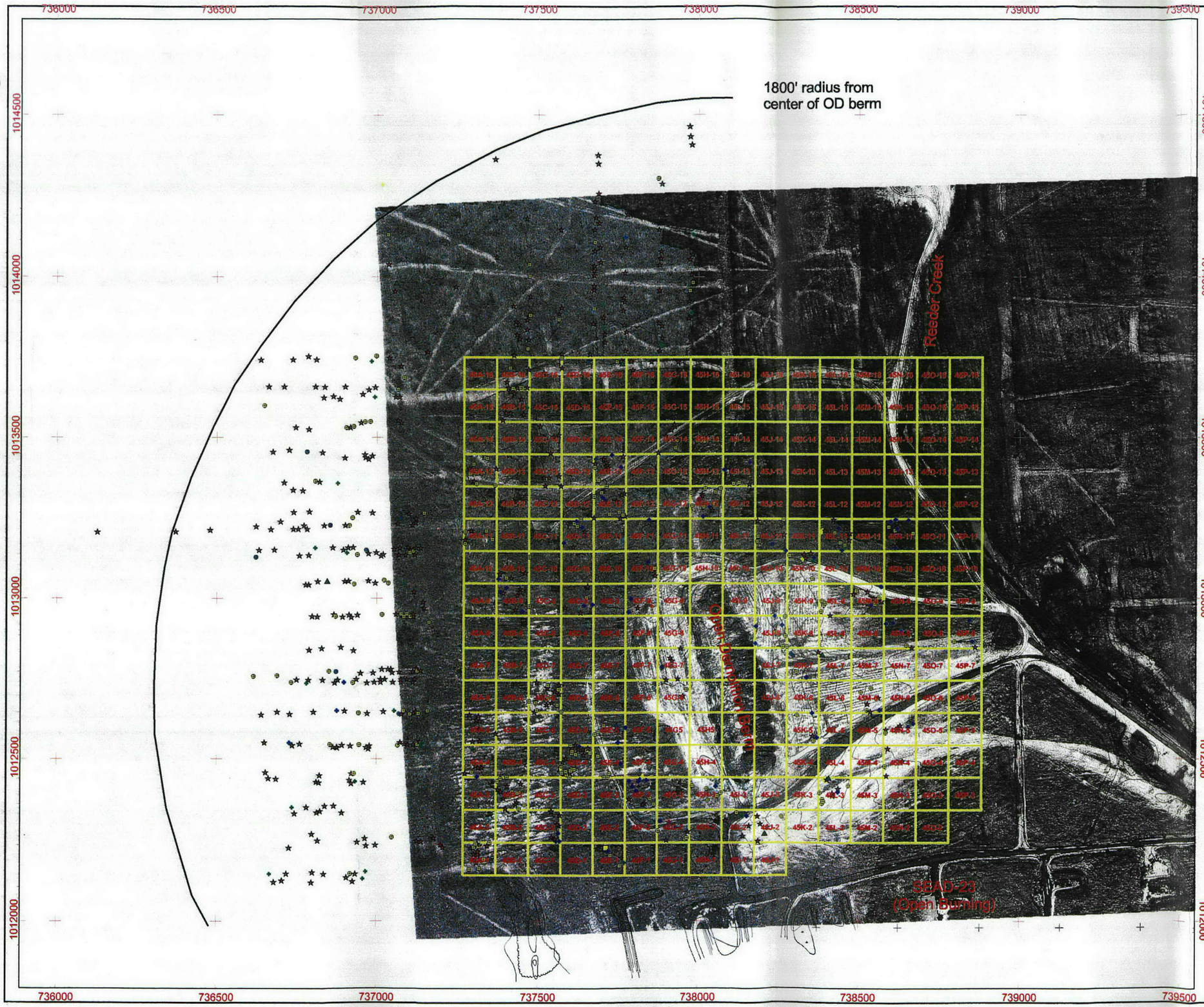
N

300 0 300 600 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.33 UXO Recovered in SEAD-45		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:3600	PROJECT NUMBER: 736703-01000	
	DATE: JAN 2004	PAGE NUMBER: 1	Figure 3.33
SUBMITTED BY: SAS	FILE: SEAD_45.APR		



OE Items Recovered in SEAD-45

- Fuze
- 20mm Round
- 25mm Round
- 37mm Round
- 40mm Rifle-fired Grenade
- 81mm mortar
- 57mm Projectile
- 75mm Projectile
- 90mm Projectile
- 105mm Projectile
- 115mm Projectile
- 120mm Projectile
- 155mm Projectile
- Other

SEAD-45 Grids

Mag and Flag Grids Investigated

997750 748750 Grid Coordinates (New York State Plane, Central)

A number of OE items were recovered from the two mag and flag grids investigated. These items are too numerous to list.

Only the 20 higest amplitude anomalies were investigated in the majority of the grids.

N

300 0 300 600 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 3.34 OE Recovered in SEAD-45
DRAWN BY: JEB	
CHECKED BY: BJM	SCALE: 1:3600 — PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004 — PAGE NUMBER: Figure 3.34
	FILE: SEAD_45.APR

SECTION 4

RISK ASSESSMENT

4.1 INTRODUCTION

A qualitative risk assessment was performed at SEDA to assess the risk of OE to public safety and the human environment. This risk assessment was performed using the Interim Guidance for Ordnance and Explosive Risk Impact Assessment (OERIA) (US Army Engineering and Support Center, Huntsville, March 2001). The 11 AOIs that were evaluated under this risk assessment include:

- Indian Creek Burial Area
- SEAD-53 (Igloo Area - D Row Ditches)
- Demo Range
- SEADs-16 and-17 (Deactivation Furnaces)
- EOD Area #3
- EOD Area #2
- SEAD-44A (QA Function Test Area)
- SEAD-46 (3.5" Rocket Range)
- Grenade Range
- SEAD-57 (Former EOD Area)
- SEAD-45 (Open Detonation Area)

4.2 DEFINITION OF RISK ASSESSMENT FACTORS

4.2.1 INTRODUCTION

The potential risk posed by UXO at a site may be characterized qualitatively by evaluating factors in two categories, ordnance and site characteristics. By performing a qualitative assessment of these categories, an overall assessment of the safety risk posed by UXO remaining at the site may be obtained. The following paragraphs describe the components of each category.

4.2.2 ORDNANCE

4.2.2.1 There are four risk assessment factors in the ordnance category. These include the type, sensitivity, density, and depth of the ordnance.

4.2.2.2 *Type.* The type of OE found at a site impacts the likelihood and severity of a possible injury. The type(s) of OE found at each site during the investigation are included. When multiple types of OE are found, the type with the potential to cause the most severe injury is used. The four levels of ordnance type are defined and presented in order from highest to lowest risk in Table 4.1.

TABLE 4.1
OE TYPE RISK FACTOR DEFINITIONS

OE Type Category	Description
Most severe	OE that will kill an individual if detonated by an individual's activities
Moderate severity	OE that will cause major injury to an individual if detonated by an individual's activities
Least severity	OE that will cause minor injury to an individual if detonated by an individual's activities
No injury	Inert OE or scrap, will cause no injury

4.2.2.3 *Sensitivity.* The type of OE identified in an AOI is used to determine the sensitivity, which, in general, is the likelihood that a piece of ordnance will detonate. There are four levels of sensitivity defined in the risk assessment process. When multiple types of OE are discovered in an AOI, the highest risk level is used in the risk assessment. The four levels of sensitivity are defined and presented in order from highest to lowest risk in Table 4.2.

TABLE 4.2
OE SENSITIVITY RISK FACTOR DEFINITIONS

Level of Sensitivity	Description
Very Sensitive	OE that is very sensitive, i.e. electronic fusing, land mines, booby traps
Less sensitive	OE that has a standard fusing
Insensitive	OE that may have functioned correctly, or is

	unfuzed, but has a residual risk
Inert	Inert OE or scrap, will cause no injury

4.2.2.4 *Density.* UXO Density is directly related to the likelihood that an individual will come into contact with UXO. In an area with low UXO density, considerable exploration would be needed to find a single UXO item; whereas in an area with high UXO density, only a brief visual or instrument aided inspection would be required to find an item. Assessment of this risk factor reflects the findings of the EE/CA and previous site inspections.

4.2.2.5 *Depth.* The depth of the UXO affects the likelihood that an individual will be exposed to UXO. There exists a direct relationship between the depth at which UXO is found and the likelihood of exposure to the UXO. That is, the greater the depth that the UXO are found, the lower the risk of exposure. There are two categories within the UXO Depth risk factor: near-surface and subsurface. The near-surface category includes those items recovered from the surface to 6 inches below ground surface. The subsurface category includes those items recovered from greater than 6 inches below ground surface.. Assessment of this risk factor reflects the findings of the EE/CA and previous site investigations.

4.2.3 SITE CHARACTERISTICS

4.2.3.1 There are four risk assessment factors in the site category. These include site activity, site accessibility, site stability, and population.

4.2.3.2 *Site Activity.* The types of activities conducted at a site affect the likelihood of encountering UXO. The types of activities and the depth at which UXO have been found are both considered to categorize the overall risk. For example, at a site where UXO is found at the surface, all activities that can impact UXO at the surface are considered activities that can have a significant impact. Conversely, if all UXO is located at depths greater than one foot below the ground surface and only surface impact activities are being performed at the site, the activities are considered to have a moderate or low impact.

4.2.3.3 *Site Accessibility.* The accessibility of a site affects the likelihood of encountering UXO. Natural or physical barriers can limit the accessibility. Natural barriers can include the terrain or topography of the site as well as the vegetation. Physical barriers can include walls and fences that limit the public's accessibility to the site. Both the physical and natural barriers found at a site are considered when evaluating this risk factor. There are three categories within the Accessibility risk factor. These categories are presented in Table 4.3.

4.2.3.4 *Site Stability.* This factor relates to the probability of buried UXO being exposed by natural processes. These natural processes include recurring natural events (e.g., frost heave, soil movement, erosion) or extreme natural events (e.g., tornadoes, hurricanes). The local soil type, topography, climate, and vegetation affect stability of the site. The soil type and climate primarily affects the depth of penetration of the UXO. Over time, the soil type and

climate will also affect the degree of erosion that takes place at a site. Topography and vegetation in the area will also affect the rate of erosion that takes place in an area. There are three categories within this risk factor. Table 4.4 describes these categories.

TABLE 4.3
SITE ACCESSIBILITY RISK FACTOR DEFINITIONS

Accessibility of Site	Description
No Restriction to Site	No physical barriers, gently rolling terrain, no vegetation that restricts access, no water
Limited Restriction to Site	Physical barriers, vegetation that restricts access, water, snow or ice cover, terrain restricts access
Complete Restriction to Site	All points of entry are controlled

TABLE 4.4
SITE STABILITY RISK FACTOR DEFINITIONS

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

4.2.3.5 *Population.* This factor refers to the number of people that may have access to the site on a daily basis. The number of people using the site directly affects the likelihood of encountering UXO. Determination of this risk factor is related to the land use expected at the site. There are three categories within this risk factor: high, medium and low. These categories are defined and presented from highest to lowest risk in Table 4.5.

TABLE 4.5
POPULATION
RISK FACTOR DEFINITION

Number of People Using Site	Description
High	Public attraction such as a park, beach, other tourist sites
Medium	Public has access to land, but area is not an attraction to the public
Low	Owners are primary users of the land

4.3 RISK ASSESSMENT AT 11 OE AOIs AT SEDA

4.3.1 INTRODUCTION

Each of the risk factors identified above was evaluated using existing data for each AOI under consideration. The following sections discuss the risk assessment by factor.

4.3.2 ORDNANCE TYPE

Appendix C lists the type and amount of UXO and OE identified in each AOI during the EE/CA. Descriptions of many of these ordnance types are contained in Section 3.7.4. The ordnance type category assigned to each of the AOIs investigated is summarized in Table 4.6.

4.3.3 ORDNANCE SENSITIVITY

There were no items recovered during the EE/CA that suggested the presence of extremely sensitive fuzing. All UXO recovered contained standard fuzing. Therefore, the ordnance sensitivity level in each of the AOIs in which UXO was found is considered Less Sensitive.

4.3.4 UXO DENSITY

The expected qualitative UXO density of each site is summarized in the Risk Assessment Table (Table 4.7). UXO density for each AOI was determined using the findings of the EE/CA field work in conjuction with USACE's UXO Calculator. Qualitative values were then assigned to ranges of density. "Low" density was defined as less than 1 UXO item expected per acre, "medium" density was defined as 1-10 UXO items/acre, and "high" density was defined as more than 10 items/acre. Densities were not applicable at the ditches in SEAD-53, the Indian Creek site or the Demo Range, as no OE was recovered in any of these areas.

4.3.5 OE DEPTH

The OE identified at Seneca Army Depot during the EE/CA and previous environmental investigations has been found at depths ranging from surface to 48 inches deep. The presence of UXO beyond 12 inches is so far limited to SEAD-45. The majority of the UXO recovered during the EE/CA was found between 0 and 6 inches below the ground surface. OE recovery depths at each site are summarized in Table 4.7.

4.3.6 SITE ACTIVITY

Most of the AOIs investigated are slated for use as Conservation/Recreation areas under the current future management plan established by the LRA. The exceptions would be SEADs-16 and -17 that are allocated for Industrial Development and SEAD-44A that will be transferred to the prison when the UXO hazard has been alleviated. At all of the AOIs where OE was found, there was at least some OE present within 6 inches of the ground surface. Therefore, as all of the AOIs have some planned future activity, the OE hazard is significant at each site.

4.3.7 SITE ACCESSIBILITY

Access to nine of the 11 AOIs at Seneca Army Depot are considered unlimited or unrestricted under the site accessibility risk factor definitions shown in Table 4.3. The accessibilities were based on the intended future use of most of the site land as a public conservation park. If the base fences are opened or removed to allow the public unrestricted movement across park land, there are few natural barriers which would prevent access to any of the sites. In fact, roads currently pass through or immediately adjacent to all of the AOIs currently planned for use as conservation land. Only two sites of the original 11 AOIs are planned to have limited restriction due to their intended use by private parties. Seads-16 and –17 are intended for industrial use, although it is unclear at present exactly what form this use will

TABLE 4.7
RISK ASSESSMENT

AOI	Ordnance				Site			
	Type	Sensitivity	Expected Density	Depth	Activity	Access	Stability	People
Indian Creek	No OE encountered	N /A	N /A	N /A	N/A	No Restriction	Moderately Stable	High
SEAD-53 (D Row Ditches)	No OE encountered	N /A	N /A	N /A	N/A	No Restriction	Moderately Stable	High
Demo Range	No OE encountered	N /A	N/A	N /A	N/A	No Restriction	Moderately Stable	High
SEAD-17	Inert	Inert	Low	Surface (0-5")	Significant	Limited Restriction	Moderately Stable	High
EOD Area 3	Inert	Inert	Low	Subsurface (0-12")	Significant	No Restriction	Moderately Stable	High
EOD Area 2	Moderate severity	Less sensitive	Low	Surface (0-3")	Significant	No Restriction	Moderately Stable	High
SEAD-44A	Moderate severity	Less sensitive	Low	Subsurface (0-12")	Significant	Limited Restriction	Unstable	Low
SEAD-46	Most severe	Less sensitive	Low	Subsurface (0-12")	Significant	No Restriction	Moderately Stable	High
Grenade Range Grids	Moderate severity	Less sensitive	High	Subsurface (0-12")	Significant	No Restriction	Moderately Stable	High
Grenade Range Meandering Path	Moderate severity	Less sensitive	Medium	Surface (0-5")	Significant	No Restriction	Moderately Stable	High
SEAD-57	Most severe	Less sensitive	Low	Surface (0-6")	Significant	No Restriction	Moderately Stable	High
SEAD-45 Grids	Most severe	Less sensitive	High	Subsurface (0-48")	Significant	No Restriction	Unstable	High
SEAD-45 Meandering Path	Most severe	Less sensitive	High	Subsurface (0-36")	Significant	No Restriction	Moderately Stable	High

take; and SEAD-44A has been transferred to the prison and is entirely within the boundaries of at least one fence.

4.3.8 SITE STABILITY

Frost heaving is a major consideration at SEDA as far as site stability is concerned. As all of the AOIs will be subjected to this process, all have been classified as moderately stable at best. Two sites, SEAD-44A and SEAD-45, also contain land that is almost completely barren. All of SEAD-44A and the detonation berm in SEAD-45 are subject to greater amounts of erosion by wind and rain due to their lack of vegetative cover. These two sites have been classified as unstable.

TABLE 4.6
ORDNANCE TYPE

Area of Interest	Most Sensitive Ordnance Type	Category
Indian Creek Burial Area	No OE Encountered	N/A
SEAD-53 (D Row Ditches)	No OE Encountered	N/A
Demo Range	No OE Encountered	N/A
SEADs-16 and -17	Unknown Fuze (spent)	Inert
EOD Area #3	Spent Rifle Grenade (illumination)	Inert
EOD Area #2	Fuze with booster	Moderate severity
SEAD-44A	40mm Rifle-Fired Grenade - 6g HE spotting charge	Moderate severity
SEAD-46	M83 (Butterfly) Fragmentation Bomb	Most severe
Grenade Range	M73 35mm Subcaliber LAW Rocket, 40mm Rifle-Fired Grenade - 6g HE spotting charge	Moderate severity

Area of Interest	Most Sensitive Ordnance Type	Category
SEAD-57	MK2 Fragmentation Grenade	Most severe
SEAD-45	105mm White Phosphorus	Most severe

4.3.9 POPULATION

If future land use plans are followed, most of SEDA will become a public conservation park or an industrial complex. Both of these uses are expected to attract a number of people to the property. This attraction will significantly increase the number of people visiting compared with current land use. This increase in people to the property will, in turn, intensify the probability of a person's exposure to UXO. While the fence encompassing the former depot restricts public access, the freedom of people to move about within the confines of the fenced site will be unrestricted unless areas of concern are controlled or restricted prior to public access. The only site where there should not be a significant increase in the number of visitors is SEAD-44A, which is within the perimeter fence of the prison.

4.4 RISK ASSESSMENT SUMMARY

4.4.1 The risk to public safety and the human environment associated with UXO at the Seneca Army Depot Activity was evaluated for each of the 11 AOIs under investigation. This assessment pertains only to those portions of the AOIs that were investigated.

4.4.2 Based on the results of the site visit and this assessment, there is no public safety risk associated with UXO at three of the AOIs investigated: the SEAD-53 ditches, the Indian Creek Burial Area, and most of the Demo Range. No OE was identified in these AOIs during the site visit or during any of the previous investigations.

4.4.3 While the Risk Assessment characterizes the Demo Range as having no OE associated hazard, this site is in very close proximity to the detonation berm in SEAD-57. Therefore, while most of the Demo Range will continue to be classified as no risk, a part of this site will be considered to have the same risk factors as those associated with SEAD-57. The specific portion of the Demo Range that will be grouped with SEAD-57 will be clarified when response action alternatives are analyzed in Chapter 8.

4.4.4 A public safety risk associated with UXO was identified at eight AOIs under investigation: SEADs-16 and -17, -44A, -45, -46, and -57, EOD Areas #2 and #3, and the Grenade Range. Response action alternatives will be evaluated for these eight AOIs.

SECTION 5

INSTITUTIONAL ANALYSIS

5.1 INTRODUCTION

An institutional analysis was performed to support the development of institutional control alternatives for Seneca Army Depot Activity. The institutional analysis was performed to identify governmental agencies that will have jurisdiction over Seneca Army Depot Activity and an evaluation of their capabilities and willingness to assert control in order to protect the public at large from UXO hazards at the site. Risks related to OE contamination may be managed through conventional removals, access control, behavior modification, or a combination of strategies. It is important to understand that the risk associated with OE contamination is connected to three causative factors that, if completely avoided, would prevent an OE-related accident. These three factors include presence, access, and behavior. If there is no OE present at a site, then there is no possibility of an OE-related accident. If OE potentially exists on-site, but people do not have access to that site, then no probability of an accident exists. Even if OE exists on-site and people have access to it, appropriate behavior on the part of those with access will substantially mitigate the risk of an accident occurring. The coexistence of all three conditions or circumstances is necessary for an OE accident to occur. Each factor provides the basis for a separate institutional control implementation strategy. These control strategies are discussed in the following sections.

5.2 INTERVIEWS

The federal government is the current landowner of the property until the parcel is transferred to a yet to be named landowner. A future landowner will be found by the Industrial Development Authority (IDA) as the key organization in regards to the implementation of any future institutional controls on the former army depot. Interviews were conducted with representatives from the army, the County, State and local town agencies knowledgeable about the history, purpose, capabilities, and funding of their particular agency in order to gauge its ability and willingness to participate in any proposed institutional controls for SEDA. These interviews are documented in Appendix F.

5.3 ACCESS CONTROL ALTERNATIVES

5.3.1 INTRODUCTION

Access controls are designed to limit the use of ordnance-contaminated property. This can be accomplished by implementing various restrictions, or by dedicating the property to a use compatible with the presence of OE on the site. The target strategy is to remove the human element from the chain of events that could lead to an accident. Access controls can be facilitated in the form of signs, fencing, land use restrictions, and/or regulatory controls.

5.3.2 SIGNS

Signs are typically posted to inform people that entry is prohibited or that activities within the property are restricted in some manner. Defiance of these restrictions may subject the trespasser to disciplinary legal action. Warning signs are typically one element of an overall institutional control plan that uses the concept of respect for property rights in order to limit the access of people to an OE-contaminated site. With this alternative, signs informing the public of potential dangers could be created and posted along the perimeter of each OE-impacted area to discourage entry. New York trespass laws are the key regulatory element of this alternative, along with the cooperation of the future stakeholder and those individuals who visit the property. In the absence of warning signs, simple trespass laws cannot be enforced without a civil action by the courts. Signs are only effective with the cooperation of the potentially effected individuals, together with the funding and technical support provided by the future stakeholder. At this time the federal government maintains control of the Seneca Army Depot Activity. Once the property is divested it will be the future landholder that will have the responsibility of maintaining the signs in order to ensure the future effectiveness of this alternative. Since there is currently no established stakeholder anywhere other than the current prison site, any enforcement actions associated with trespassing on the former army depot or maintenance actions associated with any posted signs would be extremely difficult to establish at this point at many of the AOIs. The prison property, which contains SEADs-43 and –44a, is already completely fenced; and it is anticipated that the prison will keep this fence in workable condition for the foreseeable future. It is also anticipated that there will be more enforcement of trespassing restrictions on the prison property than there will be on the un-transferred portions of the depot.

5.3.3 FENCING

As with warning signs, fencing is typically one element of an overall institutional control plan that uses the concept of physical restriction and respect for property rights to ensure that the

chance that an OE accident is minimized. Under this alternative, a chain link fence would be installed around each OE-impacted area to provide a physical barrier to inadvertent entry. The presence of the fencing in combination with signs would make it easier to enforce posted trespassing restrictions. Again, New York trespass laws are the key regulatory element for enforcement, along with the cooperation of the future stakeholder. The federal government currently owns the Seneca Army Depot Activity and will have to rely on the enforcement powers of the county sheriff to enforce the trespass laws at this time. The future owner would also have a responsibility to maintain the signage, fencing and enforcement of trespass regulations in order to ensure the future effectiveness of this alternative. Other than the prison, as previously discussed, there is currently no established future landowner for the base, meaning most enforcement and maintenance actions associated with fencing would be extremely difficult.

5.3.4 LAND USE RESTRICTIONS

Access to the site could be controlled through land use restrictions and zoning ordinances, and covenants by limiting the type of uses allowed on the site. Typically, planning boards and zoning commissions have the authority to implement such restrictions based on state and local laws that restrict uses of private property in the public interest. As of this time, no Zoning laws are in effect for the towns of Romulus or Varick, making land use restrictions very difficult to enforce. The county sheriff currently enforces an access restriction program on the Seneca Army Depot Activity on a part time basis through the use of a gate and perimeter fence in order to gain access the Depot. Again, as there is no permanent presence on most of the property, enforcement of the permit system is extremely difficult.

5.3.5 EVALUATION OF ACCESS CONTROLS

5.3.5.1 The fact that Seneca Army Depot was, until July 2000, an active military facility means access control measures such as signs and fencing have been effective in preventing trespassing. This effectiveness, however, could be largely due to the active military presence. At the prison property, it is assumed that the presence of prison guards in the area will be nearly as effective as the military presence has been in recent years. However, as of the writing of this report, no permanent authority has been found to enforce the trespass restrictions across most of the depot. Signs have been posted around selected sites on Seneca Army Depot for many years. These signs have warned of the dangers of trespassing on to certain selected areas of the depot. Although the effectiveness of there signs is difficult to determine, any designated trespass restriction cannot be enforced without them.

5.3.5.2 New fencing installed around the perimeter of OE-contaminated areas would be more effective in reducing the risk of public exposure to OE contamination, but would also restrict the use of the affected properties. Similar to the discussion on the potential use of warning signs above, fencing is also believed to be of minimal impact in keeping people out of an area unless trespass laws are enforced. If fencing is to be installed, an OE avoidance survey is

required prior to the installation of new perimeter fencing around the OE-impacted areas. Periodic inspection and maintenance of the fencing would also be required to ensure its continued effectiveness.

5.3.5.3 Currently, entry restrictions to un-transferred portions of Seneca Army Depot exist and are enforced by Seneca County Sheriff on behalf of the federal government. Future enforcement of the entry restrictions; however, would be the responsibility of the future landowner. Access control would become difficult to monitor given the size of the area. Given the proposed reuse plan of most of the Main Post as a conservation/recreation area, it is doubtful that any entry restrictions placed on the individual OE-contaminated sites would be very effective in preventing trespassing by anyone entering the conservation area itself.

5.3.5.4 All of the access control restrictions discussed above are implementable, but at a considerable cost. Signs and fences can be installed on the property, but the installation and maintenance costs of such options would be quite high compared to their anticipated effectiveness.

5.3.5.5 Based on this evaluation, the various forms of access controls such as signs, fencing, and land use restrictions would have only minimal to moderate effect on reducing the risk of OE exposure at SEDA. Although land use restrictions would be useful in preventing future incompatible uses by public or private landowners, they would not effectively reduce the risk of OE exposure to people unaware of the dangers of OE contamination. Notice via deed notification during property transfer, and/or at the time of permitting would only be effective in raising awareness if and when property transactions occurred, and only then to those involved in the transaction as opposed to the public as a whole. As a result of these limitations, the access control alternatives are not recommended as a stand alone institutional control for the Seneca Army Depot Activity. However, these methods cannot be overlooked as part of an institutional control package that would include zoning, land use restrictions and access control if methods of enforcing these restrictions are developed in the future.

5.4 PUBLIC AWARENESS ALTERNATIVES

5.4.1 INTRODUCTION

5.4.1.1 Raising public awareness of the hazards that exist at Seneca Army Depot can be facilitated in a variety of ways, all with the goal of modifying behavior. Behavioral modification relies on the personal responsibility of the site user. Even if OE exists at a site having open access, potential risk can be mitigated if individuals in the vicinity behave appropriately. For this to happen, however, individuals must understand the situation and voluntarily react in a responsible manner. The power of the federal government to influence individual behavior of this type is limited. Therefore, local authorities must take the lead in

implementing any such strategy; attempting behavioral modification through public awareness falls to the agencies that have jurisdiction over the site.

5.4.1.2 Behavior modification through public awareness is essentially a process of education and dissemination of information that can include:

- property owner notice (such as deed notifications/restrictions, notifications during property transfers, and notification during land use permitting);
- education classes (including OE identification, safety presentations to various audiences, and preparation of information packages for administrative and public officials);
- printed media (including brochures and news articles);
- visual media (including videotapes and local television programs);
- public exhibits and displays; and
- creation of an ad hoc committee to encourage local public awareness of the hazards posed by OE at the site.

5.4.2 NOTICE

5.4.2.1 Appropriate notice can exert a strong influence on an individual's behavior. When notice of OE contamination is given, the expectations of potential land use can be modified, facilitating the search for appropriate, low-risk use of the area, both for personal purposes and for economic gain. Whatever contamination exists must be considered in the design and implementation of any site improvements or activities. Notices can be placed on a property in at least three ways. They include:

- deed notifications and notices of restrictions;
- notification during property transfers; and
- notification during the land use permitting process.

5.4.2.2 *Deed Notification/Restriction.* Notifications of OE contamination and restrictions on land use could be placed on property deeds as long as government litigation is successful in doing so. In any of these cases, future land use would be restricted through the methods described in greater detail below.

5.4.2.3 *Notification during Property Transfers.* In general, property owners have a responsibility to protect the public from dangers associated with their property. When the excising or leasing of OE-contaminated property takes place, a liability exists that prospective buyers or lessees should be aware of. It may be prudent for a lending institution or bank regulatory agency to consider this factor when lending money to purchase OE-contaminated property. Prior to placing a notification on a property transaction, one should obtain a legal rendering.

5.4.2.4 *Notification during Permitting.* Typically, governmental controls are in place to protect property owners and their neighbors through approvals or permits required to develop properties in certain ways. Government approvals for property improvements generally ensure that proper notice has been given. Plans for the improvements are prepared in consideration of the presence of endangered species, wetlands, or other concerns. Finally, governmental oversight during the planning stage of a project ensures that the land is being developed for an appropriate use based on the proposed zoning of the property. Permits combine all of the benefits of approvals and secure a legally binding commitment from the landowner for certain behavior. The assumption that permits can be revoked for cause provides enforcement under local authority.

5.4.3 PRINTED MEDIA

5.4.3.1 OE awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with OE contamination. One of the major avenues available to promote awareness and understanding is printed media in the form of brochures, fact sheets, newspaper articles, and other information packages. The opportunity to disseminate information through printed media is readily available and can be easily facilitated. Personnel of the Depot and current property owners within the region are generally aware of the OE contamination at the Seneca Army Depot Activity. However, since trespassing on the property can occur, all people that enter the property may not be aware of the OE contamination. Therefore, reinforcement of the fact that OE exists at SEDA should be performed on a regular basis to reinforce the awareness of the potential hazards. Also, providing information to new visitors to the region and others not currently aware of the situation is of primary importance. The reinforcement and augmentation of current knowledge on the hazards posed by OE is desirable to keep the realization of OE contamination and the potential hazards in the minds of people at all times.

5.4.3.2 *Brochures/Fact Sheets.* Under this alternative, brochures and fact sheets would be produced that describe the history of SEDA, describe how to identify OE, describe safety procedures associated with the avoidance of OE items, give instructions for dealing with OE if encountered, and give telephone numbers to contact if OE is encountered or if questions need to be answered. These brochures could be produced by USACE, but should also include IDA sponsorship involving the future owner. This information could be distributed in a variety of ways.

5.4.3.3 *Newspaper Articles/Interviews.* Newspaper articles and interviews with former Depot representatives, USACE representatives, and representatives from other institutions can be printed to further educate the public concerning the OE contamination at the Seneca Army Depot Activity. These articles can be very informative, can effectively reduce the risk of improper handling of OE, and can be presented in a positive manner. Articles have already been published on the OE contamination remaining on Depot through the PAO and have been favorably received.

5.4.3.4 *Information Packages for Public Officials.* Generally, public officials outside of the Seneca Army Depot Activity are not aware of the OE contamination. An information package produced by USACE defining areas of primary concern would be valuable for public officials. This sharing of information would reinforce the importance of local involvement in the institutional control plan. Recommended contents of the packages include maps of the site showing the areas of greatest OE contamination, types and potential danger of the OE that could be discovered at the site, USACE contacts, and other contacts available to discuss safety concerns.

5.4.4 CLASSROOM EDUCATION

5.4.4.1 Public awareness can be facilitated through classroom education. Although the public generally understands that OE exists at SEDA, local residents do not have the necessary training to properly identify and avoid OE if encountered. A properly educated public is more likely to make appropriate decisions related to safe and proper precautions if OE is found. Classroom education can be offered in two areas, OE education and OE safety.

5.4.4.2 *OE Education.* Although everyone that enters the Seneca Army Depot Activity needs to be aware of the potential risk associated with OE, it may not be necessary for everybody to be trained in OE identification. The message to the general public should be not to touch anything that looks like OE, shrapnel, or any other unidentified material. However, it would be prudent to provide additional training to public officials and members of institutions who have a role in implementing institutional controls at SEDA. There are any many firms that specialize in OE identification and handling who have prepared and presented classes in the past. OE identification classes are conducted at various times and locations around the nation. It may be possible to schedule classes and transport public officials to these classes, though this approach may prove to be costly and time consuming. Alternately, USACE may consider inviting experts in OE detection and identification to teach classes in the area. A scheduled removal action would provide an ideal opportunity to offer OE identification classes taught by specialists in the field. Videos of the classes could be made and viewed by those unable to attend.

5.4.4.3 *OE Safety.* The affected public should be educated about the potential dangers associated with OE and should understand the safety procedures to follow should they encounter a suspected OE item. Safety presentations should be given to all public and private primary and secondary schools in the region.

5.4.5 VISUAL MEDIA

5.4.5.1 OE awareness, respect for the risk involved, and reinforcement of the OE safety message are the key ingredients in minimizing the risk associated with OE contamination. One of the major approaches available to promote awareness and understanding is the use of

videotaped programs as presentation tools and for broadcast on local television stations. The opportunity to disseminate information through visual media is readily available and can be easily implemented. Most current property personnel, though aware of the OE contamination on Seneca Army Depot, would be well served by reinforcement and augmentation of their existing knowledge. Providing information to new property owners, personnel, visitors, and others not currently aware of the full extent of the situation, moreover, is an important, necessarily recurring task.

5.4.5.2 *Videotapes.* A professional quality videotape can be produced that describes the history of Seneca Army Depot, describes how to identify OE, describes safety procedures associated with the avoidance of OE items, gives instructions for dealing with OE if encountered, and gives telephone numbers to contact if OE is encountered or if questions need to be answered. The videotape can be produced by USACE and should include interviews with local residents and landowners as well as USACE personnel familiar with the site. This videotape could be used in classroom education programs and distributed to local libraries and colleges. The length of this videotape should be no more than 15 to 20 minutes.

5.4.5.3 *Television.* Local television would also provide excellent access to programs about Seneca Army Depot, the presence of OE, how to identify OE, safety procedures associated with the avoidance of OE items, instructions for dealing with OE if encountered, and telephone numbers to contact if OE is encountered or if questions need to be answered. Local television stations may be willing to broadcast the videotapes described above, as well as a longer version (approximately 30 minutes). This longer videotape would include more detailed information about Seneca Army Depot and associated OE contamination and would be appropriate for inclusion in the local television stations' programming schedule.

5.4.6 EXHIBITS/DISPLAYS

Placing exhibits/displays in museums or other areas where the public will be exposed to educational information can be an effective method of raising and preserving general awareness and educating the public on the possible risks associated with the OE contamination at the former Seneca Army Depot. There are several locations within the local area where a display would receive exposure and would aid in informing and educating the public.

5.4.7 WEB SITE

Development of an internet web site devoted to the history of Seneca Army Depot could be a very effective method of raising general awareness and educating the public. The web page could contain information on the history of the depot, how to identify OE, and safety procedures associated with the avoidance of OE items. Additionally, instructions for dealing with OE if encountered and telephone numbers to contact if OE is encountered could be provided. The web page could be easily updated, would allow for users to ask questions about the site via an

electronic bulletin board, and would provide an appropriate educational tool for use in the proposed classroom education alternative. The web site address could be disseminated through exhibits, displays, notices, news segments, and the other information outlets already discussed.

5.4.8 AD HOC COMMITTEE

Creation of an ad-hoc committee would serve as a mechanism for facilitating implementation of recommended actions to reduce risks of public exposure to OE and gauging the current levels of public awareness of and support for these actions. The committee could be composed of influential members of the local community and representatives from USACE, among others.

5.4.9 EVALUATION OF PUBLIC AWARENESS ALTERNATIVES

In general, the public awareness alternatives described here would be very effective in reducing the risk to the public by educating potential site visitors about possible OE contamination on the property. The most effective alternatives are those that provide information to the public through various forms of communication, including printed media, classroom education, exhibits/displays, videotapes, television and the Internet. It has been assumed that informing and educating the public to the potential risks associated with the OE remaining on the site will reduce the possibility of injury. However, it is also understood that public awareness may allow for an unintended reaction within a small segment of the population that may view the dangerous handling of OE as an adventure. In order for these alternatives to be successfully implemented, support from a variety of local institutions including public officials, television stations, libraries, schools, and businesses is required.

5.5 RECOMMENDED INSTITUTIONAL CONTROL ALTERNATIVE

5.5.1 INTRODUCTION

The selection of the recommended institutional control alternative was based upon the description and evaluation of the alternatives presented in this chapter; discussions with representatives of the USACE and institutions that have the capability, authority, and willingness to support the proposed institutional controls for the site; and overall knowledge of Seneca Army Depot. The institutional control alternatives recommended below are considered to be appropriate methods of reducing the risk to the public from the OE items potentially remaining at the site.

5.5.2 RECOMMENDED INSTITUTIONAL CONTROL ALTERNATIVE

5.5.2.1 Based on the institutional analysis, the public awareness alternative is the preferred institutional control alternative for the Seneca Army Depot Activity. Access control alternatives are recommended for this site, but not as the primary control on people's behavior. Existing signs have yet to be proven completely effective in preventing access to those contaminated areas on the Depot; however, installing and maintaining new fencing at the site is not cost-effective and, in view of trespassing in already-fenced areas, would likely not be extremely effective in controlling access to the site. Although land use restrictions would be useful in preventing future incompatible uses by public landowners, they alone would not effectively reduce the risk of exposure to people unaware of the dangers of OE contamination. Notice via deed notification during property transfer, and/or at the time of permitting would only be effective in raising awareness if and when property transactions occurred, and then only to those involved in the transaction—not to the public as a whole. Therefore, the access control alternatives are recommended as part of an institutional control package. This recommendation is made to reinforce limitations on access controls and stress that access controls be combined with other forms of educational activities and access restriction to reinforce the effectiveness as an institutional control for SEDA.

5.5.2.2 The institutional control alternative recommended for further consideration at Seneca Army Depot consists of the following recommended tools, presented in the recommended order of implementation:

- Printed Media;
- Classroom education;
- Visual Media;
- Exhibits/Displays;
- Web Site
- Ad hoc committee.
- Access Control
- Land use Restrictions/Covenants, and deed notification
- Permitting and Zoning

SECTION 6

IDENTIFICATION OF RESPONSE ACTION OBJECTIVES

6.1 RESPONSE ACTION OBJECTIVES

None of the AOIs within SEDA investigated as part of this EE/CA were identified as warranting an immediate (time-critical) OE response action. However, non-time-critical OE response actions were evaluated for applicability at each of the individual AOIs. The goal of a non-time-critical OE response action is public safety, which can be achieved by reducing the explosive threat posed by the UXO that potentially remains on the property. While the overall goal of the chosen response action is assuring public safety, a number of factors must be considered to establish more specific objectives for the response action. The objectives had to take into consideration the State and Federal applicable or relevant and appropriate requirements (ARARs) identified below, while still being realistic and achievable in terms of cost. To attain the goal of reducing the explosive threat posed by the potential for UXO remaining at the AOIs within the Camp, the objectives identified had to be effective, implementable, and economical.

The objectives identified included:

- Remove OE from each AOI to the extent practicable;
- Mitigate the hazard presented by any OE not removed;
- Provide a plan to manage OE that may pose more of a problem in the future based on changes to the physical characteristics of a site (erosion, frost heaving, etc.) or changes to the planned use of a site.

Based on these objectives, a number of response actions were generated for evaluation at each AOI. The criteria of effectiveness, implementability, and cost were then used to evaluate the potential OE response actions in accordance with USAESCH guidance.

6.2 ASSESSMENT OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

6.2.1 INTRODUCTION

6.2.1.1 Section 121(d)(1) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), requires that remedial actions must attain a degree of cleanup that assures the safety of human health and protection of the environment. Moreover, all potential applicable or relevant and appropriate requirements (ARARs) must be outlined.

ARARs include federal standards, requirements, criteria, and limitations under state environmental or facility siting regulations that are more stringent than federal standards.

6.2.1.2 Although the requirements of CERCLA Section 121 generally apply as a matter of law only to remedial actions, USACE's policy for response actions is that ARARs will be identified and complied with to the extent practicable. Three factors are applied to determine whether identifying and complying with ARARs is practical in a particular response situation. These factors include:

- The exigencies of the situation;
- The scope of the response action to be taken; and
- The effect of ARAR compliance on the statutory limits for response action duration and cost.

6.2.1.3 ARARs are identified on a site-specific basis and involve a two-part analysis: first, a determination is made as to whether a given requirement is applicable; if not applicable, examination is made of whether it is nevertheless both relevant and appropriate. When a requirement is found to be both relevant and appropriate, that requirement must be complied with to the same degree as if it were applicable.

6.2.1.4 "Applicable" requirements are those cleanup standards, control standards, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance at a remedial action site. "Relevant and appropriate" requirements are cleanup and control standards, and the substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to ordnance, a remedial action, the location, or other circumstance at a remedial action site, nevertheless address problems or situations sufficiently similar to those encountered at a site where their use is well-suited.

6.2.1.5 There are three categories of ARARs: chemical-specific, location-specific, and action-specific. According to the NCP, chemical-specific ARARs are usually health or risk-based numerical values that establish the acceptable concentration of a chemical that may remain in, or be discharged to, the ambient environment. Location-specific ARARs generally are restrictions placed upon the concentrations of hazardous substances or the conduct of activities solely due to the locations of those substances or activities. Some examples of special locations include flood plains, wetlands, historic places, and sensitive ecosystems or habitats. Action-specific ARARs are usually technology- or activity-based requirements, limitations placed on actions taken with respect to hazardous wastes, or requirements to conduct certain actions to address particular circumstances at a site.

6.2.1.6 Non-promulgated advisories or guidance documents issued by federal or state governments do not have the status of potential ARARs. However, these "to be considered" criteria (TBC) may be used in determining the necessary level of cleanup for human safety and

protection of the environment. Potential ARARs and TBCs for SEDA are listed in and discussed in the following paragraphs.

6.2.2 CHEMICAL-SPECIFIC ARARS

Typically, chemical-specific ARARs are not normally a part of an OE investigation / removal action since only the removal of OE is the aim of an OE project. However, as the potential for soil contamination exists as a result of past OB/OD operations at the base, chemical-specific ARARs have been identified. Chemicals that may be contained within UXO are addressed through the action-specific DOD requirements for removal and disposal of OE items. The chemical-specific ARARs identified for SEDA include:

Federal:

- Resource Conservation and Recovery Act (RCRA), Groundwater Protection Standards and Maximum Concentration Limits (40 CFR 264, Subpart F)
- Atomic Energy Act, Standards for Protection Against Radiation (10 CFR 20 subpart D)
- Clean Water Act, Water Quality Criteria (Section 304) (May 1, 1987 - Gold Book)
- Clean Air Act, Standards for Radio nuclides (40 CFR 61.22 and .102)
- Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) (40 CFR 141.11-. 16)

New York State:

- New York State Codes, Rules and Regulations (NYCRR) Title 6, Chapter X
- New York Groundwater Quality Standards (6 NYCRR 703)
- New York Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) (10 NYCRR 5)
- New York Surface Water Quality Standards (6 NYCRR 702)
- New York State Raw Water Quality Standards (10 NYCRR 170.4)
- New York RCRA Groundwater Protection Standards (6 NYCRR 373-2.6 (e))
- New York State Department of Environmental Conservation, Division of Water, Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, November 15, 1990

- New York State Department of Environmental Conservation, Division of Hazardous Substances Regulation, Technical and Operational Guidance Series, Technical Administrative Guidance Memorandum: 4003, Cleanup Guideline for Soils Contaminated with Radioactive Materials (TAGM 4003).

- New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation, Technical and Operational Guidance Series, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046 (TAGM 4046).

- New York State Department of Environment Conservation, Division of Fish and Wildlife, Division of Marine Resources, Technical Guidance for Screening Contaminated Sediments, July 1994.

- Surface Water and Groundwater Classifications and Standards (6 NYCRR 700-705)

- Declaration of Policy, Article 1 Environmental Conservation Law (ECL)

- General Functions, Powers, Duties and Jurisdiction, Article 3 Environmental Conservation Law, Department of Environmental Conservation

- ECL, Protection of Water, Article 15, Title 5.

- Use and Protection of Waters, (6 NYCRR, Part 608)

- New York State Title 12, Part 38, Ionizing Radiation Protection, Acceptable Surface Contamination Levels (12 NYCRR Part 38)

6.2.3 LOCATION-SPECIFIC ARARS

Several location-specific ARARs potentially pertain to the response action at SEDA. The ARARs include the protection of historical and archeological resources and the protection of wildlife and habitat resources. The location-specific ARARs identified for SEDA include:

Federal:

- Executive Orders on Floodplain Management and Wetlands Protection (CERCLA Floodplain and Wetlands Assessments) #11988 and 11990

- National Historic Preservation Act (16 USC 470) Section 106 et seq. (36 CFR 800) (Requires Federal agencies to identify all affected properties on or eligible for the National Register of Historic Places and consult with the State Historic Preservation Office and Advisory Council on Historic Presentation)

- RCRA Location Requirements for 100-year Floodplains (40 CFR 264.18(b)).
- Clean Water Act, Section 404, and Rivers and Harbor Act, Section 10, Requirements for Dredge and Fill Activities (40 CFR 230)
- Wetlands Construction and Management Procedures (40 CFR 6, Appendix A).
- USDA/SCS - Farmland Protection Policy (7CFR 658)
- USDA Secretary's memorandum No. 1827, Supplement 1, Statement of Prime Farmland, and Forest Land - June 21, 1976.
- EPA Statement of Policy to Protect Environmentally Significant Agricultural Lands - September 8, 178.
- Farmland Protection Policy Act of 1981 (FPPA)(7 USC 4201 et seq).
- Endangered Species Act (16 USC 1531).
- Fish and Wildlife Coordination Act (16 USC 661)
- Wilderness Act (16 USC 1131).

New York State:

- New York State Freshwater Wetlands Law (ECL Article 24, 71 in Title 23).
- New York State Freshwater Wetlands Permit Requirements and Classification (6 NYCRR 663 and 664).
- New York State Floodplain Management Act and Regulations (ECL Article 36 and 6 NYCRR 500).
- Endangered and Threatened Species of Fish and Wildlife Requirements (6 NYCRR 182).
- New York State Flood Hazard Area Construction Standards.

6.2.4 ACTION-SPECIFIC ARARS

Several action-specific ARARs may be applicable to any OE removal actions performed at SEDA or if institutional controls are implemented in the future. The action-specific ARARs identified for SEDA include:

Federal:

- RCRA Subtitle C Hazardous Waste Treatment Facility Design and Operating Standards for Treatment and Disposal systems, (i.e., landfill, incinerators, tanks, containers, etc.) (40 CFR 264 and 265); Minimum Technology Requirements.
- RCRA, Subtitle C, Closure and Post-Closure Standards (40 CFR 264, Subpart G).
- RCRA Groundwater Monitoring and Protection Standards (40 CFR, Subpart F).
- RCRA Generator Requirements for Manifesting Waste for Off-site Disposal (40 CFR 262).
- RCRA Transporter Requirements for Off-Site Disposal (40 CFR 263).
- RCRA, Subtitle D, Non-Hazardous Waste Management Standards (40 CFR 257).
- Safe Drinking Water Act, Underground Injection Control Requirements (40 CFR 144 and 146).
- RCRA Land Disposal Restrictions (40 CFR 268) (On and off-site disposal of excavated soil).
- Clean Water Act, - NPDES Permitting Requirements for Discharge of Treatment System Effluent (40 CFR 122-125).
- Effluent Guidelines for Organic Chemicals, Plastics and Resins (Discharge Limits) (40 CFR 414).
- Clean Water Act Discharge to Publicly - Owned Treatment Works (POTW) (40 CFR 403).
- DOT Rules for Hazardous Materials Transport (49 CFR 107, 171.1-171.500).
- Occupational Safety and Health Standards for Hazardous Responses and General Construction Activities (29 CFR 1904, 1910, 1926).
- SARA (42 USC 9601)
- OSHA (29 CFR 1910.120)
- Clean Air Act (40 CFR 50.61)

New York State:

- New York State Pollution Discharge Elimination System (SPDES) Requirements (Standards for Storm water Runoff, Surface water, and Groundwater discharges (6 NYCRR 750-757).

- New York State RCRA Standards for the Design and Operation of Hazardous Waste Treatment Facilities (i.e., landfills, incinerators, tanks, containers, etc.); Minimum Technology Requirements (6 NYCRR 370-373).

- New York State RCRA Closure and Post-Closure Standards (Clean Closure and Waste-in-Place Closures) (6 NYCRR 372).

- New York State Solid Waste Management Requirements and Siting Restrictions (6 NYCRR 360-361), and revisions/enhancements effective October 9, 1993.

- New York State RCRA Generator and Transporter Requirements for Manifesting Waste for Off-Site Disposal (6 NYCRR 364 and 372).

6.2.5 TO BE CONSIDERED CRITERIA

Three action-specific To Be Considered Criteria (TBCs) have been identified for any potential OE removal actions at SEDA. The first action-specific TBC, AR 200-1, requires Army compliance with all environmental statutes and regulations and requires Army consultation with federal, state, and local regulatory agencies. The second action-specific TBC, AR 385-64, requires that safety measures be taken for the handling of explosive ordnance. The final action-specific TBC, DOD 6055.9-STD, requires that specialized personnel be employed to detect, remove, and dispose of ordnance. This standard also defines the safety precautions and procedures for the detonation or disposal of ordnance.

6.3 STATUTORY LIMITS

Statutory limits exist for responding to releases under Section 104 of CERCLA. These limits set a $2 million ceiling on Superfund-financed response actions and a twelve-month time limit on implementing those response actions. However, these limits do not apply to response actions authorized under CERCLA Section 104(b) that are not financed by Superfund. As a result, the response action being examined in this EE/CA for SEDA does not have any statutory fiscal or timeframe limitations set by CERCLA. However, there are funding limitations for the project based on the budget available in the Defense Environmental Restoration Program (DERP) and on the large number of UXO-contaminated sites located throughout the country that must compete for these funds based on a "worst-first" funding criteria.

SECTION 7

IDENTIFICATION AND ANALYSIS OF RESPONSE ACTION ALTERNATIVES

7.1 INTRODUCTION

7.1.1 Response action alternatives will be identified and analyzed for each of the 11 AOIs under investigation. Response actions will be considered at the following AOIs:

- Indian Creek Burial Area
- SEAD-53 (Igloo Area)
- Demo Range
- SEADs-16 and -17 (Deactivation Furnaces)
- EOD Area #3
- EOD Area #2
- SEAD-44A (QA Function Test Area)
- SEAD-46 (3.5" Rocket Range)
- Grenade Range
- SEAD-57 (Former EOD Area)
- SEAD-45 (Open Detonation Area)

7.1.2 The identification of alternatives for these AOIs at SEDA includes two principal groups, intrusive and non-intrusive, as well as several variations of these two. Non-intrusive alternatives are comprised of the No Further Action (NFA) and institutional controls alternatives, while intrusive approaches a number of different clearance alternatives. This chapter provides a brief, general description of OE clearance technologies. From this general description, five specific response action alternatives for Seneca Army Depot will be introduced.

7.1.3 Once the potential response action alternatives have been introduced, each must be analyzed and screened against the three general response objective categories (effectiveness, implementability, and cost) to ensure that it meets the minimum standards within each of the criteria of the three categories. This screening will be performed on all potential response action alternatives for the 11 AOIs investigated at SEDA. The purpose of this screening is to ensure that only viable alternatives are ranked against each other in Chapter 8 of this document. Once this screening has been completed, the remaining alternatives will be compared to each other in regards to each of the three general response categories.

7.2 DESCRIPTION OF OE CLEARANCE TECHNOLOGIES

Various technologies and approaches exist for the clearance of OE. OE clearance operations fall into three distinct areas: detection, recovery, and disposal. A discussion of the techniques used in each of these areas is presented in the following paragraphs.

7.2.1 OE DETECTION

7.2.1.1 The detection of OE includes those methods and instruments that can be used to locate OE. The selection of the best technology depends on the properties of the OE to be located, including whether the ordnance is found on the surface or below the surface, and the characteristics of the area where the OE is located, such as soil type, topography, vegetation, and geology.

7.2.1.2 Detection technologies have two basic forms. One form, visual searching, has been successfully used on a number of sites where OE is located on the ground surface. When performing a visual search of a site, the area to be searched is divided into five-foot lanes, which are then systematically inspected for OE. A metal detector is sometimes used to supplement the visual search in areas where ground vegetation may conceal OE. Typically, any OE found during these searches is flagged or marked on a grid sheet for later removal.

7.2.1.3 The other form of OE detection, geophysics, includes a family of detection instruments designed to locate OE. This family of instruments includes magnetic instruments, electromagnetic instruments, and ground penetrating radar. Each piece of equipment has its own inherent advantages and disadvantages based on its operating characteristics, making the selection of the type of geophysical instrument paramount to the survey success. Nevertheless, geophysics is the most cost-effective method of conducting subsurface OE surveys. The equipment designed for OE geophysical surveys is lightweight, easily maintained, and very effective. However, there are limitations to geophysics.

7.2.1.4 Geophysical equipment cannot usually distinguish OE items from other metallic objects located below the surface. "Cultural interference," such as underground utility lines, construction debris, or metal bearing rock, can produce a signature to the equipment similar to OE. Therefore, it is necessary for the geophysical survey team to carefully document any known cultural interference prior to beginning the survey. Another limitation to the equipment is that metallic objects have to be larger when at greater depths so that the geophysical equipment can obtain a reading. Due to these limitations, no geophysical equipment will detect every buried OE item on a site. However, no equipment or process can, at present, be guaranteed to detect and remove 100 percent of OE on a site. The use of geophysical equipment and surveys has proven to be one of the most cost effective methods currently available to detect subsurface OE.

7.2.2 OE RECOVERY

7.2.2.1 Once a site has been surveyed by either visual or geophysical means, the recovery of OE can begin. OE recovery operations can take the form of a surface-only clearance, an intrusive (subsurface) clearance, or a combination of the two methods. The decision on the appropriate level of clearance operation is based on the nature and extent of the OE contamination as well as the intended future use of the site.

7.2.2.2 During a surface clearance operation exposed OE or suspected OE items are identified during the detection phase. The OE items are then inspected, collected (if possible), and transported to a designated area for cataloging and eventual disposal. If it is determined during the OE inspection that the item cannot be safely moved it may be necessary to destroy the OE item in place.

7.2.2.3 During a subsurface clearance operation buried OE items or suspected OE identified by the geophysical survey or other detection methods require excavation for removal. Because the actual nature of the buried OE item cannot be determined without it being uncovered, non-essential personnel evacuations are necessary, as well as, perhaps, the use of engineering controls to ensure the safety of the operation. The excavation of the OE item then takes place with either hand tools or mechanical equipment depending on the suspected depth of the object. Once the OE item has been exposed, it is then inspected, collected (if possible), and transported to a designated area for cataloging and disposal. If it is determined during the OE inspection that the item cannot be safely moved, it will be destroyed in place.

7.2.2.4 Evacuations are sometimes necessary when conducting intrusive investigations to minimize the risk of the operation. An evacuation area is calculated by USACE based on the potential explosive force that could be encountered during an excavation. An evacuation distance is then calculated to ensure that all non-essential personnel are outside of that distance during the excavation process. Engineering controls can be developed to reduce this evacuation distance; however, evacuations may be required in any future OE investigation at Seneca Army Depot if excavations take place close to any inhabited areas and engineering controls cannot be developed to reduce the exclusion zone to preclude the need to evacuate. Every possible option will be explored to minimize potential evacuations with the exception of compromising public safety. Due to the remoteness of SEDA, it is unlikely that many evacuations will be necessary during future OE clearance operations.

7.2.3 OE DISPOSAL

7.2.3.1 Disposal of recovered OE items at Seneca Army Depot can take one of two forms, remote, on-site demolition and disposal; or in-place demolition and disposal. The decision regarding which of these techniques to use is based on the risk involved in employing the disposal option, as determined by the specific area's characteristics and the nature of the OE items recovered.

7.2.3.2 A countercharge can be used to destroy the OE item or the OE item can be burned as a means of destruction. Burning an OE item is not as desirable as a countercharge, as the burning can produce secondary explosions, or the item may not be completely destroyed, thus leaving the OE item in a more dangerous state than it was originally. Engineering controls, such as sandbag mounds and sandbag walls over and around the OE item, are often used to minimize the blast effects when an OE item is destroyed in this manner.

7.2.3.3 In some instances it is determined that an OE item must be destroyed in-place. This technique is typically employed when the OE item cannot be safely moved to a remote location. This procedure utilizes techniques similar to those described above that will detonate the OE item or apply sufficient pressure and heat to neutralize the hazard. When this technique is employed, engineering controls such as sandbag mounds and sandbag walls over and around the OE item are often used to minimize the blast effects.

7.3 IDENTIFICATION AND DESCRIPTION OF RESPONSE ALTERNATIVES

7.3.1 The alternatives identified in this section have been selected based on the results of the investigations conducted to date as well as available OE detection and disposal technology. Each alternative, if implemented, must have the ability to achieve the response action objectives. To aid in the selection of appropriate OE clearance alternatives, a penetration analysis was performed by the USACE to determine possible depths of penetration for ordnance types used at SEDA.

7.3.2 This information, combined with the OE sampling information, soil conditions, and bedrock conditions at the site, was utilized to select appropriate OE clearance alternatives. For the removal action at the Seneca Army Depot Activity, five response alternatives have been developed:

Alternative 1. No Further Action (NFA);

Alternative 2. Institutional Controls;

Alternative 3. Removal of OE items to depth of 6 inches

Alternative 4. Removal of OE items to depth using a geophysical instrument selected in a prove-out

Alternative 5. Excavation of soil to a specified depth, followed by mechanical sifting of this soil to separate out OE. Removed soil will be replaced and the area restored after sift.

7.3.3 No response measure can completely remove all OE risk due to limitations in available technology. Yet, all of the response measures being considered for the site will reduce risks posed by inadvertent ordnance detonation, resulting in a reduction of the OE risk. It may also be feasible and appropriate to combine some of the alternatives in order to optimize the safe transition of the site to a future land use. Note that surface clearance was not selected as a viable

stand-alone alternative because subsurface OE/UXO was found in each AOI where OE/UXO was present.

7.3.4 The implementation of a long-term monitoring program will not be evaluated as a separate alternative, but as an integral part of any alternative where OE material has been removed or left on-site. As part of this monitoring program, visual surveys will be performed on a proposed schedule. These visual surveys will consist of the inspection of areas to determine the effectiveness of the clearance alternative applied. These visual surveys will be concentrated in areas most susceptible to erosion and frost effects. Any incident reports from the property will be reviewed and any Institutional Controls in effect will be checked to see that they have been properly maintained. During this inspection it will also be determined if any of the proposed land-uses have changed. It is proposed that the first visual inspection would occur approximately every two years up to 30 years from the completion of clearance activities. If the results of these inspections indicate that additional clearance is necessary in certain areas, steps will be taken to perform additional clearance.

7.3.1 NFA (ALTERNATIVE 1)

Alternative 1, if selected, would take no further action in regards to detecting, clearing, and disposing of any potential OE. The NFA alternative would involve either the transfer of parts of the Depot in their current condition or the Army retaining control of the Depot as an inactive facility. This alternative can be implemented if the potential exposure and hazards from OE are such that the proposed future uses can be implemented safely or if the Army retains control of the facility. Implementation of Alternative 1 at SEDA is dependent upon the results of the EE/CA surveys. If the data indicated that no evidence of OE existed at the site, and the area is safe for recreational uses, then the site, or portions of the site, may be turned over for use as recreation/conservation area without any further action. This alternative, if selected, does not preclude a later DoD response should a problem surface. However, these sites will no longer be under consideration as ordnance sites.

7.3.2 INSTITUTIONAL CONTROLS (ALTERNATIVE 2)

The institutional controls (Alternative 2), if selected, would provide a legal and/or administrative mechanism to either prevent access to or control the use of specific areas of SEDA with OE concerns. This alternative could also provide ordnance education and awareness; thereby reducing the risk of an OE related accident at the site. Examples of potential institutional controls include fences, warning signs, deed restrictions, covenants, and enforceable local government ordinance. Examples of OE education include educational programs, brochures, and media displays. Alternative 2 may be implemented as a stand-alone alternative, or may be implemented in conjunction with another selected alternative to ensure that restrictions on future land use are followed. The Institutional Analysis Report, which describes the full range of institutional controls, is provided in Chapter 5.

7.3.3 CLEARANCE OF OE ITEMS TO DEPTH OF 6 INCHES (ALTERNATIVE 3)

7.3.3.1 Alternative 3, if selected, would include the use of geophysical instruments to detect OE in the shallow subsurface (0-6 inches). If this alternative is selected, an instrument will be selected, through the process of a geophysical proveout, which will detect any of the OE recovered during the EE/CA to at least 6 inches.

7.3.3.2 Prior to any geophysical survey, brush-clearing crews would clear enough undergrowth so that the geophysical crews could adequately perform their work. Brush clearing should be limited to only those areas where the vegetation prevents the effective use of the clearance equipment. In areas where the geophysical equipment can be used effectively in the natural state, there will be no brush clearance. In areas where the future land use is slated for conservation, brush clearing would only be used as necessary so that the surrounding ecosystem would not be disturbed. It is assumed that brush clearance will create minimal short-term disturbance to the ecosystem due to the rapid vegetation growth rates in this climate.

7.3.3.3 During the geophysical investigation, OE clearance would be completed by experienced UXO-qualified personnel who visually search the ground surface for any OE. In addition, the personnel would be aided by a geophysical instrument that would be used to perform a sweep in lanes five feet apart, or some other comparable width depending on the sweep reach of the type of equipment used, to ensure complete site coverage. In this type of investigation, all contacts would be removed, if possible, or flagged and investigated or detonated as needed at a later time.

7.3.4 CLEARANCE OF OE ITEMS TO DEPTH OF DETECTION (ALTERNATIVE 4)

Alternative 4 would be similar to Alternative 3. Brush would still be removed from the site as needed, and the geophysical data collected would typically be collected in grids that would be established across the AOI. Geophysical data collected under this alternative would be stored for further processing after collection. Anomalies would then be picked after the data were processed, and these targets would be reacquired using GPS equipment and marked for further investigation. The second phase to this approach includes the intrusive investigation of all flagged anomalies identified during the survey to determine their exact nature. During this investigation, phased engineering controls may have to be used to reduce the evacuation distance that would be required during the conduct of these investigations. Evacuation distances are determined by USACE based on the "maximum credible event" (MCE) or worst-case scenario of the potential detonation of an ordnance item that could be found at the site. All non-essential personnel would be evacuated to distance from the excavated area based on the most probable munition (MPM) to maximize the safety of the operation. Once these investigations begin, each anomaly will be excavated to the depth necessary to remove it from the ground. Following removal of the item identified, the excavation will be back filled to as close to its original state as possible.

7.3.5 REMOVAL OF OE ITEMS TO DEPTH BY MEANS OF EXCAVATION AND MECHANICAL SORTING (ALTERNATIVE 5)

Alternative 5 calls for the excavation of soils to a specified depth, and the sorting of OE out of those soils. A land surveying and brush clearing operation would be necessary as described in Alternative 3, and experienced UXO-qualified personnel will perform all phases of the work. Soil would be excavated to a depth determined by the OE depth data collected during the EE/CA. This excavated soil would then be mechanically sifted. Any OE would be removed as the dirt passed through the screen. Sifted soil would be certified "clean" and replaced after a confirmation survey of the areas it had been removed from. This confirmation survey would be performed as the clearance to depth alternative (alternative 4). Geophysical instruments would be used to identify any anomalies below the excavated soil, and these anomalies investigated prior to the replacement of the "clean" soil.

7.3.6 OPTIONS

The combination of one or more alternatives together will be dealt with on a case-by-case basis. It may become necessary to perform an excavation removal on a portion of an area while the remainder of the area can be controlled with institutional measures.

7.4 INTRODUCTION OF SCREENING CRITERIA

7.4.1 In the EE/CA process, the alternatives described above must be analyzed and screened against the three general categories of effectiveness, implementability, and cost to ensure that they meet the minimum standards of the criteria within each category. This screening will be performed for the alternatives chosen as possibilities at each AOI. The three general categories are described below along with the specific evaluation criteria contained within each of the categories.

7.4.2 The effectiveness of an alternative refers to its ability to meet the clean-up objective within the scope of the response action. The effectiveness category is divided into four evaluation criteria. These include Overall Protection of Public Safety and the Human Environment; Compliance with ARARs; Long-Term Effectiveness; and Short-Term Effectiveness.

7.4.3 The implementability category includes the technical and administrative feasibility of implementing an alternative, the availability of various services and materials required during its implementation, and the acceptance local residents and agencies have expressed towards the various alternatives. The implementability category is divided into six evaluation criteria including: Technical Feasibility; Administrative Feasibility; Availability of

Services and Materials; Property Owner Acceptance; Local Agency Acceptance; and Community Acceptance.

7.4.4 Finally, each alternative is evaluated to determine its projected overall implementation cost. Each of the evaluation criteria introduced above will be discussed in greater detail in the following paragraphs.

7.5 EFFECTIVENESS

7.5.1 OVERALL PROTECTION OF PUBLIC SAFETY AND THE HUMAN ENVIRONMENT

Alternatives are evaluated under this criterion on how well they achieve and maintain protection of public safety and the human environment. A process known as impact analysis is applied in evaluating this criterion. At this stage of the EE/CA, impact analysis consists of an evaluation of whether the alternative will have an impact on the potential for harm and the level of protectiveness at the site if the alternative is implemented, as compared to the existing condition. The evaluation is based on the ten factors used in the risk assessment presented in Chapter 4.

7.5.2 COMPLIANCE WITH ARARS

Evaluation under this criterion ensures that all requirements can be met without regulatory problems. The assessment may also include the TBC criteria. The applications of ARARs for each alternative will primarily focus on what ARARs apply as well as how they will be met.

7.5.3 LONG-TERM EFFECTIVENESS

This criterion measures how an alternative maintains the protection of human health and the environment after the response objective has been met. The analysis focuses on:

- the permanence of the response action alternative;
- the magnitude of residual risk following completion of the response action; and
- the adequacy and reliability of controls, if any, used to manage the treated residuals or untreated wastes that remain at the site following the response action.

7.5.4 SHORT-TERM EFFECTIVENESS

This criterion addresses the effects of an alternative during the implementation phase. Alternatives are evaluated for their effects on human health and the environment prior to the response objectives being met. More specifically, each alternative will be examined for:

- protection of the community and workers during the response action;
- adverse impacts resulting from construction and implementation; and
- the time required to meet the response objectives.

7.6 IMPLEMENTABILITY

7.6.1 TECHNICAL FEASIBILITY

This criterion evaluates the ease of implementing a specific alternative. The analysis of the technical feasibility for each course of action focuses on difficulties in:

- the operation and construction of the response action;
- the reliability of the response action in relation to implementation; and
- the need and ease of conducting future removal actions/requirements following the initial undertaking.

7.6.2 ADMINISTRATIVE FEASIBILITY

This criterion focuses on the planning for a course of action. The evaluation of this criterion considers difficulties in:

- obtaining permits applicable to a proposed alternative;
- coordinating services needed to carry out an alternative; and
- arranging the delivery of services in a timely manner.

7.6.3 AVAILABILITY OF SERVICES AND MATERIALS

This criterion primarily deals with the availability of services needed to carry out an alternative. Two issues are of primary importance under this criterion:

- can the services and materials be delivered conveniently; and
- are the quantities needed to implement the response action available in a timely manner.

7.6.4 STAKEHOLDER ACCEPTANCE

Each of the alternatives may have a varying degree of impact on the future use of the area. As a result, each alternative is rated based on the degree of acceptance expressed by the stakeholders at SEDA. Each alternative is rated based on the degree of acceptance expressed by the property owners at each site, federal and state government as represented by NYSDEC, the EPA, and the USACE, and the communities of Romulus and Varick. These two communities and their local governments will be those responsible for any necessary oversight after the land is transferred to future owners.

7.7 COST

As the scope of work for each alternative is developed, an order of magnitude cost estimate is calculated for costs associated with the implementation of each response action. These costs will include the direct and indirect capital costs incurred in implementing the response action. As part of this assessment, a time frame for completion of each of the proposed alternatives is also developed.

7.8 APPLICATION OF THE EVALUATION CRITERIA BY ALTERNATIVE

7.8.1 ALTERNATIVE 1: NO FURTHER ACTION

Effectiveness: The NFA alternative does not have an impact on the overall protection of public safety and the human environment at the AOIs where UXO and/or OE items have been recovered (Tables 7.1 through 7.8). It will, therefore, not be considered in SEADs-16 and -17, -44A, -45, -46, -57, the Grenade Range, or EOD Areas #2 or #3. This alternative is a possibility in the three areas where no OE or UXO was recovered during the EE/CA, the Indian Creek Burial Area, SEAD-53, and the Demo Range. In addition to a lack of OE recovered, there is little more than rumor to suggest that any of these areas was actually involved in any ordnance demolition or burial. However, while the Demo Range may not have been involved in any ordnance related activities as a separate area, it is in relatively close proximity to the demo berm in SEAD-57. Any response action applied to a certain radius around this berm will include a portion of the Demo Range.

7.8.2 ALTERNATIVE 2: INSTITUTIONAL CONTROLS

7.8.2.1 *Effectiveness*: The Institutional Controls alternative has an impact on the overall protection of public safety and the human environment (see Tables 7.1 through 7.8), complies with ARARs, and provides for both the long-term and short-term effectiveness at each of the 11 AOIs.

7.8.2.2 *Implementability*: The Institutional Controls alternative is technically feasible although not administratively Implement able. Some of the aspects, materials and services to implement this alternative are readily available. However the Institutional Analysis determined that local County and State Government support for institutional controls is inadequate. The willingness of the public to support the institutional controls alternative is not known. Input received from the current stakeholders as a part of the public response period for this draft EE/CA report will be incorporated into Institutional Analysis in the final report and may affect this evaluation.

7.8.2.3 *Cost*: The cost to perform this alternative at each AOI where it has been considered is presented in Chapter 8, and the cost breakdowns are presented in Appendix G.

7.8.3 ALTERNATIVE 3: CLEARANCE OF OE TO DEPTH OF 6 INCHES

7.8.3.1 *Effectiveness*: For this alternative, qualified UXO clearance personnel would perform a one-time removal of OE to a depth of 6 inches. OE items were identified within 6 inches of the surface in all of the AOIs other than Indian Creek, SEAD-53, and the Demo Range. Therefore, an OE clearance operation to a depth of 6 inches below the surface would favorably impact the overall protection of public safety and the human environment at each of the other AOIs (see Tables 7.1 through 7.8). Alternative 3 would be effective in both the long term and the short term.

7.8.3.2 *Implementability*: This alternative is both technically and administratively feasible and the materials and services necessary to implement this alternative are readily available. Generally, clearance alternatives are acceptable to stakeholders as a means to reduce the residual UXO risk.

7.8.3.3 *Cost*: The cost to perform this alternative at each AOI where it has been considered is presented in Chapter 8, and the cost breakdowns are presented in Appendix G.

TABLE 7.1
IMPACT ANALYSIS
SEADs-16 AND -17

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	Inert 20mm Projectile, Unknown Fuze (inert)	Category 0	Low	0-5"	Industrial Development	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.2
IMPACT ANALYSIS
EOD AREA #3

	Ordnance				Site			
Alternative	**Type**	**Sensitivity**	**Density**	**Depth**	**Activity**	**Access**	**Stability**	**People**
Existing Condition	Fuze lighter, Rifle-fired Grenade	Category 0	Low	0-12"	Conservation/ Recreation	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.3
IMPACT ANALYSIS
EOD AREA #2

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	Fuze w/ Booster	Category 2	Medium	0-3"	Conservation/ Recreation	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.4
IMPACT ANALYSIS
SEAD-44A

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	40mm Rifle-fired Grenade	Category 2	Low	0-12"	Prison	Limited Restriction	Unstable	Low
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Slight**	**Slight**	No Impact	**Slight**
Clearance to 6"	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	**Moderate**	No Impact

TABLE 7.5
IMPACT ANALYSIS
SEAD-46

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	M83 Fragmentation Bomb	Category 3	Low	0-12"	Conservation/ Recreation	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.6
IMPACT ANALYSIS
GRENADE RANGE

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	40mm Rifle-fired Grenade, 35mm Subcaliber LAW Rocket	Category 2	High	0-12"	Conservation/ Recreation	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.7
IMPACT ANALYSIS
SEAD-57

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	MK 2 Fragmentation Grenade	Category 3	Low	0-6"	Conservation/ Recreation	Limited Restriction	Moderately Stable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	No Impact	No Impact	No Impact

TABLE 7.8
IMPACT ANALYSIS
SEAD-45

Alternative	Ordnance				Site			
	Type	Sensitivity	Density	Depth	Activity	Access	Stability	People
Existing Condition	105mm WP Projectile	Category 3	High	0-48"	Conservation/ Recreation	Limited Restriction	Unstable	High
No Further Action	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Institutional Controls	No Impact	No Impact	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	**Moderate**
Clearance to 6"	No Impact	No Impact	**Slight**	**Slight**	No Impact	No Impact	No Impact	No Impact
Clearance to Depth	No Impact	No Impact	**Moderate**	**Moderate**	No Impact	No Impact	No Impact	No Impact
Excavation and Mechanical Sorting	No Impact	No Impact	**Significant**	**Significant**	No Impact	**Moderate**	No Impact	No Impact

7.8.4 ALTERNATIVE 4: CLEARANCE TO DEPTH OF DETECTION

7.8.4.1 *Effectiveness*: For this alternative, clearance personnel would perform a one-time OE removal to the depth of detection of the geophysical equipment chosen as ideal for the site during a geophysical prove-out. It is assumed that the geophysical instrumentation chosen for this task will detect the majority of the OE present in any of the AOIs to at least the specific depth of penetration for each item. For example, while most geophysical instruments will not detect a 20mm projectile to deeper than approximately 18", these items are not expected to be present at a depth greater than this. While larger items may penetrate farther than 18", their larger mass makes them detectable to deeper depths. The results of the EE/CA support the assumption that the OE present at SEDA is within the detection depths of commonly used geophysical equipment. As with Alternative 3, Alternative 4 would have favorably impact the overall protection of public safety and the human environment at each of the AOIs where OE was recovered (see Tables 7.1 through 7.8). Alternative 4 would be effective in both the long term and the short term.

7.8.4.2 *Implementability*: This alternative is both technically and administratively feasible and the materials and services necessary to implement this alternative are readily available. Generally, clearance alternatives are acceptable to stakeholders as a means to reduce the residual UXO risk.

7.8.4.3 *Cost*: The cost to perform this alternative at each AOI where it has been considered is presented in Chapter 8, and the cost breakdowns are presented in Appendix G.

7.8.5 ALTERNATIVE 5: CLEARANCE OF OE TO DEPTH BY MEANS OF MECHANICAL SORTING

7.8.5.1 *Effectiveness*: For this alternative, qualified UXO clearance personnel would oversee the excavation of all soil containing OE and supervise the mechanical sorting of OE from surrounding soils. This removal activity would address not only those OE items found within the first six inches below the surface, but also those found at deeper depths. This alternative has an impact on the overall protection of public safety and the human environment by removing the OE from the site. This alternative would be effective in both the long term and short term and would open the land up for unrestricted use.

7.8.5.2 *Implementability*: This alternative is both technically and administratively feasible and the materials and services necessary to implement this alternative are readily available for SEAD-45. Generally, excavation and mechanical sorting alternatives are acceptable to stakeholders as a means to remove the overall UXO risk.

7.8.5.3 *Cost*: The cost to perform this alternative at each AOI where it has been considered is presented in Chapter 8, and the cost breakdowns are presented in Appendix G.

7.9 SUMMARY OF REMAINING ALTERNATIVES

7.9.1 Alternative 1; NFA, is a viable alternative at the three sites where no UXO or OE was recovered during the EE/CA fieldwork. The other four Alternatives, however, do have some impact at each of the other sites investigated. Therefore, Alternatives 2, 3, 4, and 5 have been considered for each of the sites where OE was recovered. At some of the sites containing OE, a number of these alternatives would have a significant impact on the OE risk. Therefore, only one of the alternatives having a significant impact will be considered at each site. This will always be the most cost-effective alternative.

7.9.2 At SEADs-16 and -17 and EOD Area #2, where OE was not found below 6 inches, Alternatives 4 (Clearance to Depth) and 5 (Clearance to Depth by means of Mechanical Sorting) have not been considered, as they will not provide any more protection than Alternative 3 (Clearance to 6"). Alternative 5 has also not been considered at EOD Area #3, SEAD-46, or the Grenade Range, as it would not be any more effective than Alternative 4. Further implementation of Alternative 5 has also not been considered at SEAD-44A, as the area that has not already been scraped can be remediated as effectively with Alternative 4. However, given the current state of SEAD-44A, implementation of Alternative 4 in that area is contingent upon the mechanical sorting of OE out of the estimated 35,000 cubic yards of soil stockpiled there. The completion of this sorting is built into all further discussion of Alternative 4 in SEAD-44A.

SECTION 8

COMPARATIVE ANALYSIS OF RESPONSE ACTION ALTERNATIVES

8.1 INTRODUCTION

8.1.1 After screening each of the alternatives on their ability to meet the minimum requirements of the evaluation criteria, a comparative analysis was conducted to determine the relative performance of the remaining alternatives in each of the same criteria. This comparison was based on an analysis of the Effectiveness, Implementability, and Cost of each alternative. The purpose of this comparison is to determine the advantages and disadvantages of each of the alternatives relative to one another.

8.1.2 It was rumored that SEAD-53 ditches and Indian Creek were used for OE burial, disposal, and/or other OE-related activities, although no substantive proof of these rumors has been found. Nonetheless, EE/CA sampling was performed in these areas. During sampling, no OE or OE-related scrap was recovered from these sites. Therefore, NFA is the recommendation for SEAD-53 and Indian Creek. No other response alternatives will be evaluated for these sites, and it is recommended that these areas no longer be under consideration as ordnance sites. There was also no OE or OE-related scrap recovered at the Demo Range during the EE/CA. However, due to its proximity to SEAD-57, a part of the Demo Range will be included in the response action for SEAD-57. Based on the results of the previous chapter, the remaining response alternatives for the areas where OE was recovered include:

1. SEADs-16 and -17 and EOD Area #2 - no OE below 6 inches
   - Alternative 2 - Institutional Controls;
   - Alternative 3 - Clearance to Depth of 6"

2. SEAD-44A, SEAD-46, EOD Area #3, Grenade Range - individual anomalies can be discerned
   - Alternative 2 - Institutional Controls;
   - Alternative 3 - Clearance to Depth of 6"
   - Alternative 4 – Clearance to Depth of Instrument Detection (geophysical instrument).

   As stated in Section 7, completion of the sorting of 35,000 cubic yards of soil is necessary at SEAD-44A before either Alternative 3 or Alternative 4 can be undertaken. This completion of the sorting has been considered as an integral part of both of these Alternatives at SEAD-44A.

3. SEAD-57 and SEAD-45 - anomaly density does not allow for discrimination of individual anomalies

- Alternative 2 - Institutional Controls;
- Alternative 3 - Clearance to Depth of 6" (includes fence around areas where individual anomalies cannot be discerned)
- Alternative 4 – Clearance to Depth of Instrument Detection (geophysical instrument - includes fence around areas where individual anomalies cannot be discerned)
- Alternative 5 – Clearance of OE to Depth by means of Excavation and Mechanical Sorting (includes verification survey over excavated area, as well as geophysical survey over those areas of each site where individual anomalies can be discerned)

8.1.3 The rankings under the Effectiveness category involve the consideration of four criteria. These four criteria are protection of public safety and the human environment, compliance with ARARs, long-term effectiveness, and short-term effectiveness. The impact analysis process will be utilized to evaluate each alternative for protection of public safety and the human environment. For each of the criteria, a ranking value will be assigned to each alternative, with 1 representing the best alternative. Ranking values will be totaled for each alternative and the one with the lowest overall score will be the preferred alternative. The effectiveness criteria ranking values will be used to determine the overall Effectiveness ranking. The overall Effectiveness ranking will then be used in conjunction with the Implementability and Cost rankings to provide an overall ranking of the alternatives.

8.1.4 The rankings under the Implementability category involve the consideration of four criteria: technical feasibility, administrative feasibility, availability of services and materials, and stakeholder acceptance. A ranking value will be assigned to each alternative, with 1 representing the best alternative in the category. Stakeholder acceptance will be weighted by a factor of two (i.e., the ranking values will be multiplied by two) due to the relative importance of this criterion. The Implementability criteria ranking values will be used to determine the overall Implementability ranking. The lowest overall score indicates the most implement able alternative. The overall Implementability rankings will then be used in conjunction with the Effectiveness and Cost rankings to derive an overall ranking of the alternatives.

8.1.5 Appendix G provides a more detailed breakdown of the costs for each alternative and the assumptions used in preparing the cost estimates. The cost estimate for each alternative is an order of magnitude estimate, which gives a general estimate of the level of effort that will be required to complete each alternative.

8.2 EFFECTIVENESS

8.2.1 INTRODUCTION

Each of the alternatives remaining after the screening in Chapter 7 was subjectively ranked under the Effectiveness category. The results of these rankings are summarized for each area in Tables 8.1 to 8.8. An explanation of these rankings is provided in the following paragraphs.

8.2.2 OVERALL PROTECTION OF PUBLIC SAFETY AND HUMAN ENVIRONMENT

8.2.2.1 The impact analyses in Chapter 7 were used to evaluate each alternative for overall protection of public safety and the human environment. The impact of each of the remaining alternatives was evaluated in terms of whether it provided a slight, moderate, or significant improvement (or no impact) over the existing condition in terms of the decrease in the potential for harm and the level of protectiveness at the site. This evaluation included the eight criteria used in the risk assessment presented in Chapter 4 and the screening of the alternatives presented in Chapter 7.

8.2.2.2 As shown in Tables 7.1 through 7.8, the Institutional Controls alternative has an impact in terms of the activity that can be performed at each site, the access at each site, and the number of people that may be affected by UXO at each site. At all of the sites, access-related institutional controls would attempt to limit people from entering the sites, thus moderately decreasing the potential for OE encounters. This would also prevent the use of most of these sites for the planned recreational purposes, although the conservation plans should not be greatly affected. The one exception is SEAD-44A, which is already within the boundaries of the prison site, and would not receive many visitors on a regular basis. At that site, institutional controls would not greatly affect the planned use of the site.

8.2.2.3 There were two sites where OE was only recovered between 0 and 6 inches below the ground surface, SEADs-16 and -17 and EOD Area #2. At these sites, clearance to depth of 6 inches would completely address residual OE hazards. At the rest of the areas, OE would still be left at depth given the use of this option, so clearance to 6 inches would have, at best, a moderate impact. At SEAD-45, it is assumed that the effects of a clearance to only 6 inches would be slight, as there is such a large amount of OE below 6 inches.

TABLE 8.1
SEADS-16 AND -17 (DEACTIVATION FURNACE)
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	2	1	2	1	6	2
Clearance to 6"	1	1	1	2	5	1

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.2
EOD AREA #2
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	2	1	2	1	6	2
Clearance to 6"	1	1	1	2	5	1

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.3
EOD AREA #3
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	3	1	3	1	8	3
Clearance to 6"	2	1	2	2	7	2
Clearance to Depth	1	1	1	3	6	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.4
SEAD-44A (QA FUNCTION TEST AREA)
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	3	1	3	1	8	3
Clearance to 6"	2	1	2	2	7	2
Clearance to Depth	1	1	1	3	6	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.5
SEAD-46 (3.5" ROCKET RANGE)
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	3	1	3	1	8	3
Clearance to 6"	2	1	2	2	7	2
Clearance to Depth	1	1	1	3	6	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.6
GRENADE RANGE
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	3	1	3	1	8	3
Clearance to 6"	2	1	2	2	7	2
Clearance to Depth	1	1	1	3	6	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.7
SEAD-57 (FORMER EOD RANGE)
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	4	1	4	1	10	3
Clearance to 6"	3	1	3	2	9	2
Clearance to Depth	2	1	2	3	8	1
Clearance of OE to Depth by means of Mechanical Sorting	1	2	1	4	8	1

Note: Ranking from best to worst; best=1, worst=4

TABLE 8.8
SEAD-45 (OPEN DETONATION AREA)
RESPONSE ACTION EFFECTIVENESS

ALTERNATIVE	Protection of Public Safety & Environment	Compliance with ARARs	Long-Term Effectiveness	Short-Term Effectiveness	SCORE	RANK
Institutional Controls	4	1	4	1	10	3
Clearance to 6"	3	1	3	2	9	2
Clearance to Depth	2	1	2	3	8	1
Clearance of OE to Depth by means of Mechanical Sorting	1	2	1	4	8	1

Note: Ranking from best to worst; best=1, worst=4

8.2.2.4 In most of those areas where OE was recovered below six inches, clearance to depth using a geophysical method should be sufficient to address the OE hazard. This assumes that the instrument used would detect any piece of ordnance to the maximum depth that it would be buried. The EE/CA results support this theory, as no OE was recovered below what would be the detection limit of the EM-61 used. For example, no 40mm rifle-fired grenades were recovered from more than 12 inches below the ground surface, while the 40mm grenade detection limit of the EM-61 is approximately 18 inches. The one exception to this rule was shot holes in SEAD-45 where 20mm projectiles were found buried below 2 feet. However, where a number of small items are buried together, the combined influence of these items allows for a detection depth greater than that for a single item.

8.2.2.5 The only two sites where clearance to depth of detection would not have a significant impact on remaining OE are SEADs-45 and -57. There are portions of these two sites where the density of buried metal is so great that individual anomalies cannot be distinguished in the data collected. In the areas of extremely high metal density, the only significantly effective alternative would be soil excavation followed by the mechanical sifting of the removed soil. Any OE remaining in the soil would be sorted out during this process. It should be noted that a clearance to the depth of detection would have a significant impact on the OE remaining in areas of these two sites where the density of buried metal allows for the delineation of specific anomalies.

8.2.2.6 Based on this evaluation, the Clearance of OE to Depth by Excavation of Soil and Sorting of OE alternative is the most protective of public safety and the human environment for all of the AOIs, with each of the other alternatives providing decreasing levels of overall protection, depending on the depth and density of OE recovered during the EE/CA. At those sites where OE was found only to 6 inches below the ground surface, and the density of OE was low showing discernable anomalies it is assumed that both of the Clearance to 6 inches and Clearance to the Depth of Detection options would be as effective as Excavation and Sifting.

8.2.3 COMPLIANCE WITH ARARS

Of the alternatives being considered, the only one that would have any significant effect based on the ARARs being considered would be Alternative 5. The excavation and sifting of soil outlined in this alternative offers the most potential for ecological harm due to the activities involved. The other three alternatives being considered are all fairly similar as far as compliance with ARARs is concerned. Therefore, Alternative 5 is ranked lower than the other three alternatives in those areas where it is being considered.

8.2.4 LONG-TERM EFFECTIVENESS

In general, the long-term effectiveness of an alternative will follow the Overall Protection provided by that solution. The more residual ordnance removed from a site, the less

chance there is that any will be encountered at some point in the future. Therefore, the long-term effectiveness ranking are the same as those for Overall Protection.

8.2.5 SHORT-TERM EFFECTIVENESS

For this criterion, the Institutional Controls alternative provides for the greatest protection of workers during the implementation of the alternative with each of the subsequent alternatives providing for lesser degrees of protection. For this reason, the Institutional Controls alternative is ranked as first in short-term effectiveness and Clearance of OE to Depth by Excavation and Sifting is ranked as last.

8.3 IMPLEMENTABILITY

8.3.1 INTRODUCTION

The remaining alternatives for each group of AOIs were also ranked within each of the four criteria within the Implementability category based on a subjective analysis of the merits of each alternative. The results of this analysis are presented in Tables 8.9 to 8.16. Consistent with the methodology outlined above, the preferred alternative is the option with the lowest overall score. In the event of a tie, the most *effective* alternative received the preferred ranking. The explanation of the rankings for the evaluation criteria is provided in the following paragraphs.

8.3.2 TECHNICAL FEASIBILITY

In this category, the alternatives were ranked with the Institutional Controls alternative being the easiest to implement from a technical standpoint and the Clearance of OE to Depth by Excavation and Sorting alternative being the most difficult to implement from a technical standpoint.

8.3.3 ADMINISTRATIVE FEASIBILITY

All of the screened alternatives will require mobilizing crews and equipment to the site. Therefore, there is no appreciable difference in the amount of administrative action that will be needed for any of the alternatives. The four alternatives being screened have been ranked equally as far as administrative feasibility is concerned.

8.3.4 AVAILABILITY OF SERVICES AND MATERIALS

As with administrative feasibility, there is no appreciable difference between the alternatives as far as this category is concerned. All four alternatives have been ranked equally as far as availability of services and materials is concerned.

8.3.5 STAKEHOLDER ACCEPTANCE

Stakeholders typically include the property owner and/or manager, local government agencies, and the local community. The major stakeholders include the property manager, the Army at this point in time, the State of New York, as represented by NYSDEC, and the local communities of Romulus and Varick. Due to the importance of this criterion, stakeholder acceptance has been weighted by a factor of two. Both the property manager, the Army, and the local communities favor those alternatives that will most effectively alleviate the ordnance hazard present at SEDA. Therefore, the most effective alternative as far as ordnance removal is concerned was ranked highest at each area. If two or more factors were equal in ordnance removal effectiveness, priority was given to the alternative that would comply with the wishes of the State of New York. This resulted in rankings favoring those alternatives that alleviated the risk from ordnance and more effectively complied with the ARARs chosen for the Depot.

TABLE 8.9
SEADS-16 AND -17
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	4	7	2
Clearance to 6"	2	1	1	2	6	1

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.10
EOD AREA #2
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	4	7	2
Clearance to 6"	2	1	1	2	6	1

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.11
EOD AREA #3
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	6	9	3
Clearance to 6"	2	1	1	4	8	2
Clearance to Depth	3	1	1	2	7	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.12
SEAD-44A (QA FUNCTION TEST AREA)
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	6	9	3
Clearance to 6"	2	1	1	4	8	2
Clearance to Depth	3	1	1	2	7	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.13
SEAD-46 (3.5" ROCKET RANGE)
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	6	9	3
Clearance to 6"	2	1	1	4	8	2
Clearance to Depth	3	1	1	2	7	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.14
GRENADE RANGE
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	6	9	3
Clearance to 6"	2	1	1	4	8	2
Clearance to Depth	3	1	1	2	7	1

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.15
SEAD-57 (FORMER EOD RANGE)
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	8	11	4
Clearance to 6"	2	1	1	6	10	3
Clearance to Depth	3	1	1	4	9	2
Clearance of OE to Depth by means of Mechanical Sorting	4	1	1	2	8	1

Note: Ranking from best to worst; best=1, worst=4

TABLE 8.16
SEAD-45 (OPEN DETONATION AREA)
RESPONSE ACTION IMPLEMENTABILITY

Alternative	Technical Feasibility	Administrative Feasibility	Availability of Services and Materials	Stakeholder Acceptance	SCORE	RANK
Institutional Controls	1	1	1	8	11	4
Clearance to 6"	2	1	1	6	10	3
Clearance to Depth	3	1	1	4	9	2
Clearance of OE to Depth by means of Mechanical Sorting	4	1	1	2	8	1

Note: Ranking from best to worst; best=1, worst=4

8.4 COST

Tables 8.17 through 8.24 summarize the estimated costs for each of the remaining alternatives at each site. Included in these cost estimates are any upkeep and maintenance fees, if applicable, over a 30-year period following implementation of the alternative. In addition, if the boundary of OE contamination was not clearly defined during the EE/CA, more area has been added to the AOI in question. The amount of extra area was based on a reasonable assumption of where the boundary of contamination should occur. The cost of surveying and clearing this added area has been factored into the estimated costs. Appendix G contains a detailed breakdown of these costs for each alternative.

TABLE 8.17
SEADS-16 AND -17 (DEACTIVATION FURNACE)
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	2	2	$291,923
Clearance to 6"	1	1	$109,408

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.18
EOD AREA #3
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	3	$109,596
Clearance to 6"	2	2	$13,757
Clearance to Depth	1	1	$40,632

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.19
EOD AREA #2
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	2	2	$109,596
Clearance to 6"	1	1	$16,560

Note: Ranking from best to worst; best=1, worst=2

TABLE 8.20
SEAD-44A (QA FUNCTION TEST AREA)
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	3	$162,556
Clearance to 6"	2	2	$2,404,915
Clearance to Depth	1	1	$2,632,650

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.21
GRENADE RANGE
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	3	$3,644,051
Clearance to 6"	2	2	$280,459
Clearance to Depth	1	1	$595,045

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.22
SEAD-46 (3.5" ROCKET RANGE)
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	3	$400,906
Clearance to 6"	2	2	$264,080
Clearance to Depth	1	1	$788,153

Note: Ranking from best to worst; best=1, worst=3

TABLE 8.23
SEAD-57 (FORMER EOD RANGE)
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	4	$1,070,539[1]
Clearance to 6"	2	3	$490,594
Clearance to Depth	1	2	$893,726
Clearance of OE to Depth by means of Mechanical Sorting	1	1	$1,754,984

Note: Ranking from best to worst; best=1, worst=4

[1]Institutional controls alternative is combined with SEAD-45.

TABLE 8.24
SEAD-45 (OPEN DETONATION AREA)
COST COMPARISON

Alternative	Effectiveness	Implementability	Cost
Institutional Controls	3	4	$1,070,539[1]
Clearance to 6"	2	3	$2,682,705
Clearance to Depth	1	2	$5,078,536
Clearance of OE to Depth by means of Mechanical Sorting	1	1	$23,007,064

Note: Ranking from best to worst; best=1, worst=4

[1]Institutional controls alternative is combined with SEAD-57.

SECTION 9

RECOMMEDATIONS AND RECURRING REVIEW

9.1 INTRODUCTION

The recommended response actions have been chosen based on the effectiveness and implementability for each of the alternatives considered at each of the AOIs. If two alternatives were equal according to effectiveness and implementability, then cost was used as the determining factor in choosing which alternative to recommend. Following implementation of the chosen response action alternative, the former Seneca Army Depot will be included in the USACE program for recurring reviews. Recurring reviews will be conducted every five years to evaluate the continued effectiveness of the response action to address public safety risk from UXO.

9.2 RECOMMENDED RESPONSE ACTIONS

9.2.1 INSTITUTIONAL CONTROLS

Institutional controls were not chosen for any of the individual AOIs. However, base wide controls should be implemented in order to properly educate the public about the potential residual hazards of OE that may exist on site. The Institutional Controls recommended in Section 5 are the ones that should be considered for implementation, and Appendix F analyses the effectiveness of all the institutional controls considered for SEDA. Although the Demo Range, the ditches in SEAD-53, and the rumored Indian Creek Burial area have been considered NFA sites, the base-wide Institutional Controls will cover these areas as well.

9.2.2 CLEARANCE TO DEPTH OF 6 INCHES

The Clearance to a Depth of 6 Inches Alternative has been chosen for two areas, SEADs-16 and –17 and EOD Area #2. At both of these areas, OE was found no deeper than 6 inches below the ground surface. Therefore, it is not considered necessary to investigate any deeper than this depth. A complete investigation of the area not cleared during the EE/CA for each AOI (Figures 9.1 and 9.2) using this alternative will be sufficient to remove the majority of the OE that is present in the areas. Should any OE be discovered after the initial survey, possibly due to natural occurrences (i.e. freeze/thaw), the survey may be repeated as part of the recurring reviews.

9.2.3 CLEARANCE TO DEPTH OF DETECTION

9.2.3.1 This alternative is recommended for four of the AOIs that were investigated during the EE/CA fieldwork: EOD Area #3, SEAD-44A, SEAD-46, and the Grenade Range. At each of these areas, OE or UXO items were found below a depth of 6 inches; so a clearance to a depth of 6 inches would not be sufficient to clear the OE that may be present on site. Therefore, geophysical equipment will be used to survey all grids not cleared in the EE/CA. As stated in Section 7.8.4, the geophysical equipment typically used in these types of surveys should be able to detect most OE buried in these AOIs.

9.2.3.2 In both EOD Area #3 and SEAD-46, major features were not surveyed due to a lack of suitable brush cutting equipment and man power. In EOD Area #3, thick brush and trees prevented the investigation of the suspected disposal pit; and the suspected target berm in SEAD-46 was not investigated for the same reason. The response actions suggested for these two areas (Figures 9.3 and 9.4) take brush-clearing considerations into account and will allow for the complete investigation of these features. The response action for SEAD-46 also calls for 39 acres to be surveyed, which is in addition to work already competed. It should be noted that the total area surveyed will be larger than what was originally assumed to be the extent of this area (40 acres) and that this proposed area covers un-surveyed land to the south of EOD Area #3. It is believed that this extra acreage will be sufficient to define and clear the southern boundary of the AOI.

9.2.3.3 It should be noted that OE clearance operations have begun in SEAD-44A. Parsons estimates that approximately 35,000 cubic yards of soil remain to be sifted, and 11 acres of follow up clearance to depth remain to be performed. The complete response alternative for SEAD-44A (Figure 9.5) includes completion of these two tasks.

9.2.3.4 At the Grenade Range, the recommended alternative also includes the clearance to 6 inches of 19 acres surrounding the Grenade Range (Figure 9.6). This recommendation is based on the occurrence of OE within grids on the edge of the Grenade Range. A clearance to 6 inches will alleviate any OE concerns in this area, and will reduce the need for brush clearance in the heavily wooded areas beyond the Grenade Range. Unlike previously discussed areas, all of the grids surveyed during the EE/CA fieldwork will be re-surveyed, as most contained at least some anomalies that were not investigated intrusively.

9.2.4 CLEARANCE TO DEPTH BY MEANS OF EXCAVATION AND MECHANICAL SORTING

9.2.4.1 This alternative is recommended in two areas, SEAD-45 and SEAD-57. Portions of each of these AOIs contain very high concentrations of buried metal, such that individual anomalies cannot be identified in geophysical data. Therefore, it is necessary to completely excavate these areas and sift the soil in order to remove any remaining OE. Once these areas have been excavated, geophysical surveys will be conducted over the excavated portions of the site in order to remove any remaining metal. Areas beyond the excavated sectors should be cleared to depth of detection or to a depth of 6 inches.

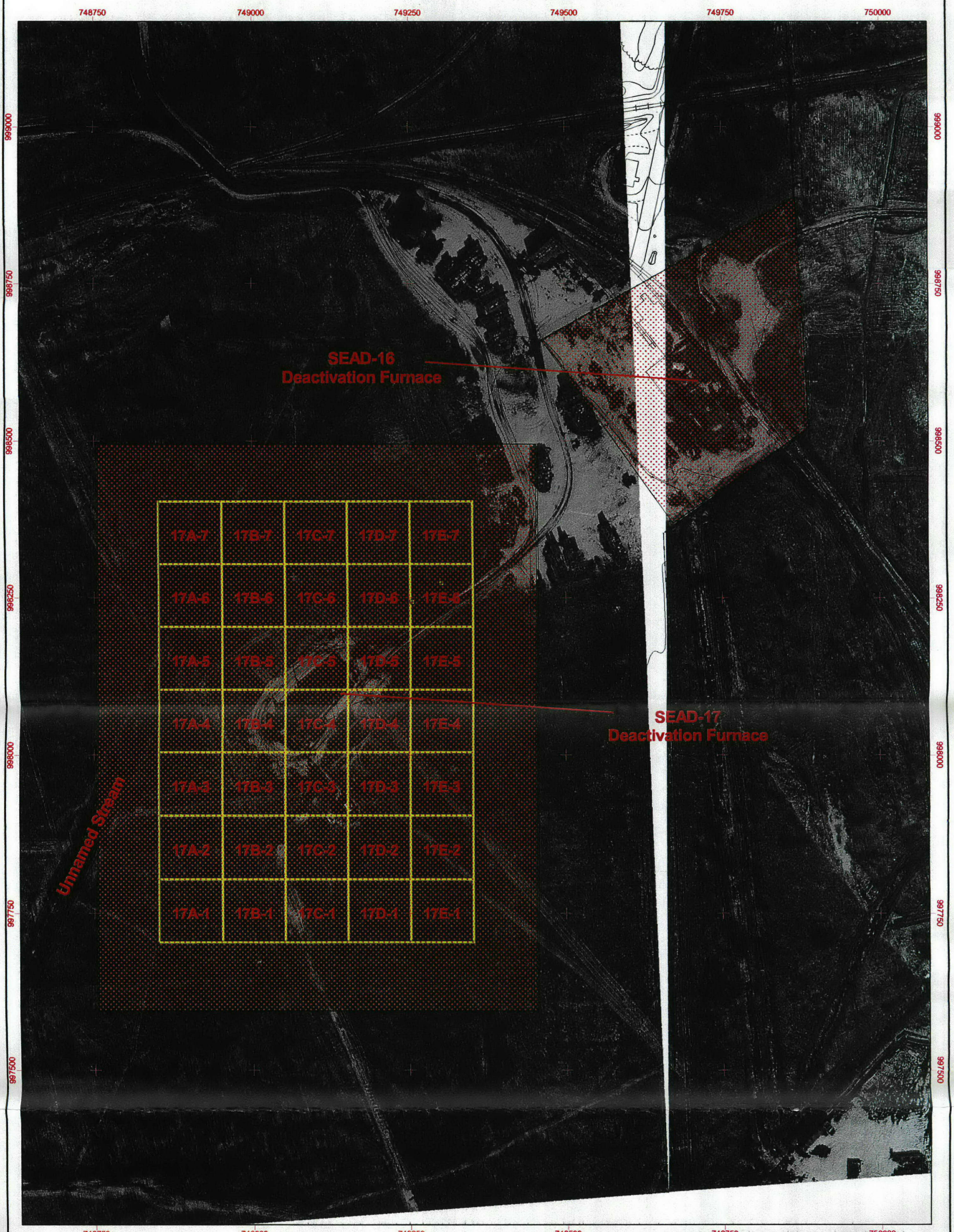
9.2.4.2 The recommended response action in SEAD-45 includes the removal, sifting, replacement, and restoration of 255,000 cubic yards of soil. This estimate assumes excavation of 70 acres to a depth of 2 feet, as shown in red on Figure 9.7. Also, the existing demolition berm is included in the total volume of soil to be sifted. After the material is removed, the recommended response action includes 100% confirmation sampling in this area to assure the complete removal of residual OE/UXO. Although no formal estimate has been made as to the amount of underground metal present in the area to be scraped, the costs used for this operation were derived from the actual costs incurred during the scrape and sift operation at SEAD-23, directly adjacent to SEAD-45. Outside of the excavated area, a total of 220 acres of geophysics will be performed out to a distance of 2000 feet from the Demolition Berm. This includes all of the area outside of the excavated section as very few grids were completely investigated intrusively during the EE/CA. The Clearance to Depth of 6 Inches Alternative is recommended for the 160 acres between the 2000-foot radius and 2500-foot radius from the Demolition Berm. The approximate areas over which each type of operation should be performed are shown on Figure 9.7.

9.2.4.3 Clearance to depth by means of excavation and mechanical sorting is also recommended for SEAD-57 due to high concentrations of metallic debris near the demolition berm. Parsons estimates that 12,000 cubic yards of soil would be excavated over 7 acres to a depth of 1 foot, as shown on Figure 9.8. Confirmation sampling would be required to remove residual ordnance below the depth of excavation. Clearance to depth of detection would be performed on any grids not cleared during the EE/CA that are outside of the excavated area to encompass the 41 acres of the Former EOD range that are accessible with minimal brush cutting. Clearance to depth of 6 inches would be performed on the 20 acres of heavily wooded areas within SEAD-57.

9.3 COMPONENTS OF THE RECURRING REVIEW

9.3.1 The recurring review will include site visit and interviews with property owners, local agencies, and the community. The purpose of the site visit is to determine if there have been any changes in site conditions that would impact public safety. Specific site conditions of concern include new construction, erosion, site activities, and changes in land use. The purpose of the interviews is to determine whether there were any OE incidents over the review period and to evaluate whether institutional control programs implemented as part of the response action are still in place.

9.3.2 As part of this recurring review the property owner(s) would in the interim years self report on activities on the property. This would allow the property owner(s) to address any concerns or report any encounter with UXO that had taken place. These interim reports would allow the Army to monitor and document the use of the property by the property owner(s). These reports would be sent to the Army contact and copied to the *ad hoc* committee placed in charge of reviewing UXO incidents on the transferred property.



OE Items Recovered in SEAD-17

- 20mm
- Fuze

Proposed Area of Clearance

SEAD-17 Grids

997750 / 748750 Grid Coordinates (New York State Plane, Central)

100 0 100 Feet

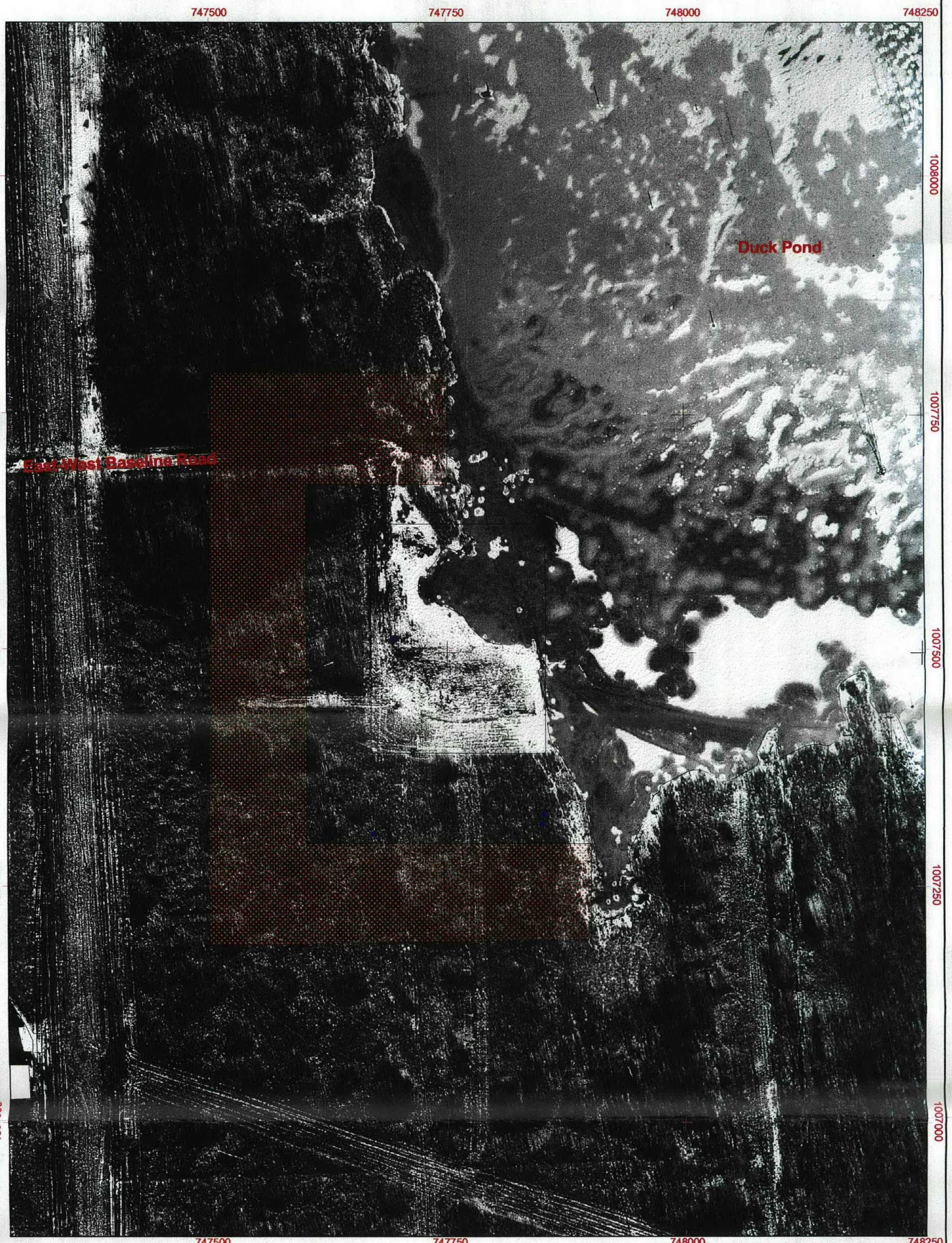
N

Note: Grids investigated intrusively during EE/CA will not be resurveyed

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 9.1 Proposed Areas of Clearance SEADs-16 and -17
DRAWN BY: JEB	
CHECKED BY: BJM	SCALE: 1:1200
SUBMITTED BY: SAS	DATE: JAN 2004
	FILE: SEAD_17.APR
	PROJECT NUMBER: 736703-01000
	PAGE NUMBER: Figure 3.14



OE Items Recovered in EOD 2

- Slap Flare
- Fuze w/ Booster

Proposed Area of Clearance

997750 / 748750 Grid Coordinates (New York State Plane, Central)

N

40 0 40 80 120 Feet

PARSONS

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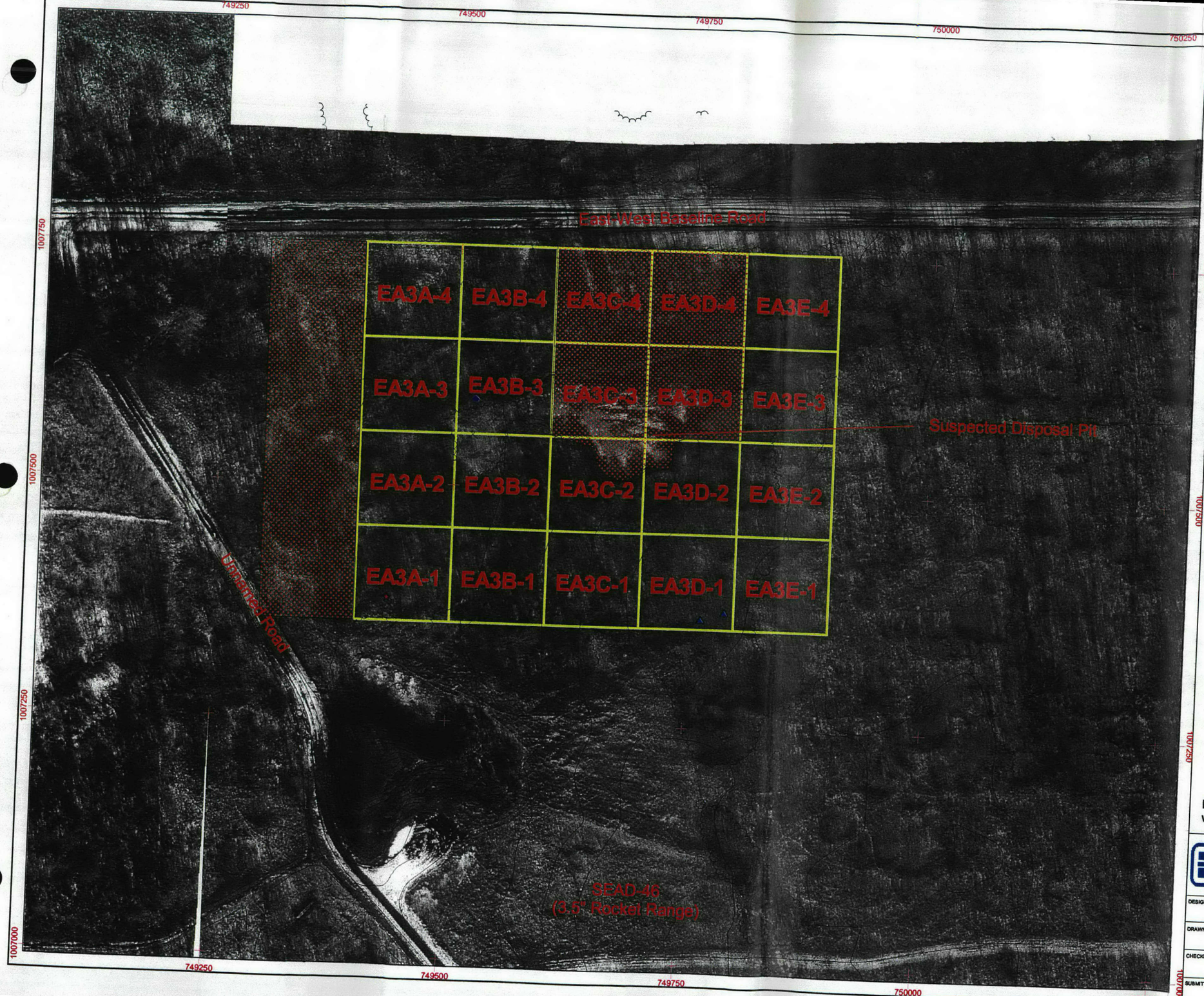
DESIGNED BY: JEB	Figure 9.2 Proposed Area of Clearance EOD Area #2	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 9.2
	FILE: EOD2.APR	



OE Items Recovered in EOD 3
- ★ M2-Fuze lighter
- ▲ Rifle grenade - illum. (Expended)
- ◆ Slap Flare -(Illumination)

Proposed Area of Clearance

EOD 3 Grids

997750 + 748750 Grid Coordinates (New York State Plane, Central)

N

100 0 100 Feet

Note: The area to the south of the EOD Area #3 grids will be surveyed as part of the SEAD-46 response action

PARSONS

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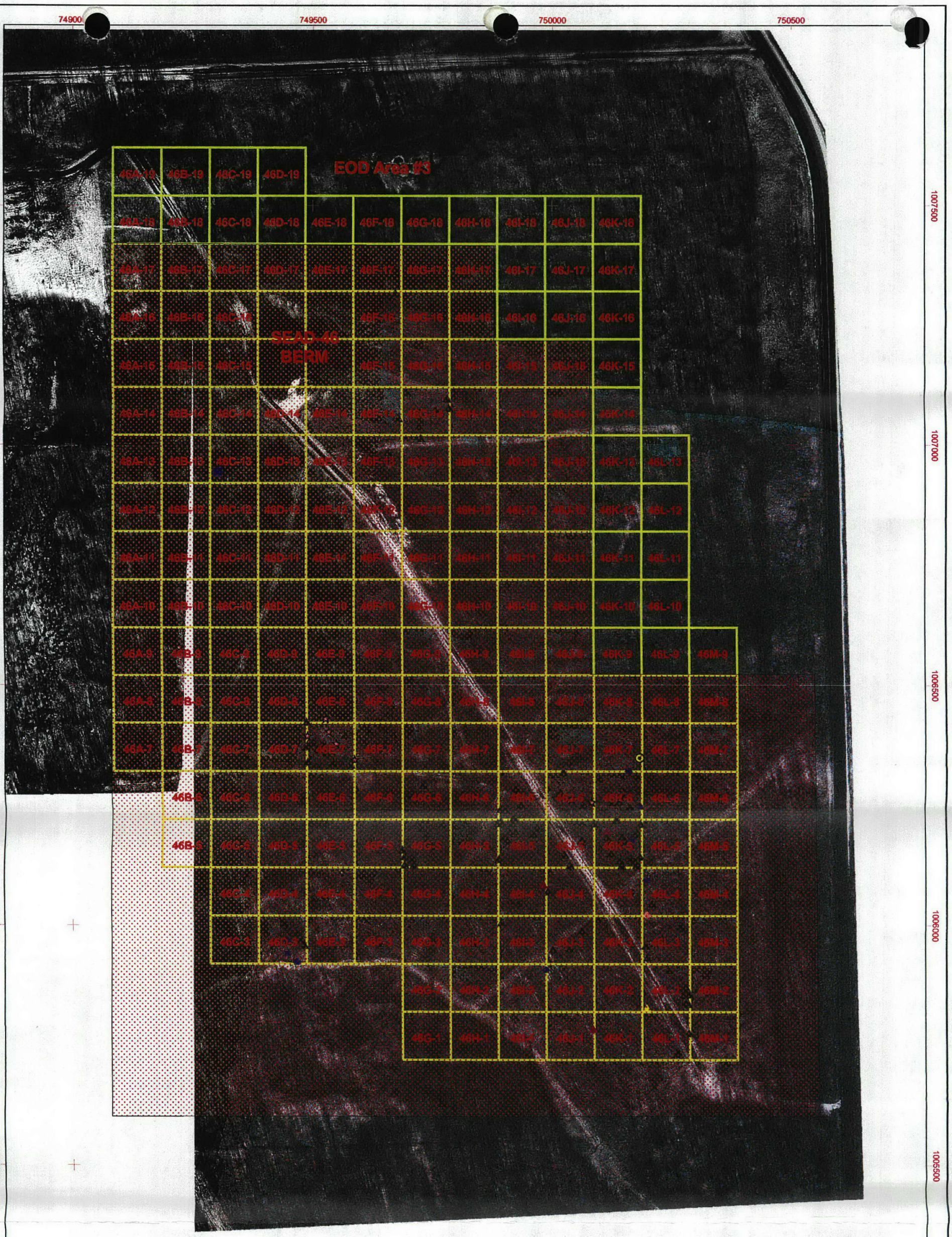
DESIGNED BY: JEB	Figure 9.3 Proposed Area of Clearance EOD Area #3	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1200	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 9.3
	FILE: EOD3.APR	



OE and UXO Items Recovered in SEAD-46

- Fuze
- M385 or M382 40mm Pratice Grenade
- MK2 grenade
- Chemical Smoke Grenade
- 40mm Illumination Flare
- Illumination Flare
- 60mm mortar body
- M83 Cluster Bomb

Proposed Area of Clearance

SEAD-46 Grids

997750 748750 Grid Coordinates (New York State Plane, Central)

100 0 100 200 300 Feet

N

Note: Grids investigated intrusively during the EE/CA will not be re-surveyed

PARSONS

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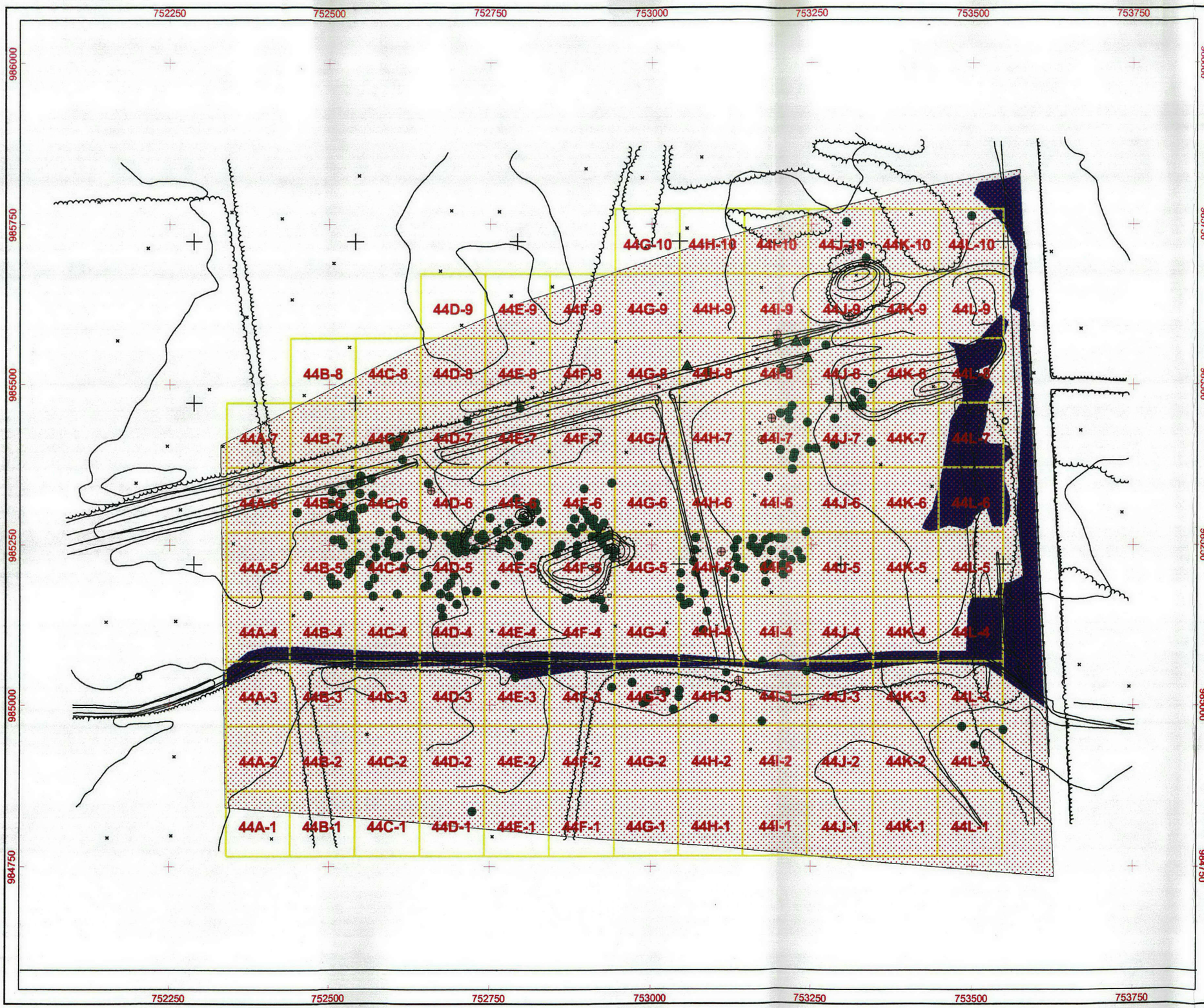
DESIGNED BY: JEB	Figure 9.4 Proposed Area of Clearance SEAD-46 (3.5" Rocket Range)		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:2400	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 9.4
	FILE: SEAD_46.APR		



OE and UXO Items Recovered in SEAD-44A

- Illumination Flare
- M54 Chemical Smoke Grenade
- M385 40mm Pratice Grenade

Proposed Area of Clearance

SEAD-44A Grids

Approximate Extent of Stream and Ponded Water

753750 / 985750 Grid Coordinates (New York State Plane, Central)

All of the OE and UXO items recovered by Parsons on the north side of the stream in SEAD-44A were items left after the 1-foot scrape performed by EODT and Sessler

N

50 0 50 100 150 200 250 Feet

Note: Grids investigated intrusively during the EE/CA will not be re-surveyed

PARSONS

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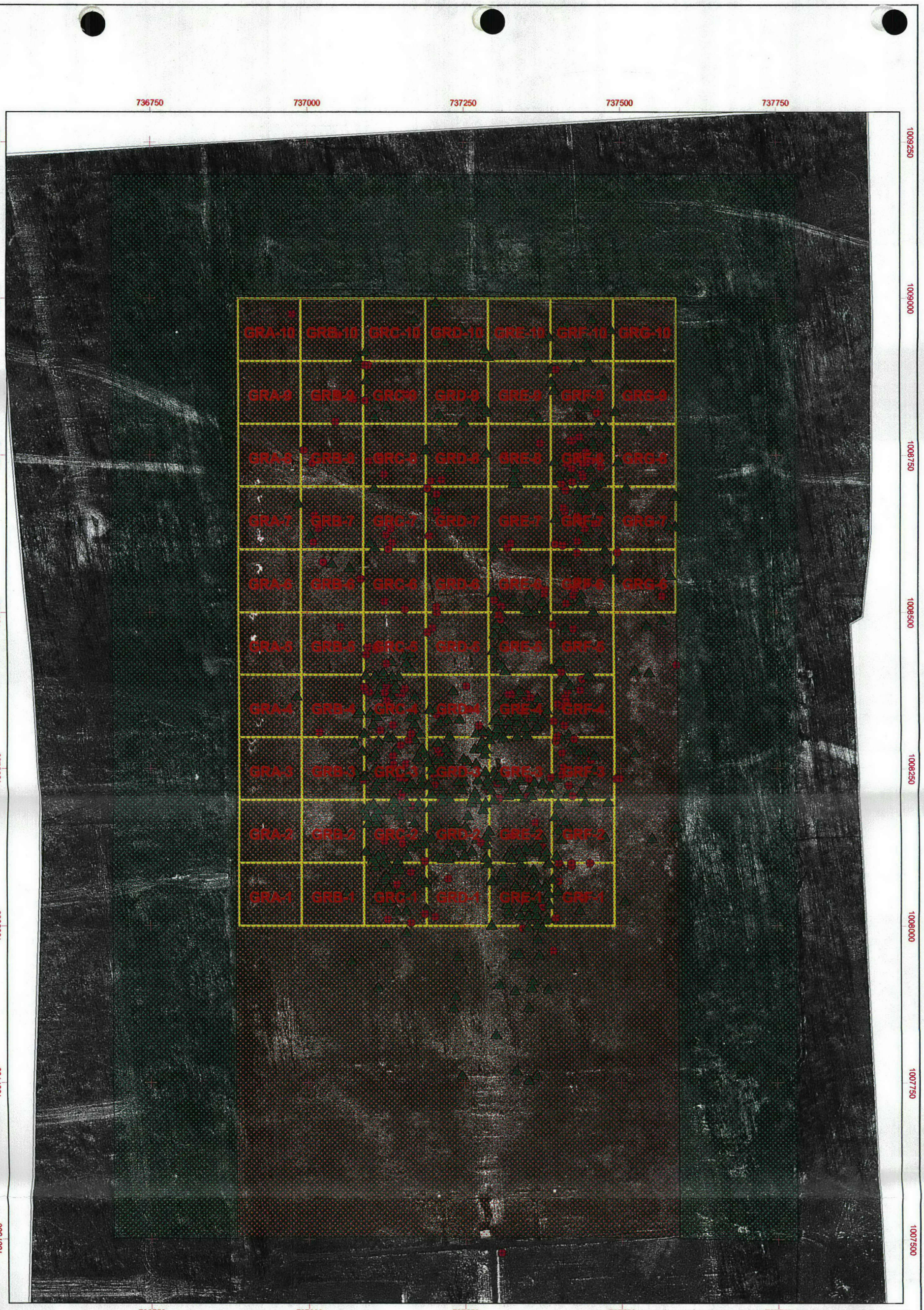
DESIGNED BY: JEB	Figure 9.5 Proposed Area of Clearance SEAD-44A		
DRAWN BY: JEB			
CHECKED BY: BJM	SCALE: 1:1800	PROJECT NUMBER: 736703-01000	
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER:	Figure 9.5
	FILE: SEAD_44A.APR		



OE and UXO Items Recovered in Grenade Range

- M73-35mm Subcaliber Pratice Rocket
- M382 or M385-40mm Pratice Grenade
- Proposed Area of Clearance to 6"
- Proposed Area of Clearance to Depth of Detection
- Grenade Range Grids
- 997750 / 748750 Grid Coordinates (New York State Plane, Central)

N

100 0 100 200 Feet

PARSONS

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DESIGNED BY: JEB	Figure 9.6 Proposed Areas of Clearance Grenade Range	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:1800	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 9.5
	FILE: GR_RNG.APR	

Proposed Area of Clearance by Excavation and Mechnical Sifting

This alternative assumes the removal of 70 acres of soil to a depth of 2 feet and the existing demo berm (255,000 cubic yards).

Proposed Area of Clearance to Depth of Detection

Proposed Area of Clearance to Depth of 6 Inches

997750
748750 Grid Coordinates (New York State Plane, Central)

N

400 0 400 800 Feet

PARSONS

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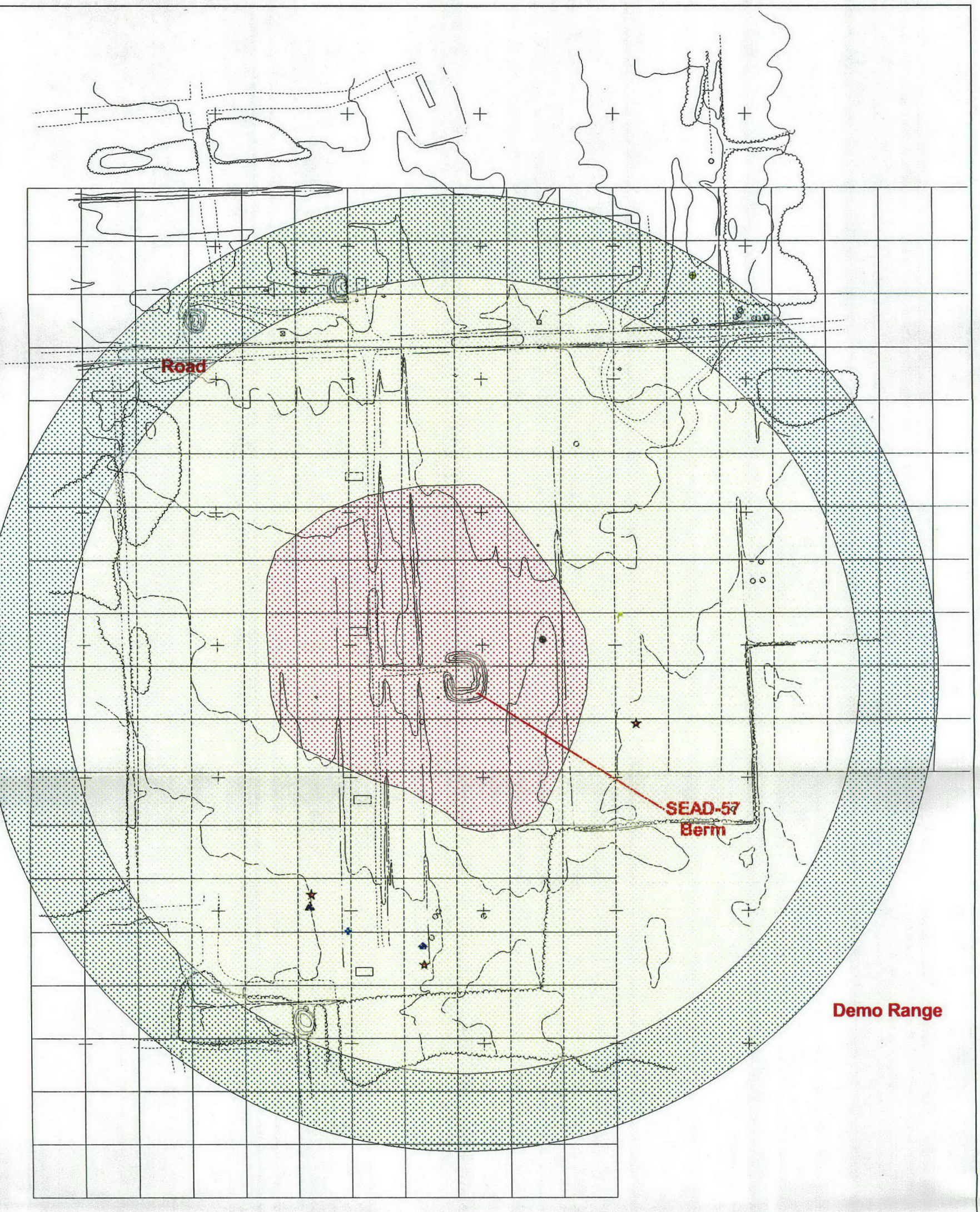
DESIGNED BY: JEB	Figure 9.7 Proposed Areas of Clearance SEAD-45 (Open Detonation Area)
DRAWN BY: JEB	
CHECKED BY: SAS	SCALE: 1:4800 — PROJECT NUMBER: 736703-01000
SUBMITTED BY: BJM	DATE: JAN 2004 — PAGE NUMBER: Figure 9.7
	FILE: SEAD_45REM.APR



Proposed Area of Clearance by Excavation and Mechanical Sorting

Proposed Area of Clearance to Depth of Detection

Proposed Area of Clearance to 6"

997750 + 748750 Grid Coordinates (New York State Plane, Central)

N

100 0 100 200 Feet

PARSONS

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE CENTER

DESIGNED BY: JEB	Figure 9.8 Proposed Areas of Clearance SEAD-57 (Former EOD Range)	
DRAWN BY: JEB		
CHECKED BY: BJM	SCALE: 1:2400	PROJECT NUMBER: 736703-01000
SUBMITTED BY: SAS	DATE: JAN 2004	PAGE NUMBER: Figure 9.8
	FILE: SEAD_57.APR	

SECTION 10

REFERENCES

Army Regulation 385-64, *Ammunition and Explosives Safety Standards,* 28 Nov 1997, revised 1 Feb 2000.

Code of Federal Regulations (CFR), 1993. *National Oil and Hazardous Substances Pollution Contingency Plan (NCP).* 40 CFR 300.415, 7/93.

Engineering Science, Inc., September 1994. *SWMU Classification Report, Seneca Army Depot Activity.* Boston, MA. Prepared for U.S. Army Engineer Division, Huntsville and Seneca Army Depot.

Naval EOD Technology Division, 1999. *ORDATA II, Version 1.0, Enhanced International Deminers' Guide to UXO Identification, Recovery, and Disposal.* Indian Head, MD.

Parsons Engineering Science, Inc., June 2000. *Work Plan, Ordnance and Explosives Engineering Evaluation and Cost Analysis; Seneca Army Depot Activity, Romulus, New York.* Prepared for U.S. Army Corps of Engineers Huntsville Center.

Parsons Engineering Science, Inc., April 2000. *Site Specific Geophysical Proveout, Seneca Army Depot Activity (SEDA), Engineering Evaluation Cost Analysis (EE/CA),* Canton, MA. Prepared for U.S. Army Corps of Engineers, Huntsville Center.

Parsons Engineering Science, Inc., December 1995a. *Expanded Site Inspection, Seven High Priority SWMUs, SEAD 4, 16, 17, 24, 25, 26, and 45.* Boston, MA. Prepared for U.S. Army Engineer Division, Huntsville and Seneca Army Depot.

Parsons Engineering Science, Inc., December 1995b. *Expanded Site Inspection, Three Moderate Priority SWMUs, SEAD 11, 13, and 57.* Boston, MA. Prepared for U.S. Army Engineer Division, Huntsville and Seneca Army Depot.

Parsons Engineering Science, Inc., December 1995c. *Draft Final, Expanded Site Inspection, Eight Moderately Low Priority AOCs, SEADs 5, 9, 12(A and B), (43, 56, 69), 44(A and B), 50, 58, and 59.* Boston, MA. Prepared for U.S. Army Engineer Division, Huntsville and Seneca Army Depot.

U.S. Army Corps of Engineers, St. Louis District, December 1998. *Archive Search Report, Findings, Seneca Army Depot, Romulus, Seneca County, New York.*

Woodward-Clyde Federal Services, March 1997. *U.S. Army Base Realignment and Closure 95 Program, Environmental Baseline Survey Report, Seneca Army Depot Activity, New York.* Denver Colorado. Prepared for U.S. Army Corps of Engineers, New York and Seattle District.

APPENDICES

APPENDIX A

SCOPE OF WORK

APPENDIX A

ANNEX ___

SCOPE OF WORK
FOR
ORDNANCE AND EXPLOSIVE (OE)
ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
AT
SENECA ARMY DEPOT ACTIVITY

1.0 BACKGROUND AND OBJECTIVE

1.1 The work required under this Scope of Work (SOW) falls under the Defense Environmental Restoration Program (DERP) and the Base Realignment and Closure (BRAC) program. Ordnance and Explosives (OE) may exist on property that is currently owned by the Department of Defense and due to be transferred. This action will be performed in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Sections 104 and 121; Executive Order 12580; the National Contingency Plan (NCP). In accordance with the above, no federal, state or local permits are required, nor will be obtained, for actions (including on-site destruction of unexploded ordnance (UXO)) that may be required. However, substantive permit requirements shall be fulfilled.

1.2 OE is a safety hazard and may constitute danger to site personnel and the local population if improperly managed. All activities involving work in areas potentially containing unexploded ordnance hazards shall be conducted in full compliance with CEHNC, USACE, DA and DoD requirements regarding personnel, equipment and procedures. 29 CFR 1910.120 shall apply to all actions taken at this site.

1.3 The objective of this delivery order is for the A-E to prepare an Engineering Evaluation/Cost Analysis (EE/CA) report that allows and documents meaningful stakeholder participation; that characterizes ordnance and explosives (OE) nature, location and concentration; that provides a description of the OE related problems affecting human use of the site; that identifies and analyzes reasonable risk management alternatives; and that provides a convenient record of the process for use in final decision making and judicial review, if necessary.

1.4 Personnel assigned to the project shall meet the qualification requireements listed in DID ot025d.

2.0 INTRODUCTION

2.1 Location. SEDA is a US Army facility located in Seneca County, New York. SEDA occupies approximately 10,600 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

2.2 Regulatory Status. SEDA was included on the Federal Facilities National Priorities List on 13 July 1989. Consequently, all work to be performed under this contract shall be performed according to the Federal Facilities Agreement in effect for Seneca Army Depot.

2.3 Previous Investigations. Previous investigations have been performed at SEDA. An "Archive Search Report" (Reference 6.21) was conducted by the U.S. Army Corps of Engineers, St. Louis District, in 1998. The purpose of the ASR was to identify areas of the depot that might be contaminated with Ordnance and Explosives (OE).

2.4 Areas of Focus. The sites of focus in this effort are:

Former Liquid Propellant Storage Area (SEAD-43)

Former QA Function Test Range and Associated Pits (SEAD-44A)

Former EOD Range (SEAD-57)-approx. 58 acres;

Open Burning Grounds (SEAD-23)

Abandoned and Existing Deactivation Furnaces (SEAD-16 and SEAD-17)

Open Detonation Grounds (SEAD-45)-approx. 60 acres.

Demo Range (No SEAD designation)- Site is Item 3 on page 7-2 of the ASR-approx. 40 acres;

Burial Area Near Indian Creek (No SEAD Designation)-Site is Item 5 on page 7-3 of the ASR-approx. 2 acres;

Grenade Range (No SEAD Designation)-Site is Item 7 on page 7-3 of the ASR-approx. 15 acres;

Igloo Area (SEAD-53)-approx. 6500 acres;

Small Arms Range/3.5" Rocket Range (SEAD-46)-approx. 40 acres;

EOD Area #3 (No SEAD Designation)-Site is Item 11 on page 7-4 of the ASR-approx. 5 acres;

EOD Area #2 (No SEAD Designation)-Site is Item 12 on page 7-4 of the ASR-approx. 5 acres;

3.0 SPECIFIC REQUIREMENTS

3.1 (Task 1) - Site Visit & Records Review. The A-E shall make a site visit, review pertinent records and interview personnel knowledgeable of site conditions. The purpose of this task is to permit the A-E's staff with direct project responsibility to gain necessary information about site conditions. It is not intended that this task be a "records locating task " where new information is located or developed. An abbreviated Site Safety and Health Plan (ASSHP) must be prepared by the A-E and submitted to the Contracting Officer for review and approval prior to the visit. Site visitors to areas potentially contaminated with OE must be escorted by a qualified UXO specialist, provided by the A-E. The Contracting Officer will provide a generic ASSHP for the A-E to site-adapt. The A-E shall ensure that the site visit is fully coordinated and that all members of the site visit team maintain compliance with the ASSHP.

3.2 (Task 2) - Geophysical Test Plot. The A-E shall, on a geophysical test plot at the site designed and established by the A-E and the Government, test various geophysical methods, equipment and personnel for use at the individual sites in order to establish the methods, equipment and procedures best suited to each site. A separate test plot for each site is not required. One effort, to include seed OE items expected at all sites, shall suffice. The

A-E shall use the information gathered in this phase of work to evaluate the relative efficiencies of potentially appropriate geophysical investigation procedures. Afterwards, the A-E shall propose and justify specific geophysical methods, equipment and personnel appropriate and necessary to accomplish the required geophysical investigations. The proposed geophysical methods must be clearly based upon site-specific conditions, instrument capabilities, and project goals.

3.3 (Task 3) - EE/CA Work Plan. The A-E shall prepare an EE/CA Work Plan in accordance with TAB EECA001 (attached).

3.4 Site Investigation and Sampling. The A-E shall characterize the site by implementing the work described in the Project Work Plans and including, but not necessarily limited to, the following activities. Each of the four subtasks represented in paragraphs 3.4.1 through 3.4.4 shall be completed for each of the sites involved:

3.4.1 (SubTask #.1) - Surface Preparation, OE Identification and Removal. The A-E shall provide all necessary qualified personnel and equipment to perform surface preparation, as well as surface OE identification, removal and disposal on the site in anticipation of site activities scheduled to occur under this contract. The A-E shall perform the minimum amount of work necessary to clear the areas of vegetation, surface OE and OE scrap where these impede the progress, effectiveness or safety of the geophysical investigation team. All OE-related activities shall be performed in accordance with applicable sections of the approved work plan.

3.4.2 (SubTask #.2) - Geophysical Investigation and Evaluation. The A-E shall implement geophysical investigations as described in the approved Work Plan and DID ot005-05.

3.4.2.1 Investigation. The total cumulative area to be geophysically investigated and evaluated under this SOW consists of the acreages discussed later in this SOW for each site. The actual number and location of grids may increase or decrease based upon conditions encountered in the field, if so directed by the Contracting Officer.

3.4.2.2 Evaluation. After the site is geophysically mapped, the A-E shall utilize a qualified geophysicist to check and evaluate the geophysical data collected. The geophysicist shall make a professional determination regarding the identification of anomalies at the site. Based on this determination, the A-E shall provide a "dig-sheet" showing predicted location and character of all suspected anomalies to the CEHNC Project Manager. In addition, the A-E shall continually compare predicted results with actual results so that the A-E's geophysical evaluation methodology is constantly refined over the life of the project.

3.4.2.3 Anomaly Selection. Note that not all geophysical anomalies meeting the criteria to be considered a potential UXO will be dug. Representative anomalies will be excavated in order to characterize geophysical anomalies and to provide information necessary to estimate location, concentration and nature of UXO present at the site.

3.4.2.4 Data Format and Storage. The A-E shall utilize an appropriate data format and storage system for geophysical mapping data that is consistent with CEHNC computer/CADD systems in accordance with TAB 009 and as described in the approved Work Plan.

3.4.3 (SubTask #.3) Intrusive Investigations (OE Sampling). The A-E shall, utilizing qualified personnel IAW DID OT-025, implement site OE sampling as specified in the approved work plan. This task shall be accomplished as follows:

3.4.3.1 OE Access, Evaluation and Management. The A-E shall provide all necessary qualified personnel and equipment to perform surface and subsurface OE access, evaluation and management.

3.4.3.2 Accessing Anomalies. The A-E shall access anomalies identified by the geophysical investigations and as directed by the Contracting Officer. The A-E shall, using qualified UXO personnel, determine whether the OE can be moved or if it must be destroyed in-place. This is a safety-driven decision that will be based solely on DoD munitions safety standards and requirements.

3.4.3.3 OE Destruction. The A-E shall be responsible for the destruction of all UXO encountered during site investigations and characterizations utilizing qualified personnel and in accordance with all aspects of the project Work Plan. The A-E shall establish in the Work Plan a method of disposal for all OE.

3.4.3.4 Backfilling Excavations. All access/excavation/detonation holes shall be backfilled by the A-E. The A-E shall restore such areas to their prior condition.

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

3.4.3.6 DD Form 1348-1. The A-E shall complete a DD Form 1348-1 as turn-in documentation for inert OE/Ordnance-Related Scrap (ORS) located and removed during the performance of this task order. Instructions for completing this form are contained in the Defense Utilization and Disposal Manual, DoD 4160.21-M. The Senior UXO Supervisor shall sign a certificate as follows:

"I certify that the property listed hereon has been inspected by me and, to the best of my knowledge and belief, contains no items of a dangerous nature."

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

3.4.3.7 UXO Quality Control (QC) Specialist. The individual performing the UXO QC shall not be involved in the performance of other OE field tasks. UXO QC shall be a separate function and is not envisioned as a full-time position. As outlined in DID OT-25, the UXO QC Specialist shall meet the minimum prerequisites of an UXO Supervisor and have the documented training, knowledge and experience necessary to implement the A-E's QC plan. Any exceptions must be approved by the Contracting Officer.

3.4.3.8 Quality Assurance Sampling Areas. In order to evaluate the effectiveness of the geophysical investigation and evaluation methods utilized by the A-E, the Contracting Officer may direct the A-E, government personnel, or an independent contractor provided by the government, to independently map, locate and access all detected subsurface anomalies at locations as directed.

3.4.4 (SubTask #.4) - Location Surveys and Mapping. The A-E shall perform topographic and location surveys as described in the approved Work Plan and in accordance with DID ot005-07.

3.5 (Task 4) OE Characterization at the Former EOD Range (SEAD-57) -The A-E shall characterize the Former EOD Range (SEAD-57). This site consists of approximately 58 acres, of which ***19*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***83*** 100' by 100' grids.

3.6 (Task 5) OE Characterization at the Open Detonation Grounds (SEAD-45). The A-E shall characterize the Open Detonation Grounds (SEAD-45). This site consists of approximately 60 acres, of which ***19*** acres will be geophysically investigated and evaluated. The actual investigation/ evaluation area will consist of ***83*** 100' by 100' grids.

3.7 (Task 6) OE Characterization at the Demo Range (No SEAD designation- Site is Item 3 on page 7-2 of the ASR) - The A-E shall characterize the Former Demo Range. This site consists of approximately 40 acres, of which ***18*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***78*** 100' by 100' grids.

3.8 (Task 7) OE Characterization at the Former Burial Area Near Indian Creek (No SEAD Designation - Site is Item 5 on page 7-3 of the ASR) - The A-E shall characterize the Former Burial Area Near Indian Creek. This site consists of approximately 2 acres, of which 2 acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of 9 100' by 100' grids.

3.9 (Task 8) OE Characterization at the Former Grenade Range (No SEAD Designation)- Site is Item 7 on page 7-3 of the ASR) -The A-E shall characterize the Former Grenade Range . This site consists of approximately 15 acres, of which ***12*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***53*** 100' by 100' grids.

3.10 (Task 9) OE Characterization at the Small Arms Range/3.5" Rocket Range (SEAD-46)- The A-E shall characterize the Former Small Arms Range/3.5" Rocket Range (SEAD-46). This site consists of approximately 40 acres, of which ***18*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***78*** 100' by 100' grids.

3.11 (Task 10) OE Characterization at the Former EOD Area #3 (No SEAD Designation - Site is Item 11 on page 7-4 of the ASR) - The A-E shall characterize the Former EOD Area #3. This site consists of approximately 5 acres, of which ***5*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***22*** 100' by 100' grids.

3.12 (Task 11) OE Characterization at the Former EOD Area #2 (No SEAD Designation - Site is Item 12 on page 7-4 of the ASR) -The A-E shall characterize the Former EOD Area #2. This site consists of approximately 5 acres, of which ***5*** acres will be geophysically investigated and evaluated. The actual investigation/evaluation area will consist of ***22*** 100' by 100' grids.

3.13 (Task 12) ***OE Characterization of the D Row Drainage Ditches at the Igloo Area (SEAD-53) - The A-E shall characterize the D Row roadside drainage ditches in the Igloo Area (SEAD-53). This site consists of approximately 5 acres, of which all will be geophysically investigated and evaluated.*** The actual investigation/evaluation area will consist of ***270*** 100' by 100' grids. It should be noted that seventeen of the igloos are still being used.

3.14 (Task 13) Consolidation of Previous Characterization Sampling Results for the Former Liquid Propellant Storage Area (SEAD-43). The A-E shall take all data furnished by the Government and consolidate it into an EE/CA format recommending the appropriate and defensible remedial alternative. In addition to recent OE sampling done, the A-E shall base conclusions on data obtained previously at the site during ESI/RI/FS investigations performed by Parsons (Boston).

3.15 ***(Task 14) Additional OE Characterization.***

3.15.1 (Task 14.1) OE Characterization of the Former QA Function Test Range and Associated Pits (SEAD-44A). Previous data has demonstrated that an OE removal is required at this site. Additionally, as the current removal progresses, the A-E shall provide the personnel and equipment required to perform verification sampling at the site. It is envisioned that the A-E will perform 3, 5-acre (each) verification efforts (total of 15 acres or 65 grids) and verify 10 acres (44 grids) on the outskirts of the 15 acre site proper, as well. Results from the initial characterization and verification efforts shall be presented and conclusions formally summarized in the EE/CA report document.

3.15.2 (Task 14.2) OE Characterization of the Open Burning Grounds (SEAD-23). An OE removal is currently being completed (although demobed at this time) at the subject site. The A-E shall provide all equipment and personnel required to perform verification sampling on 35 acres of the site, including a roughly 1.5 acre portion that will be used as a permanent stockpile area. Results from verification effort shall be presented and conclusions formally summarized in the EE/CA report document.

3.15.3 (Task 14.3) OE Characterization of the Abandoned (SEAD-16) and Existing (SEAD-17) Deactivation Furnaces. The A-E shall provide all equipment and personnel required to perform OE characterization on roughly 10 acres of these two sites. Results from this characterization effort shall be presented and conclusions formally summarized in the EE/CA report document.

3.16 (Task 15) Institutional Analysis. The A-E shall perform an institutional analysis in accordance with TAB EECA006 (attached).

3.17 (Task 16) Risk Evaluation. The A-E shall utilize a CEHNC computer program, *OECert*, to determine the baseline public risk and the predicted risk reduction for each removal alternative evaluated in the EE/CA. The A-E shall write a risk report in accordance with the OECert Standing Operating Procedure that supports the EE/CA report and that determines the baseline public risk and the resultant public risk for each alternative under consideration. The A-E shall ensure that qualified personnel collect the required data, operate the computer model and write the risk report in accordance with *CEHNC 1115-3-86, "Ordnance and Explosives Cost-Estimating Risk Tool (OECert) Standing Operating Procedure (SOP)".*

3.17.1 Site UXO Statistical Report. As part of the risk evaluation report the A-E shall write a statistical report that shows how the UXO densities were determined. The A-E shall use the UXO Calculator methodology for determining a range of sector densities unless a prior statistical method has been approved by the Government.

3.18 (Task 17) Prepare EE/CA Report. The A-E shall prepare and submit an EE/CA report fully documenting the field work and subsequent evaluations and recommendations made by the A-E, as described in DID ot090. The text portions of the report shall be fully supported with accompanying maps, charts, and tables as necessary to fully

describe and document all work performed and all conclusions and recommendations presented.

3.19 (Task 18) Prepare Action Memorandum. The A-E shall, based upon close consultation with the Contracting Officer, prepare an Action Memorandum in accordance with applicable CEHNC guidance documents.

3.20 (Task 19) Community Relations Support. The A-E shall attend and participate in public meetings as directed by the Contract Officer. The support shall include preparation and delivery of briefings, graphics and presentations, and participation in site visits. The A-E shall assume two public meetings lasting two days each (including travel). The A-E shall assume that two persons will be in attendence at each.

3.21 (Task 20) Meetings and Project Management. The A-E shall perform project management functions as necessary to maintain project control and to meet required reporting requirements. The A-E shall assume six contract meetings lasting two days each (including travel). Three of those meetings will be held at Seneca ADA and three will be held at HNC. The A-E shall assume that two persons will be in attendence at each.

3.22 (Task 21, Option 1) - Prepare Explosives Safety Submission (ESS). If the Action Memorandum decision is for no further action (NOFA) or Institutional Controls, the A-E shall, if directed by the Contracting Officer, prepare an ESS for coordination an approval by the Department of Defense Explosive Safety Board. The A-E shall use the format specified in Reference 6.9.

4.0 SUBMITTALS AND CORRESPONDENCE

4.1 Format and Content of Engineering Reports. Engineering Reports presenting all data, analyses, and recommendations shall be prepared and submitted by the A-E. All drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features. The contents and format of the engineering reports shall be arranged in accordance with all pertinent guidance documents. When drawings are required, data may be combined to reduce the number of drawings. Reports shall consist of 8-1/2 inch by 11 inch pages with drawings other than the construction drawing folded, if necessary, to this size. A decimal paragraphing system shall be used, with each section and paragraph of the reports having a unique decimal designation. The report covers for each submittal shall consist of durable 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A report title page shall identify the site, the A-E, the Corps of Engineers District, Huntsville Center, and the date. The A-E identification shall not dominate the title page. All data, including raw analytical and electronic data, generated under this delivery order are the property of the DoD and the government has unlimited rights regarding its use.

4.2 Computer Files. All final text files generated by the A-E under this contract shall be furnished to the Contract Officer in Microsoft Word 6.0/95 or higher, IBM PC-compatible format. All final CADD/GIS data, design drawings and survey data generated by the A-E under this delivery order shall be submitted in the proper format and media that will permit their loading, storage, and use without modification or additional software on the Huntsville Center CADD/GIS workstations.

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

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

4.5 Draft Reports. Each page of draft reports shall be stamped "DRAFT". Submittals shall include incorporation and notation of all previous review comments accepted by the A-E.

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

4.7 Minutes of Meetings. Following the presentation, the A-E shall prepare and submit minutes of all meetings attended to the Contract Officer or his representative within 10 calendar days .

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

4.9 Project Control and Reporting. The A-E shall prepare and submit a Work, Data and Cost Management plan IAW DID ot-005-08. The plan shall be includedas part of chapter 3 of the Work Plan.

4.10 Monthly Progress Report. The A-E shall prepare and submit a monthly Cost/Schedule Status Report (CSSR) IAW DID OT-035 describing the work performed since the previous report, work currently underway and work anticipated. This report shall show the earned value curves for the amount of funds obligated, planned and actually spent to date on the project. This will allow the continuous tracking of the actual cost versus the proposed cost at the beginning of the project. The report shall state whether current work is on schedule. If the work is not on schedule, the A-E shall state what actions are anticipated in order to get back on-schedule. The report shall be submitted not later than the 10th day of the following month. Additionally, a monthly status report shall be submitted IAW DID O080

4.11 Public Affairs. The A-E shall not publicly disclose any data generated or reviewed under this task order. The A-E shall refer all requests for information concerning site conditions to the local Corps District's Public Affairs Office, with a copy furnished to the CEHNC Project Manager. Reports and data generated under this task order are the property of the DoD and distribution to any other source by the A-E, unless authorized by the Contracting Officer, is prohibited.

4.12 Addresses. The following addresses shall be used in mailing submittals:

ADDRESSEE	QUANTITY
Commander US Army Corps of Engineers, Huntsville Center ATTN: CEHNC-OE-DC (Mr. Fred Wissel) PO Box 1600 Huntsville, Alabama 35807-4301	4
Commander Seneca Army Depot Activity ATTN: Engineering and Environmental Office (Mr. Absolom) 5786 State Route 96, Romulus, New York, 14541-5001	10
Rick Sprague/Mark Bellis	1
IOC - Randy Nida	1
AEC John Buck	1

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

DOCUMENT	DATE DUE
General Requirements	
Assumed Notice To Proceed	29 Sep 99
ASSHP	1 Oct 99
Draft Geophysical Test Plot Plan	8 Oct 99
A-E Receive Comments from Govt.	15 Oct 99
Final Geophysical Test Plot Plan	22 Oct 99
Draft EE/CA Work Plan	22 Oct 99
A-E Receive Comments from Govt.	5 Nov 99
Final EE/CA Work Plan	19 Nov 99
A-E Receive Approval to Begin Field Work	24 Nov 99
OE Characterization	
Draft EE/CA Report	21 Jul 00
A-E Receive Comments from Govt.	11 Aug 00
Final EE/CA Report	29 Sep 00

APPENDIX B

EODT REPORT
SEAD-43 GEOPHYSICAL INVESTIGATION

CEHNC-OE-DC 6 April 2000

MEMORANDUM FOR Commander, Seneca Army Depot Activity,
ATTN: SIOSE-BEC (Mr. Stephen Absolom),
5786 State Route 96, Romulus, NY 14541-5001

SUBJECT: Ordnance and Explosives (OE) Characterization Results and Recommendations for the Old Missile Propellant Test Laboratory (SEAD-43/56 and 69), Seneca ADA

1. The U.S. Army Engineering and Support Center, Huntsville, has received and reviewed the results from the OE Characterization efforts, performed by EODT, Inc., at SEAD-43/56 and 69. Biased sampling was performed in the areas most likely to contain burial. Characterization was conducted on the surface and subsurface (to a depth of two feet).

2. No DOD Action Indicated (NDAI) is recommended for subject site. This recommendation is based on the enclosed Fact Sheet (encl 1) and Characterization Letter Report (encl 2). Based upon the findings, this area exhibits no signs of OE contamination or drums of propellant and is suitable for release for any purpose intended.

3. If you have any questions or concerns, please call me at 256-895-1510 or Mr. Kevin Healy, Project Engineer, at 256-895-1627.

FOR THE COMMANDER:

Original signed by
C. David Douthat

2 Encls

C. DAVID DOUTHAT, P.E., CSP
Director, Ordnance and
Explosives Team

CF (w/o encls):
Commander, U.S. Army Engineer District, New York, ATTN: Seneca Area Office (Mr. R. Battaglia), 5786 State Route 96, Romulus, NY 14541-5001

Healy/sr/1627/senecaoechar6apr.doc

CEHNC-OE-DC (200-1c) 6 April 2000

SUBJECT: Ordnance and Explosives (OE) Characterization Results and Recommendations for the Old Missile Propellant Test Laboratory (SEAD-43/56 and 69), Seneca ADA

CF:
OE-DC Read
ED-CS-G Healy
OE Read
OE-S Read
OE-CX Read
ED Read/File

DATE:
Healy, ED-CS-G 4-6-00
Potter, OE-DC
Galloway, OE-S
Matthews, OE-CX
4/2/00 Simmons, OC

EODT
EOD TECHNOLOGY, INC.

P.O. Box 24173, Knoxville, Tennessee 37933-2173
(865) 988-6063, Fax (865) 988-6067
e-mail: eodt@eodt.com

March 3, 2000

U. S. Army Engineering and Support Center, Huntsville
ATTN: CEHNC-OE-DC-A (Ms. Lydia Tadesse)
P. O. Box 1600
Huntsville, Al 35807-4301

Re: Contract DACA87-97-D-0005, Task Order 0013, OE Site Sampling and Characterization, Proposed Prison Site, Seneca Army Depot Activity, Romulus, NY

EODT Document Control No. 0823-0013-133

Dear Ms. Tadesse:

Please find enclosed a summary of Area 43A results of the geophysical surveys for the referenced task, as requested by CEHNC. Area 44 started as an OE site sampling characterization, but due to the number of ordnance items found, this area was turned into a Removal Action and the characterization effort was terminated. This should not be considered a final report, and is provided as interim information only.

EOD Technology, Inc. appreciates the opportunity to be of continued service to the U. S. Army Engineering and Support Center, Huntsville.

Yours very truly,

EOD TECHNOLOGY, INC.

Sal Molle
Project Manager

Enclosure as noted

cc Kevin Healy

0823

SITE WAS FORMERLY A LIQUID PROPELLANT STORAGE AREA; MORE RECENTLY A PESTICIDE STORAGE FACILITY. OE CHARACTERIZAT WAS PERFORMED LOOKING FOR DRUMS OF LIQUI PROPELLANT.

4 APRIL 2000

SUMMARY OF RESULTS OF GEOPHYSICAL SURVEYS

Seneca Army Depot, Area 43A

by

EOD Technology, Inc.
Lenoir City, Tennessee

The geophysical surveys conducted by EOD Technology, Inc. (EODT) did not reveal any buried drums or other dangerous objects at Area 43 of Seneca Army Depot.

During the period 01 June through 08 June, 1999, EODT conducted a geophysical survey of Area 43. The EM61 (time domain, electromagnetic pulsed, terrain conductivity meter) system was used to conduct the survey. The instrument was subjected to severe distortion from radio frequency (RF) interference produced by an active LORAN transmission tower located in near proximity to the survey site. There were other, unattributable interference problems experienced with the top coil of the EM61.

Because of the severe RF interference, real-time differential GPS could not be used for navigation. Therefore, a fiducial system was used to provide position information.

Initial processing of the survey data (grids 7, 8, 9, and 10) did not produce any useful anomaly information. Subsequently, Bob Selfridge, senior engineering geophysicist at Huntsville (CEHNC) processed the data and, discounting the top coil data, chose 63 anomalies for "dig" investigation (16% of 386 anomalies returned in processing and marked in the field). Table 1 shows the results of dig investigations.

TABLE 1
ANOMALY DIG COMPARISON SUMMARY, Area 43A

Grid number	Number of anomalies	40mm grenades # (%)	OE metallic scrap # (%)	Misc. metallic scrap # (%)	Nothing found when dug # (%)	No record or not dug # (%)
7	141	0	1 (01%)[a]	8 (6%)	0	132 (94%)
8	126	0	3 (02%)[b]	11 (11%)	0	109 (87%)
9	63	0	1 (02%)[b]	14 (22%)	0	48 (76%)
10	56	0	5 (09%)[a, b]	17 (30%)	0	22 (39%)
Total	386	0 (0%)	10 (03%)	53 (14%)	0 (0%)	63 (16%)

[a] 7.62 blank, fired

[b] M200 blanks

The digging of these anomalies resolved the source of the anomaly return but did not disclose any drums or other dangerous buried objects. The "dig" data, an Excel spreadsheet file, is attached to this document.

Also attached is a CADD drawing showing the locations of the investigated anomalies.

If there are any further questions concerning the conduct of the geophysical survey, the survey data, the "dig" data, or this report, please contact Senior EOD Supervisor Sal Molle at (423) 988-6063 or by email at samolle@eodt.com.

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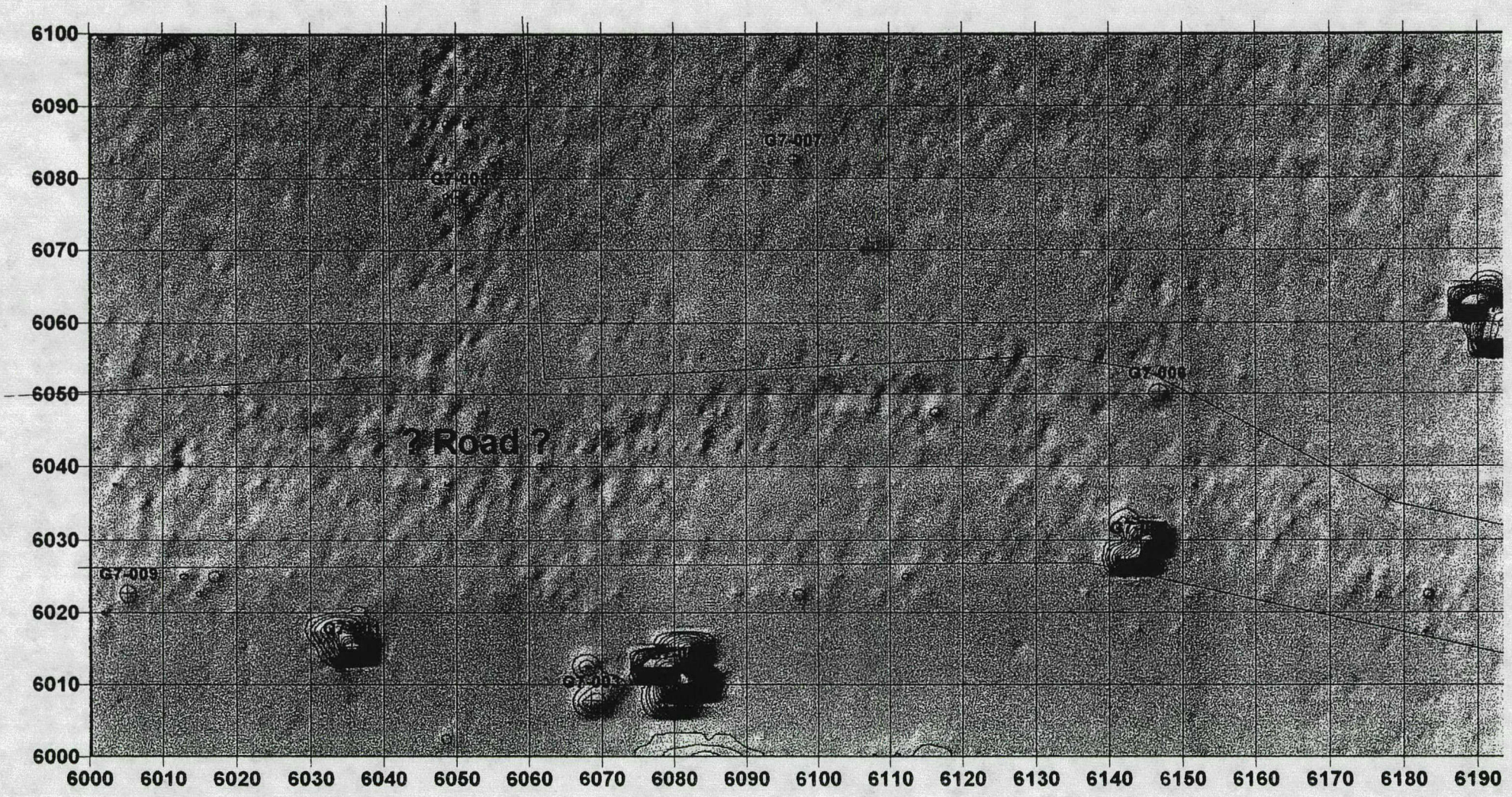
The following documents are included with report:

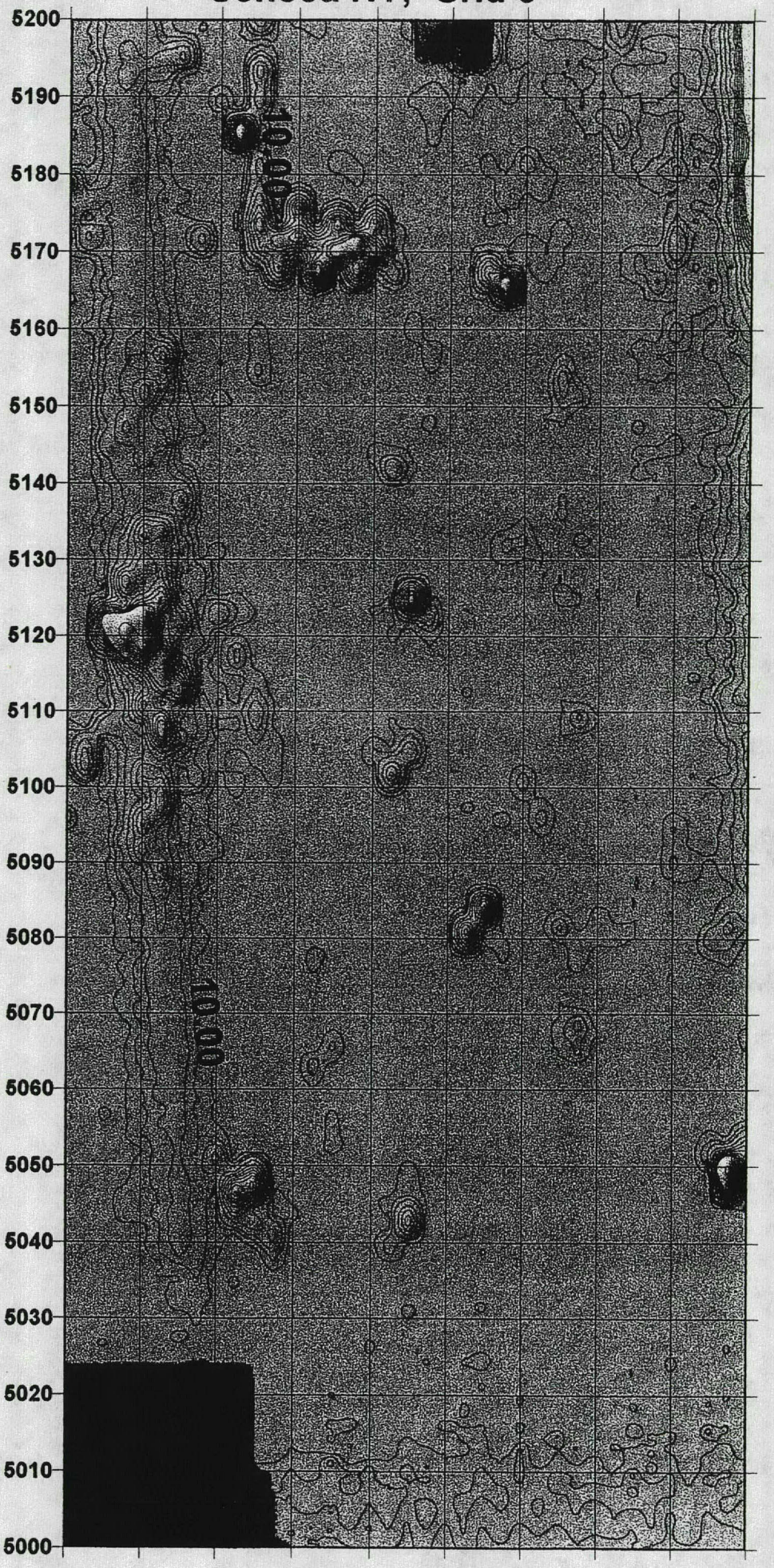
Prison Site- SEDA 43-OE Sampling Activity, Excel Spreadsheet, 2pp.
Color contour plots of grids 7,8,9,and 10, Surfer, 4pp
Grid location maps, CADD, 1p
Plots of investigated anomalies SEDA 43-Grids 7,8,9, and 10, CADD, 1p.

Seneca NY, Grid 7

Data Processed 2 June 1999 - RJS



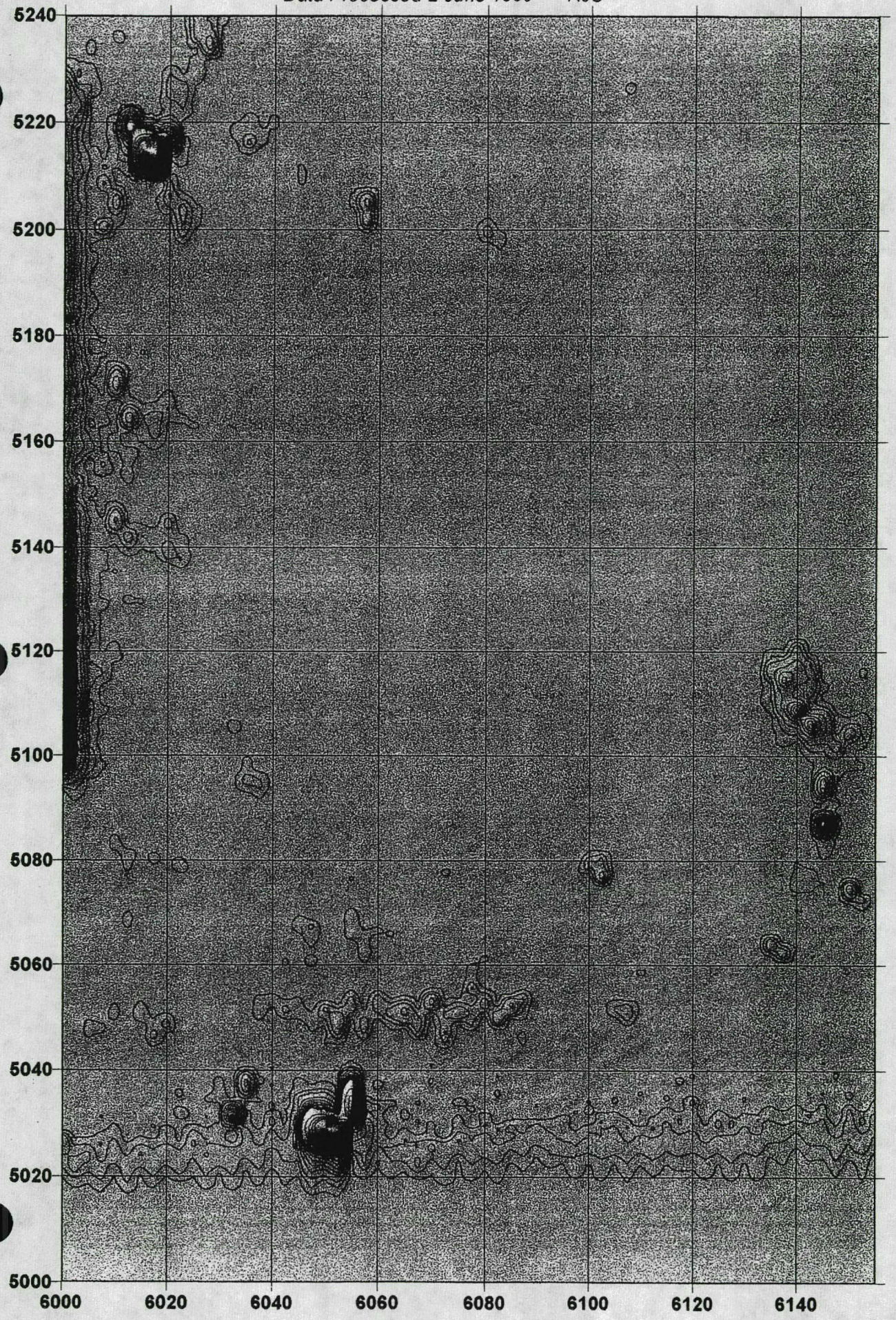
Seneca NY, Grid 8



Data Processed 2 June 1999 -- RJS

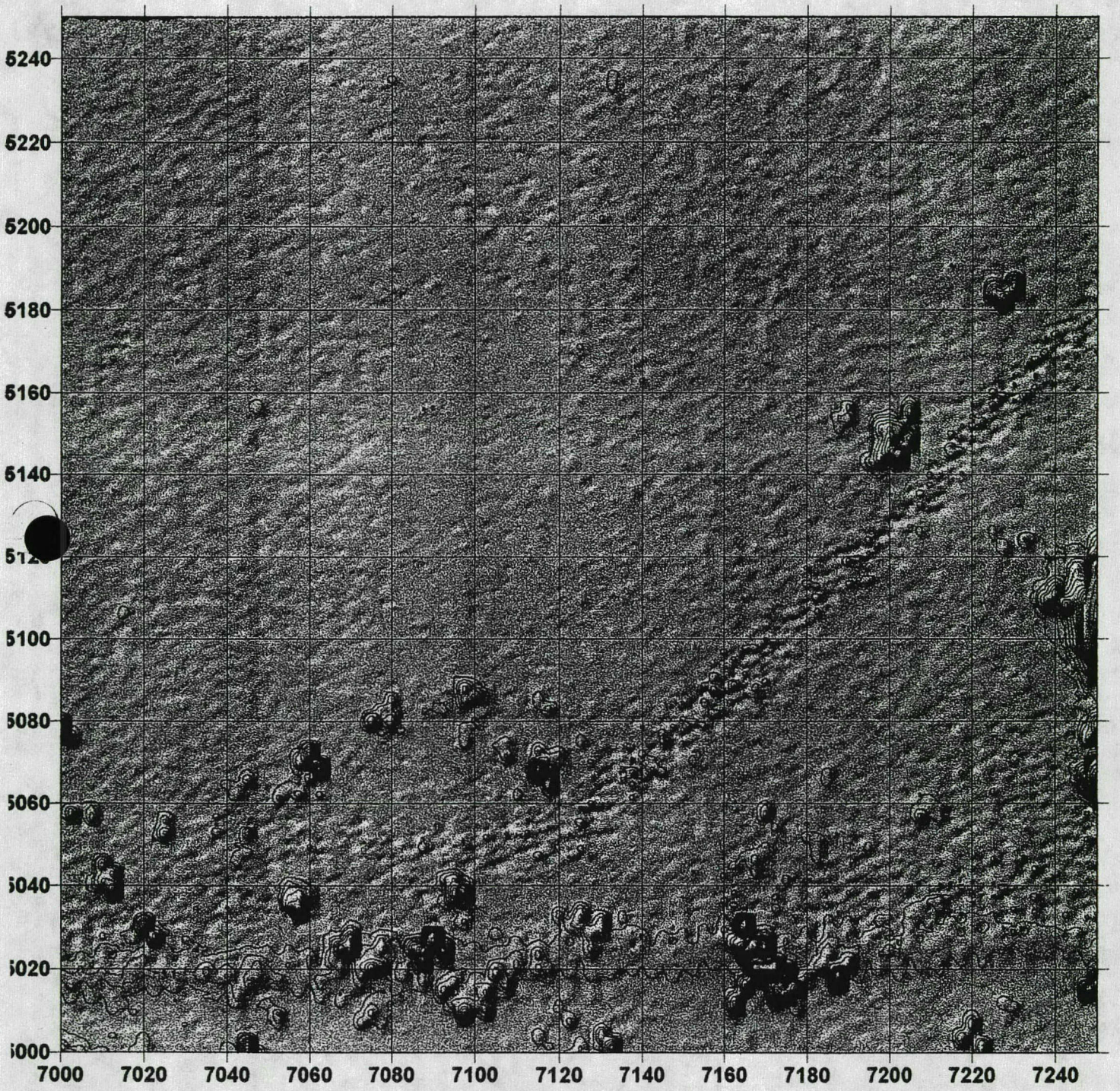
Seneca NY, Grid 9

Data Processed 2 June 1999 -- RJS



Seneca NY, Grid 10

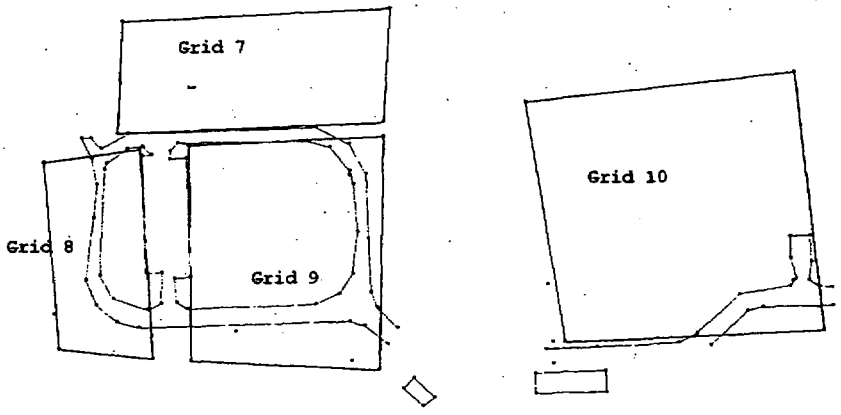
Data Processed 2 June 1999



Field surveyor:

Computer operator:

Reference:



Scale 1 in to 208 ft

0 350

US survey feet

0°00'00"

Plot Scale: 1 in to 208 ft
Printed on 4/27/1999, at 7:13:12 AM

Printed from Trimble Survey Office

Site: Not selected, System: U
Zone: New York Central 3102

Project: Seneca Prison
USFeet Template

approx location of prison fenceline

GRID 7

GRID 8

GRID 9

GRID 10

concrete pad

approx position of Bldg 606

pesticide rinsate bldg

0 100 200

PLOTS OF INVESTIGATED ANOMALIES
SEDA 43 – Grids 7, 8, 9, and 10

EODT

EOD Technology, Inc.
2229 Old Highway 86
Lenoir City, Tennessee 37771
Phone: (865) 988-6063

SEDA_43.dwg

FACT SHEET

OLD MISSILE PROPELLANT TEST LABORATORY (SEAD-43/56 and 69), SENECA ARMY DEPOT ACTIVITY ROMULUS, NEW YORK

1. Background.

The area in question is comprised of three Solid Waste Management Units; SEAD's-43, 56 and 69. Total acreage is approximately 5. SEAD-43 consists of the building formerly known as the Old Missile Propellant Test Laboratory (Building 606) and was operated between the early 1960's and mid 1970's. SEAD-56 refers to the same building during its operation as a pesticide storage facility after 1976. SEAD-69 is the approximately 5 acre area that surrounds Building 606. It was indicated that this area may have been used as a disposal area in association with the activities performed in Building 606. The Archive Search Report (ASR), performed in 1998, recommended that further characterization be performed to confirm/discount previous suggestions that bulk quantities of propellants, and possibly IRFNA, might have been disposed at the SEAD-43/56 and 69 site.

Ordnance and Explosives (OE) characterization efforts, performed in 1999, were conducted to determine whether OE was present at this site. The target was drums of propellant. Four grids, totalling roughly two acres, were geophysically mapped. Anomalies large enough to approximate a buried drum were 100% intrusively investigated. A percentage of smaller anomalies were intrusively investigated as well. No drums, OE or OE-related scrap were located (7.62mm and M200 blanks are considered small arms and not OE).

2. Present Condition.

The site was used for almost 20 years as a pesticide storage facility following the period of use as a liquid propellant storage area. Over the course of roughly 35 years, no OE was ever encountered.

The site is now an outlying parcel of the 720 acres being transferred to the New York State Department of Corrections. Construction of a maximum security facility continues and opening of the prison is expected in mid to late 2000. As currently planned, this 5 acre area will be within the portion of the prison site which is heavily restricted since it is beyond the prison building and all anticipated common areas.

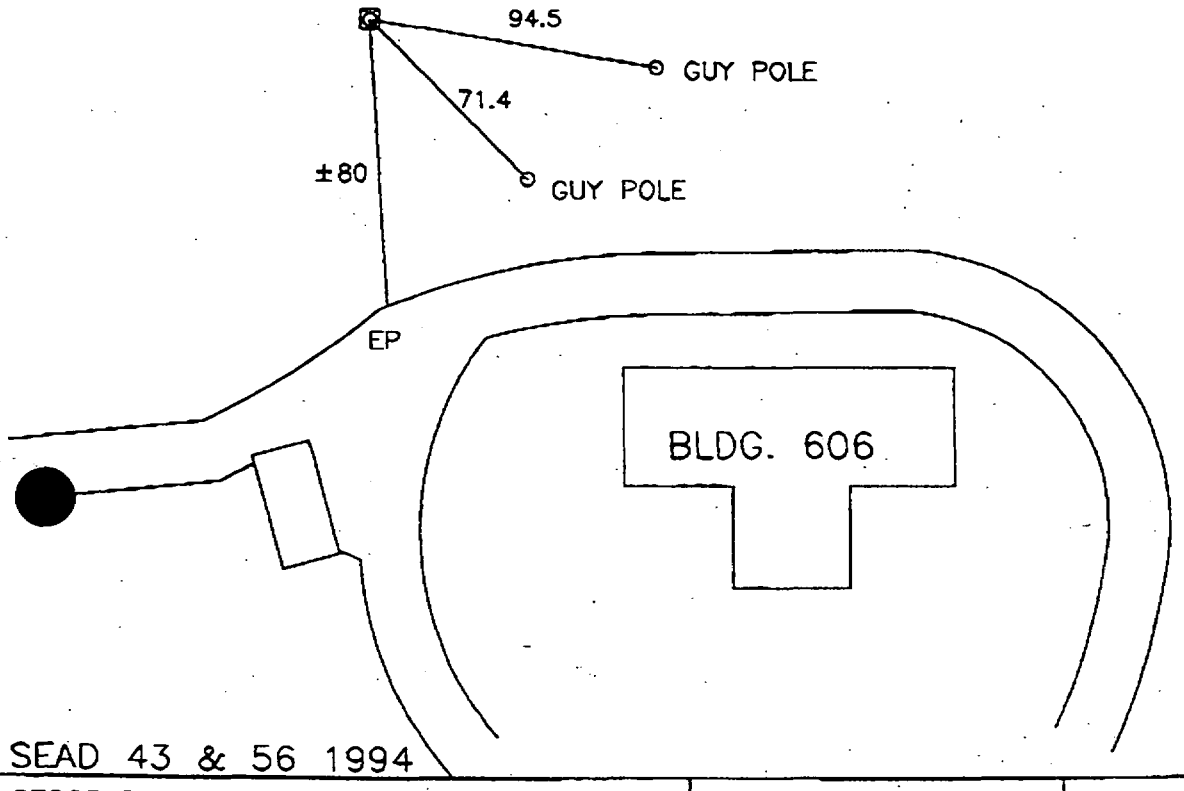
The opinion of HNC personnel is that this site poses no OE/UXO concern to anyone and that transfer should proceed.

SURVEY CONTROL CARD

SENECA ARMY DEPOT SENECA, NEW YORK

STATION SEAD 43 & 56 1994

SEAD-43 & 56-1994



SEAD 43 & 56 1994

GEOGRAPHIC COORDINATES	LATITUDE	LONGITUDE
NAD 83	42 42 35.790	76 49 47.261
STATE PLANE COORDINATES	NORTHING	EASTING
NAD 83 ZONE 3102 SURVEY FEET	987461.75	753969.25
ELEVATION: 761.18 VERTICAL DATUM: 88		

CRIPTION:

3.5" DIA. DOMED DISC SET IN 6" PVC PIPE WITH CONCRETE.

43.0 SWMU NUMBER: SEAD-43 (refer to SEAD-56)

43.1 UNIT NAME

Building 606 - Old Missile Propellant Test Laboratory.

43.2 UNIT CHARACTERISTICS

43.2.1 Unit Type

Missile Propellant Test Laboratory.

43.2.2 Design Features

Refer to SEAD-56 for a plan view of Building 606.

43.2.3 Approximate Dates of Usage

Reported to have been operated in the 1960s.

43.2.4 Operating Practices

Unknown.

43.2.5 Present Condition and Status

Building 606 is presently used for herbicide and pesticide storage (refer to SEAD-56 for description).

43.3 SPECIFIC WASTES DISPOSED

Unknown. Possibly IRFNA, liquid propellants.

43.4 MIGRATION PATHWAYS

Migration pathways are soil and groundwater.

43.5 EVIDENCE OF RELEASE

Refer to SEAD-56.

43.6 EXPOSURE POTENTIAL

Moderate.

43.7 RECOMMENDATIONS FOR SAMPLING

A CERCLA SI will be performed at this SWMU as part of the investigation of 15 Solid Waste Management Units. The investigation program is described in the "Workplan for CERCLA ESI of Fifteen Solid Waste Management Units". (Refer to SEAD-56).

43.8 REFERENCES

References 3, 5, and 8. A list of references is provided as Appendix L.

43.9 COMMENTS

In January 1980, this facility was identified by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) as a location of known or suspected waste materials (Reference 8). In 1987, the facility was deleted from the SWMU submission list by the U.S. Army Environmental Hygiene Agency (Reference 3). The reason for deleting the unit was due to the fact that waste was not handled at the unit. The facility was again added to the SWMU list in August, 1988 by the New York State Department of Environmental Conservation (Reference 5).

43.10 REGULATORY STATUS

This SWMU is classified as a Moderately Low Priority Area of Concern. It is currently being investigated under the CERCLA 15 SWMU SI program.

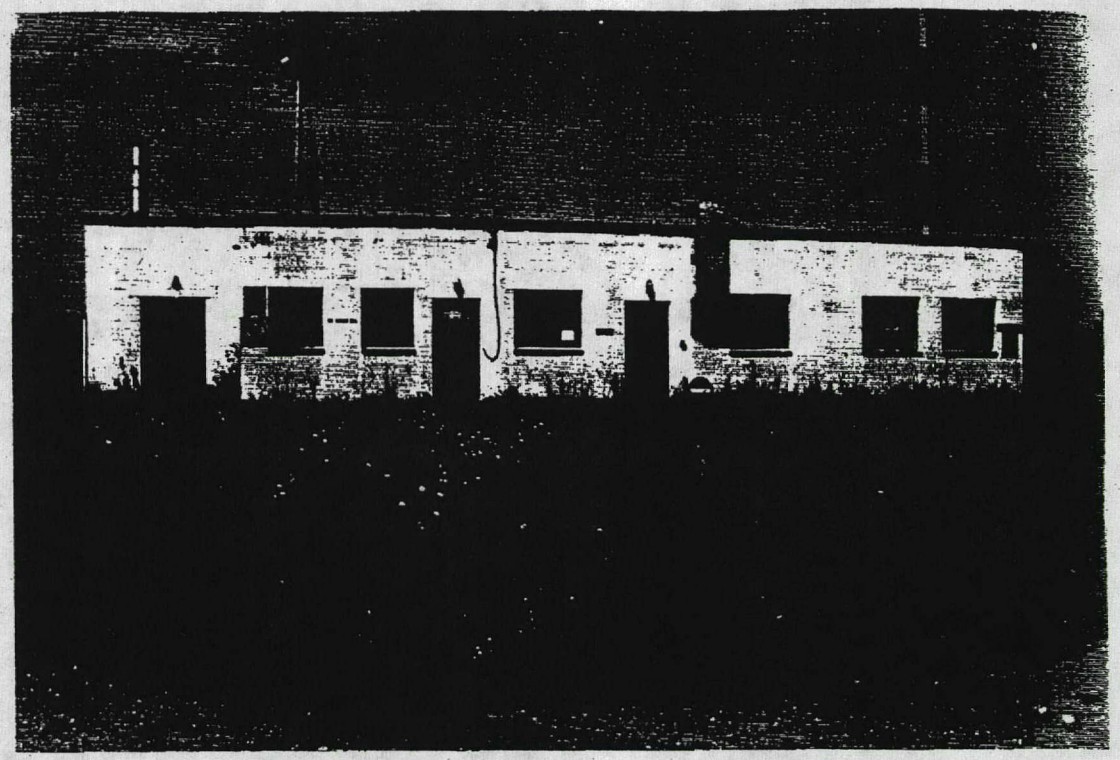


Photo 129: SEAD-56, 9/12/90. View of the Herbicide and Pesticide Storage Area - Building 606, facing north.

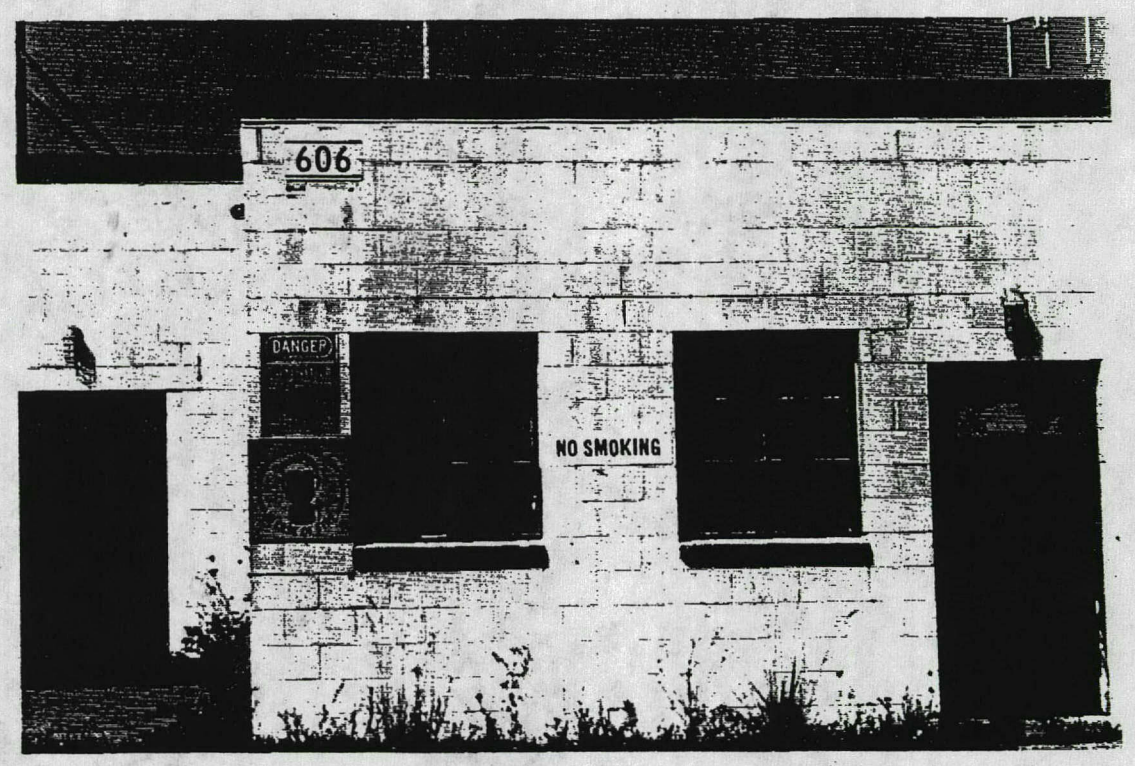


Photo 130: SEAD-56, 9/12/90. Close-up of the signs posted on the Herbicide and Pesticide Storage Area, facing north.

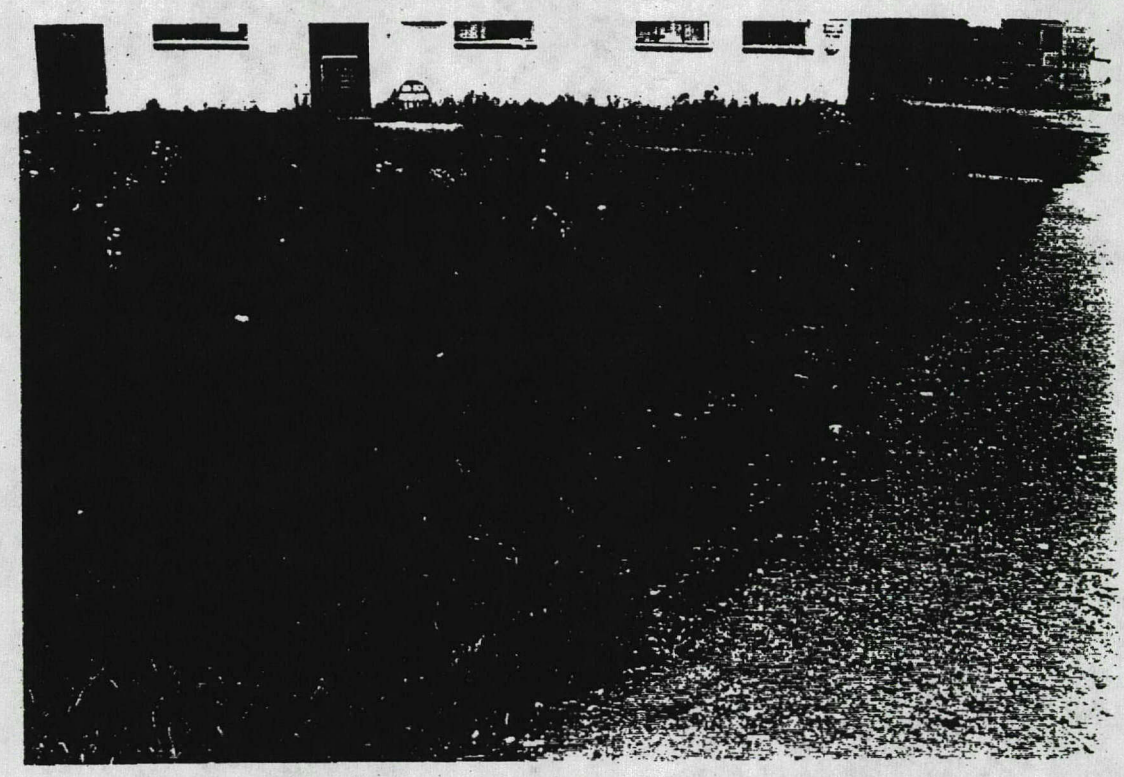


Photo 131: SEAD-56, 9/12/90. Stressed vegetation located close to the Herbicide and Pesticide Storage Area - Building 606, facing north.

Photo 132: SEAD-56, 9/12/90. Pesticide Rinseate Building located west of the Herbicide and Pesticide Storage Building, facing west.

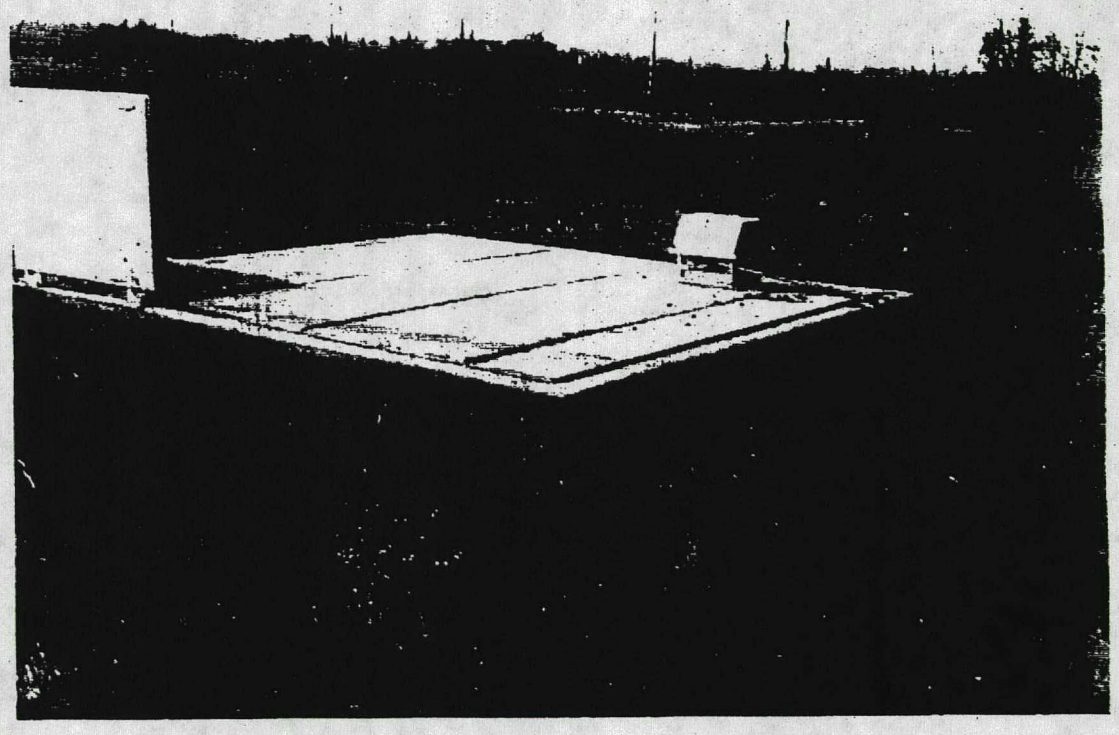


Photo 133: SEAD-56, 11/28/90. Below ground concrete pesticide rinseate collection vault, Herbicide and Pesticide Storage Area - Building 606, facing southwest.

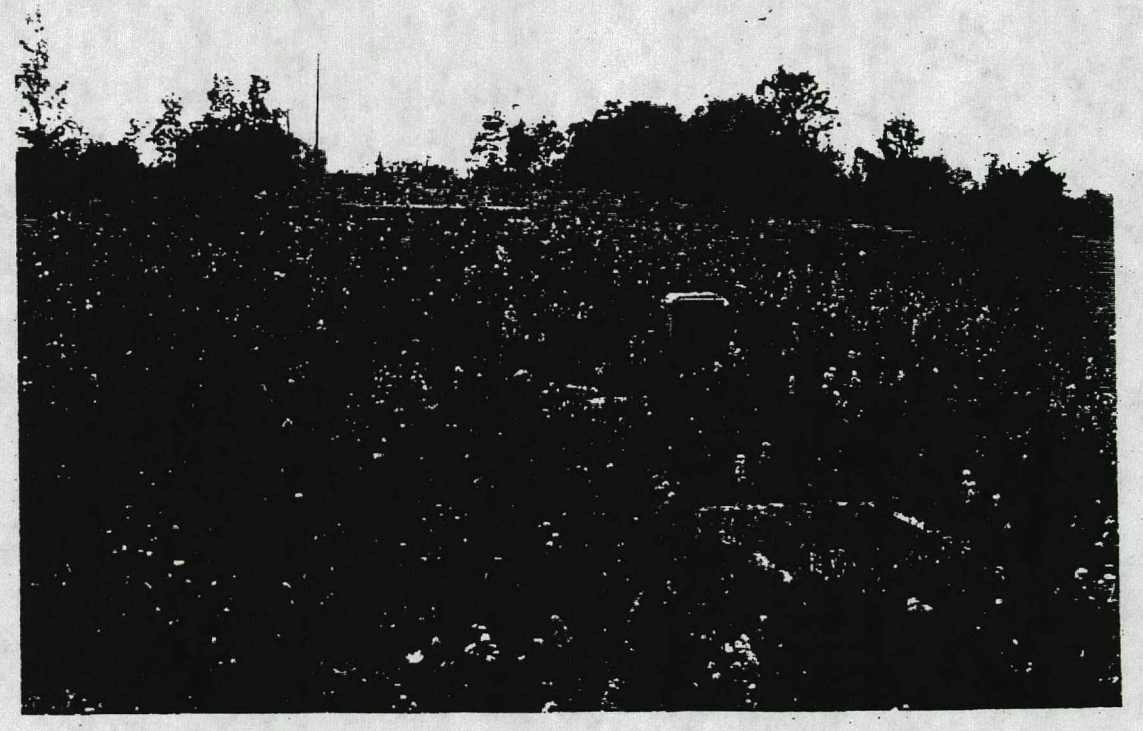


Photo 134: SEAD-56, 9/12/90. View of the septic tank system, Herbicide and Pesticide Storage Area - Building 606, facing south.

APPENDIX C

ANOMALY INVESTIGATION RESULTS

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY

EXPLANATION OF ANOMALY IDs

GRIDS

Format: AOI Prefix & Grid ID – Anomaly No., e.g. 44H6-61 (SEAD-44A, Grid H6, Anomaly 61)
Note: Mag and flag anomalies have no associated northings or eastings.

MEANDERING PATH

Format: AOI Prefix & MP – Anomaly No., e.g. GRMP-7 (Grenade Range Meandering Path, Anomaly 7)

Area of Interest (AOI) Prefixes:

17	SEADs 16 & 17
44	SEAD-44A
45	SEAD-45
46	SEAD-46
57	SEAD-57
EA2	EOD AREA #2
EA3	EOD AREA #3
EM	GRENADE RANGE MAG/EM COMPARISON TEST (GRIDS G7, G8, G9)
GR	GRENADE RANGE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
44D4-25	752641.12	985214.76	0	40mm HE (live)	UXO
44D4-80	752616.21	985363.17	3	Slap flare (live)	UXO
44F5-2	752896.31	985261.05	3	40mm - live	UXO
44H3-73	753072.5	985082.51	8	40MM PRATICE (LIVE)	UXO
44L1-29	753455.67	984970.87	0	40MM GRENADE (LIVE)****	UXO
45A11-1	737476.55	1013175.06	2	75mm shrapnell w/ expelling charge - live	UXO
45B15-5	737520.12	1013575.64	6	57MM HE (LIVE)	UXO
45C13-20	737665.02	1013433.08	4	FUZE (LIVE)	UXO
45C13-26	737642.12	1013486.97	2	57MM w. HE (LIVE)	UXO
45D11-20	737783.61	1013244.5	6	Unknown fuze, frag - live fuze?	UXO
45E12-6	737882.03	1013308.76	6	Bomb fuze and booster - live	UXO
45F9-24	737905.98	1013224.78	0	81mm mortar - live	UXO
45G14-19	738083.16	1013557.78	3	57MM HE (LIVE)	UXO
45G6-37	738102.33	1012794.91	0	37MM HE - LIVE	UXO
45G6-40	738049.97	1012857.58	2	FUZE (LIVE)	UXO
45H3-11	738111.64	1012442.14	1	Rkt fuze - live	UXO
45K5-5	738454.9	1012588.08	3	105mm WP - live	UXO
45M6-10	738666.03	1012700.13	3	Fuze (heavy) - live	UXO
45M6-14	738689.9	1012709.23	4	Base fuze and 20mm - both live	UXO
45MP-104	736811.53	1012352.28	6	M-66 fuze - live	UXO
45MP-127	737065.16	1012356.36	4	Fuze - live	UXO
45MP-191	737083.08	1012470.97	8	VT fuze - live	UXO
45MP-391	737274.07	1012794.55	0	Nose fuze - live	UXO
45MP-418	737077.31	1012865.73	2	VT fuze - live	UXO
45MP-421	737050.04	1012864.72	0	M-66 - live	UXO
45MP-440	737127.42	1012962.83	4	Fuze - live	UXO
45MP-497	737025.18	1013148.84	6	M-48 fuze - live	UXO
45MP-529	737268.34	1013158.61	6	VT fuze - live	UXO
45MP-542	737296.59	1013244.43	6	Smoke can - live	UXO
45MP-589	737004.85	1013343.72	3	M-48 fuze - live	UXO
45MP-615	737138.46	1013444.16	3	M-103 fuze - live	UXO
45MP-619	736961.26	1013471.79	6	57mm - live WP	UXO
45MP-652	737074.81	1013562.04	4	M-48 fuze - live	UXO
45MP-703	737245.68	1013677.38	5	Fuze - live	UXO
45MP-712	737262.58	1013633.76	4	Fuze - live	UXO
45MP-737	737500.97	1013981.32	4	Booster - live	UXO
45MP-738	737492.63	1013997.7	5	M-66 fuze - live	UXO
45MP-811	737701.36	1014074.24	5	M-66 - live	UXO
45MP-905	737802.96	1013882.27	6	57mm - live	UXO
45MP-969	738018.24	1013721.91	0	VT fuze - live	UXO
45N11-17	738738.99	1013235.8	36	M66 fuzes (7 - live), 20mm, 14" projectile in hole	UXO
45N14-108			3	20mm - live	UXO
45N14-118			4	20mm - live	UXO
45N14-17			8	M48 fuze - live	UXO
45N14-2			8	20mm - live	UXO
45N14-23			1	20mm - live	UXO
45N14-24			6	M48 fuze - live	UXO
45N14-27			2	20mm - live	UXO
45N14-32			1	20mm - live	UXO
45N14-33			7	VT fuze - live	UXO
45N14-36			1	20mm - live	UXO
45N14-37			0	VT fuze - live	UXO
45N14-44			6	M66 fuze - live	UXO
45N14-46			0	20mm - live	UXO
45N14-52			4	57mm - live	UXO
45N14-70			3	M48 fuze - live	UXO
45N14-74			1	20mm - live	UXO

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45P15-112			4	20mm (2) - live	UXO
45P15-120			2	20mm - live	UXO
45P15-154			2	20mm - live	UXO
45P15-158			3	20mm - live	UXO
45P15-161			4	20mm - live	UXO
45P15-162			3	20mm - live	UXO
45P15-166			3	20mm - live	UXO
45P15-173			2	20mm - live	UXO
45P15-18			0	M66 fuze - live	UXO
45P15-189			4	20mm - live	UXO
45P15-191			3	20mm - live	UXO
45P15-192			3	20mm - live	UXO
45P15-199			4	20mm - live	UXO
45P15-200			3	20mm - live	UXO
45P15-202			4	20mm - live	UXO
45P15-206			3	20mm - live	UXO
45P15-30			2	M66 fuze - live	UXO
45P15-72			5	57mm - live	UXO
46D3-1	749463.21	1005924.1	0	Slap flare - live	UXO
46D3-8	749442.52	1005968.16	3	Slap flare - live	UXO
46E7-12	749545.71	1006376.92	0	Fuze - live	UXO
46E7-29	749530.46	1006401.49	0	M123 Fuze - live	UXO
46E7-4	749566.43	1006348.05	12	Rifle grenade - residue live	UXO
46I2-65	749978.35	1006085.07	4	Smoke charge - live	UXO
46J1-8	750082.83	1005784.66	0	Smoke signal (live)	UXO
46J5-26	750080.49	1006255.71	4	Fuze - live	UXO
46K5-35	750111.97	1006196.52	8	Smoke charge - live	UXO
46K7-12	750179.98	1006347.42	9	M-83 - live	UXO
57F19-5	738698.59	1010017.29	0	French grenade - live	UXO
57M13-5	739449.94	1009427.79	3	20mm fuzed (live)	UXO
57O13-48	739568	1009480.63	3	20mm w/ fuze - live	UXO
EA2A1-21	747694.29	1007513.43	2	Fuze and booster (live)	UXO
GRA1-22	737141.73	1008065.74	1	35mm subcaliber round (live)	UXO
GRA9-5	736975.58	1008974.65	0	35mm subcaliber round - live	UXO
GRB2-13	737017.48	1008307.35	2	35mm subcaliber round (live)	UXO
GRB5-12	737052.52	1008477.26	0	35mm subcaliber round - live	UXO
GRB5-26	737085.08	1008553.69	0	35mm subcaliber round - live	UXO
GRB7-37	737006.74	1008737.07	2	35mm subcaliber round (live)	UXO
GRB7-38	736993.86	1008758.31	2	35mm subcaliber round (live)	UXO
GRB7-54	737017.19	1008841.48	1	35mm subcaliber round (live)	UXO
GRB7-56	737049.53	1008846.59	0	35mm subcaliber round (live)	UXO
GRB7-59	737073.36	1008839.35	1	35mm subcaliber round (live)	UXO
GRB7-6	737008.74	1008611.65	1	35mm subcaliber round (live)	UXO
GRB7-8	737017.51	1008633.28	1	35mm subcaliber round (live)	UXO
GRC2-100	737125.86	1008358.66	0	35mm subcaliber round - live	UXO
GRC2-105	737122.48	1008371.65	0	35mm subcaliber round - live	UXO
GRC2-107	737097.44	1008371.92	0	35mm subcaliber round - live	UXO
GRC2-108	737091.62	1008375.31	0	35mm subcaliber round - live	UXO
GRC2-109	737089.32	1008379.64	0	35mm subcaliber round - live	UXO
GRC2-115	737140.35	1008383.97	1	40mm - live	UXO
GRC2-13	737150.69	1008129.85	0	35mm subcaliber round - live	UXO
GRC2-53	737145.71	1008235.1	0	35mm subcaliber round - live	UXO
GRC2-69	737134.94	1008270.2	0	35mm subcaliber round - live	UXO
GRC2-73	737147.53	1008287.26	0	35mm subcaliber round - live	UXO
GRC2-77	737159.98	1008295.01	0	35mm subcaliber round - live	UXO
GRC2-83	737115.45	1008311.26	0	35mm subcaliber round - live	UXO
GRC2-84	737164.99	1008305.3	0	35mm subcaliber round - live	UXO

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRC2-87	737134.94	1008319.79	0	35mm subcaliber round - live	UXO
GRC5-11	737125.34	1008417.7	1	35mm subcaliber round (live)	UXO
GRC5-16	737108.61	1008440.05	1	35mm subcaliber round (live)	UXO
GRC5-62	737308.61	1008488.85	1	35mm subcaliber round (live)	UXO
GRC5-63	737305.6	1008495.41	1	35mm subcaliber round (live)	UXO
GRC5-74	737199.26	1008474.93	1	35mm subcaliber round (live)	UXO
GRC5-76	737191.69	1008467.48	1	35mm subcaliber round (live)	UXO
GRC6-105	737206.77	1008499.98	1	35mm subcaliber round (live)	UXO
GRC6-106	737205.82	1008509.06	1	35mm subcaliber round (live)	UXO
GRC6-20	737155.93	1008505.07	1	35mm subcaliber round (live)	UXO
GRC6-7	737123	1008517.54	1	35mm subcaliber round (live)	UXO
GRC6-75	737379.56	1008535.98	1	35mm subcaliber round (live)	UXO
GRC6-77	737378.89	1008530.02	1	35mm subcaliber round (live)	UXO
GRC6-93	737298.61	1008519.85	1	35mm subcaliber round (live) and 40mm practice	UXO
GRC7-1	737129.56	1008600.49	1	35mm subcaliber round (live)	UXO
GRC7-46	737097.41	1008740.97	1	35mm subcaliber round (live)	UXO
GRC7-47	737116.77	1008746.63	1	35mm subcaliber round (live)	UXO
GRC7-57	737157.38	1008848.26	1	35mm subcaliber round (live)	UXO
GRC7-61	737097.49	1008893.35	0	35mm subcaliber round (live)	UXO
GRC7-62	737092.42	1008893.8	0	35mm subcaliber round (live) same anom. as GRC7-61	UXO
GRC7-9	737132.98	1008633.26	0	35mm subcaliber round (live)	UXO
GRD1-1	737202.83	1008014.44	1	35mm subcaliber round (live)	UXO
GRD1-48	737441.59	1008044.45	1	35mm subcaliber round (live)	UXO
GRD1-49	737450.64	1008099.22	0	35mm subcaliber round (live)	UXO
GRD1-90	737223.55	1008074.72	1	35mm subcaliber round (live)	UXO
GRD4-101	737253.18	1008382.21	2	35mm subcaliber round - live	UXO
GRD4-13	737275.72	1008131.92	4	35mm subcaliber round - live	UXO
GRD4-85	737272.54	1008318.39	1	35mm subcaliber round - live	UXO
GRD7-1	737194.59	1008621.85	0	35mm subcaliber round (live)	UXO
GRD7-12	737207.09	1008660.77	1	35mm subcaliber round (live)	UXO
GRD7-19	737196.78	1008708.99	0	35mm subcaliber round (live)	UXO
GRD7-20	737214.29	1008711.02	1	35mm subcaliber round (live)	UXO
GRE2-161	737356.18	1008363.76	2	35mm subcaliber round (live) and 40mm practice	UXO
GRE2-167	737324.85	1008368.45	1	35mm subcaliber round (live)	UXO
GRE2-168	737319.88	1008368.45	1	167	UXO
GRE2-41	737362.32	1008163.91	0	35mm subcaliber round - 4 (live)	UXO
GRE2-70	737352.43	1008233.63	2	35mm subcaliber round (live)	UXO
GRE2-92	737387.35	1008235.41	1	35mm subcaliber round (live)	UXO
GRE7-2	737320.05	1008602.65	1	35mm subcaliber round (live)	UXO
GRE7-3	737325.23	1008610.26	1	35mm subcaliber round (live)	UXO
GRE7-34	737315.07	1008750.03	0	35mm subcaliber round (live)	UXO
GRE7-37	737372.13	1008769.05	0	35mm subcaliber round (live)	UXO
GRF2-17	737422.48	1008206.36	2	35mm subcaliber round (live)	UXO
GRF2-23	737404.98	1008240.07	3	35mm subcaliber round (live)	UXO
GRF2-34	737425.03	1008296.88	2	35mm subcaliber round (live)	UXO
GRF2-38	737396.15	1008293.5	2	35mm subcaliber round (live)	UXO
GRF2-39	737397.47	1008301.72	0	35mm subcaliber round (live)	UXO
GRF2-45	737404.45	1008350.08	0	35mm subcaliber round (live)	UXO
GRF2-46	737398.44	1008353.6	0	35mm subcaliber round (live)	UXO
GRF2-47	737413.25	1008357.71	1	35mm subcaliber round (live)	UXO
GRF2-49	737434.95	1008375.3	2	35mm subcaliber round (live)	UXO
GRF5-15	737424.72	1008473.73	1	35mm subcaliber round (live)	UXO
GRF5-17	737391.91	1008480	1	35mm subcaliber round (live)	UXO
GRF6-29	737431.28	1008551.16	0	35mm subcaliber round (live)	UXO
GRF6-32	737427.65	1008537.5	1	35mm subcaliber round (live)	UXO
GRF6-50	737430.97	1008594.46	0	35mm subcaliber round (live)	UXO
GRF7-10	737443.76	1008632.93	3	35mm subcaliber round (live), fuze and det	UXO

APPENDIX C
UXO AND OE RECOVERED
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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRF7-12	737459.08	1008641.14	2	35mm subcaliber round (live)	UXO
GRF7-14	737440.29	1008645.25	3	35mm subcaliber round (live)	UXO
GRF7-15	737430.81	1008653.31	1	35mm subcaliber round (live)	UXO
GRF7-18	737411.77	1008660.6	2	35mm subcaliber round (live)	UXO
GRF7-19	737409.09	1008665.97	2	35mm subcaliber round (live), fuze and det	UXO
GRF7-2	737407.92	1008606.55	2	35mm subcaliber round (live), fuze	UXO
GRF7-26	737412.4	1008693.61	4	35mm subcaliber round (live)	UXO
GRF7-29	737423.14	1008707.67	6	35mm subcaliber round (live)	UXO
GRF7-3	737431.44	1008613.19	2	35mm subcaliber round (live)	UXO
GRF7-33	737438.72	1008720.05	3	35mm subcaliber round (live)	UXO
GRF7-35	737440.14	1008715.47	3	35mm subcaliber round (live)	UXO
GRF7-39	737422.61	1008729.37	2	35mm subcaliber round (live)	UXO
GRF7-41	737455.14	1008741.69	2	35mm subcaliber round (live)	UXO
GRF7-42	737446.77	1008737.74	3	35mm subcaliber round (live)	UXO
GRF7-43	737440.14	1008737.11	2	35mm subcaliber round (live)	UXO
GRF7-44	737430.19	1008743.75	2	35mm subcaliber round (live)	UXO
GRF7-49	737445.19	1008755.12	3	35mm subcaliber round (live)	UXO
GRF7-58	737435.08	1008779.86	2	35mm subcaliber round (live)	UXO
GRF7-63	737462.72	1008817.92	5	35mm subcaliber round (live)	UXO
GRF7-71	737397.71	1008886.58	3	35mm subcaliber round (live)	UXO
GRMP-66	737391.31	1007960.65	1	35mm subcaliber round (live)	UXO
17A3-3	748909.43	997940.7	2	Fuze	OE
17E6-19	749302.05	998272.96	3	20mm	OE
17E6-7	749254.97	998242.99	5	20mm	OE
44B5-1	752427.5	985202.41	10	40mm practice	OE
44B5-10	752492.4	985240.9	3	40mm practice	OE
44B5-11	752489.93	985249.56	4	40mm practice	OE
44B5-14	752499.94	985256.91	1	40mm practice	OE
44B5-16	752494.95	985253.31	3	40mm practice	OE
44B5-18	752481.36	985280.75	0	40mm practice	OE
44B5-20	752477.47	985288.52	2	40mm practice, scrap metal	OE
44B5-21	752467.49	985288.24	4	40mm practice	OE
44B5-23	752494.67	985304.74	4	40mm practice	OE
44B5-26	752497.52	985317.73	3	40mm practice	OE
44B5-27	752496.55	985326.74	4	40mm practice	OE
44B5-28	752485.87	985324.8	5	40mm practice, wire	OE
44B5-29	752479.9	985323.41	6	40mm practice, slug	OE
44B5-30	752475.32	985326.19	3	40mm practice	OE
44B5-32	752482.67	985338.39	0	40mm practice	OE
44B5-34	752462.55	985344.22	4	40mm practice	OE
44B5-36	752462.55	985321.06	3	40mm practice	OE
44B5-38	752410.51	985330.21	0	40mm practice	OE
44B5-40	752479.12	985359.84	6	40mm practice, scrap	OE
44B5-41	752464.95	985362.75	3	40mm practice	OE
44B5-43	752494.12	985374.97	6	40mm practice	OE
44B5-5	752462.43	985229.63	1	40mm practice	OE
44B5-6	752464.9	985220	7	40mm practice	OE
44B5-7	752472.46	985219.87	5	40mm practice	OE
44B5-9	752489.93	985235.67	2	40mm practice, arrow tip	OE
44B7-17	752503.52	985411.54	2	40mm cap	OE
44B7-22	752572.3	985412.17	3	40mm practice	OE
44B7-24	752559.42	985432.48	4	40mm practice	OE
44B7-26	752557.53	985440.42	0	40mm practice	OE
44B7-28	752567.12	985438.66	0	40mm practice	OE
44B7-29	752575.07	985445.97	2	40mm practice	OE
44C5-10	752520.79	985217.87	4	40mm practice, steel frag	OE
44C5-15	752522.44	985250.59	4	40mm practice	OE
44C5-17	752575.05	985243.57	6	40mm practice, sifter part	OE
44C5-19	752567.42	985262.69	6	40mm practice	OE

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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
44C5-2	752527.97	985201.14	3	40mm practice	OE
44C5-20	752559.95	985261.5	2	40mm practice	OE
44C5-23	752500	985255.65	2	40mm practice	OE
44C5-24	752507.48	985264.17	1	40mm practice	OE
44C5-25	752519.89	985272.39	4	40mm parts	OE
44C5-26	752532.45	985262.53	2	40mm practice, sm frag	OE
44C5-27	752531.55	985275.68	4	40mm practice, scrap	OE
44C5-29	752547.85	985268.36	2	40mm practice	OE
44C5-31	752551.29	985280.32	6	40mm practice (3)	OE
44C5-32	752552.94	985286.74	2	40mm practice (3), frag	OE
44C5-33	752569.69	985294.52	3	40mm expended	OE
44C5-34	752562.96	985302.74	3	40mm practice	OE
44C5-35	752538.13	985300.94	1	40mm practice (2)	OE
44C5-39	752501.05	985305.58	3	40mm practice	OE
44C5-4	752565.03	985204.13	3	40mm practice	OE
44C5-41	752525.72	985310.96	6	40mm part, al canister	OE
44C5-42	752563.09	985323.93	2	40mm expended, al frag	OE
44C5-45	752507.73	985336.49	4	40mm practice, scrap	OE
44C5-46	752512.81	985337.54	6	40mm practice	OE
44C5-49	752527.05	985357.55	3	Drive shaft, 40mm	OE
44C5-51	752506.99	985360.1	3	40mm practice	OE
44C5-52	752507.44	985377.31	4	40mm practice	OE
44C5-55	752508.19	985386.74	2	40mm practice	OE
44C5-56	752524.51	985382.4	3	40mm practice	OE
44C5-59	752529.33	985228.79	12	40mm practice (2)	OE
44C5-61	752585.27	985271.96	12	40mm practice	OE
44D1-10	752681.05	984868.53	0	40 MM PRATICE (surf)	OE
44D4-15	752634.74	985169.33	0	40mm practice	OE
44D4-16	752656.26	985188.49	0	40mm practice	OE
44D4-18	752633.07	985182.55	2	40mm practice	OE
44D4-20	752644.95	985200.38	2	40mm practice	OE
44D4-21	752687.51	985207.85	0	40mm practice	OE
44D4-22	752670.64	985208.81	2	40mm practice	OE
44D4-23	752631.54	985204.59	2	40mm practice	OE
44D4-26	752612.18	985218.4	2	40mm practice	OE
44D4-27	752606.81	985215.52	2	40mm practice	OE
44D4-29	752612.37	985231.63	2	40mm practice	OE
44D4-30	752647.06	985220.7	1	40mm practice	OE
44D4-33	752652.43	985232.78	2	40mm practice	OE
44D4-37	752603.65	985266.26	2	40mm practice	OE
44D4-38	752646.21	985281.22	2	40mm practice	OE
44D4-39	752651.77	985282.75	4	40mm practice	OE
44D4-40	752649.85	985288.31	2	Cable.clamp, ogive, 40mm practice	OE
44D4-41	752652.72	985272.21	1	40mm practice	OE
44D4-42	752656.75	985277.19	2	40mm practice	OE
44D4-43	752658.28	985268.18	3	40mm practice	OE
44D4-45	752663.84	985275.85	2	40mm practice	OE
44D4-46	752669.98	985270.1	3	40mm practice	OE
44D4-47	752684.16	985272.78	2	40mm practice	OE
44D4-49	752670.17	985279.87	3	40mm practice	OE
44D4-54	752690.1	985291.19	3	40mm practice	OE
44D4-55	752695.66	985287.16	2	40mm practice (3)	OE
44D4-56	752699.5	985289.65	2	40mm practice	OE
44D4-57	752696.62	985296.56	2	40mm practice	OE
44D4-59	752674.96	985299.43	2	40mm practice	OE
44D4-61	752639.31	985293.68	1	40mm practice	OE
44D4-63	752619.95	985294.45	2	40mm practice	OE
44D4-64	752614.77	985298.09	3	40mm practice and frag	OE
44D4-65	752602.31	985303.46	2	40mm practice	OE
44D4-67	752655.79	985294.64	2	40mm practice (3)	OE

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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
44D4-68	752657.9	985289.27	6	40mm practice	OE
44D4-70	752669.02	985292.34	0	40mm practice	OE
44D4-81	752612.57	985375.44	2	40mm practice	OE
44D7-19	752672.46	985471.92	2	40mm practice	OE
44E3-36	752747.56	985074.98	0	40mm practice	OE
44E5-10	752732.57	985287.63	6	40mm practice	OE
44E5-11	752752.47	985292.63	3	40mm practice	OE
44E5-12	752757.48	985290.27	5	40mm practice	OE
44E5-13	752762.63	985279	2	40mm practice	OE
44E5-14	752767.08	985284.71	2	40mm practice	OE
44E5-15	752786.42	985316.42	5	40mm practice	OE
44E5-16	752762.49	985315.86	6	40mm practice	OE
44E5-2	752715.55	985218.92	3	40mm practice	OE
44E5-20	752718.66	985301.12	3	40mm practice	OE
44E5-22	752737.17	985313.91	4	40mm practice	OE
44E5-24	752707.41	985321.71	0	40mm practice	OE
44E5-25	752756.71	985321.57	4	40mm practice	OE
44E5-26	752771.2	985330.2	3	40mm practice	OE
44E5-27	752779.97	985333.96	6	40mm practice	OE
44E5-28	752769.67	985340.5	4	40mm practice	OE
44E5-29	752778.16	985345.38	2	40mm practice	OE
44E5-3	752752.47	985263.57	6	40mm practice	OE
44E5-31	752747.94	985351.92	8	40mm practice	OE
44E5-39	752753.65	985491.75	0	40mm practice	OE
44E5-6	752737.44	985280.4	4	40mm practice	OE
44E5-7	752722.42	985275.11	6	40mm practice	OE
44E5-9	752725.9	985282.2	8	40mm practice	OE
44F3-22	752895.42	985059.94	4	40mm practice	OE
44F4-10	752830.58	985198.41	1	40mm practice	OE
44F4-11	752824.93	985195.79	4	40mm practice	OE
44F4-7	752883.64	985182.42	2	40mm practice	OE
44F4-8	752878.54	985196.07	3	40mm practice	OE
44F4-9	752867.38	985197.45	2	40mm practice	OE
44F5-10	752842.21	985279.26	5	40mm practice	OE
44F5-12	752887.9	985273.04	6	40mm practice	OE
44F5-13	752879.94	985282.9	0	40mm practice	OE
44F5-15	752883.05	985291.2	4	40mm practice, ogive	OE
44F5-16	752889.11	985294.32	4	40mm practice	OE
44F5-18	752872.15	985293.1	3	40mm practice	OE
44F5-19	752864.88	985293.1	8	40mm practice	OE
44F5-20	752840.13	985298.64	4	40mm practice, al frag	OE
44F5-21	752832.34	985306.08	1	40mm practice, scrap	OE
44F5-22	752849.82	985307.81	1	40mm practice	OE
44F5-23	752867.48	985310.23	4	40mm practice (2)	OE
44F5-24	752875.09	985306.25	6	40mm practice	OE
44F5-28	752882.88	985314.21	3	40mm practice (2)	OE
44F5-29	752867.3	985320.26	3	40mm practice	OE
44F5-30	752859.86	985319.05	4	40mm practice	OE
44F5-31	752856.75	985327.53	3	40mm practice	OE
44F5-32	752838.06	985320.78	3	40mm practice	OE
44F5-33	752851.13	985334.55	1	40mm practice	OE
44F5-35	752852.34	985367.43	2	40mm practice	OE
44F5-36	752894.93	985375.74	1	40mm practice	OE
44F5-4	752899.92	985270.49	6	40mm practice	OE
44F5-5	752840.67	985266.71	3	40mm practice	OE
44F5-6	752809.94	985266.2	3	40mm practice	OE
44F5-8	752813.48	985275.46	2	40mm practice	OE
44F5-9	752817.46	985280.3	4	40mm practice	OE
44G3-13	752943.95	985036.08	2	40mm practice	OE
44G3-14	752947.92	985037.5	3	40mm practice	OE

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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
44G3-18	752991.14	985025.45	2	40mm practice	OE
44G3-23	752999.5	985045.01	2	40mm practice	OE
44G3-25	752979.38	985052.52	1	40mm practice	OE
44G3-26	752967.61	985054.51	3	SLAP FLARE	OE
44G3-44	752926.95	985067.5	3	40MM SLUG	OE
44G3-48	752949.44	985042.12	10	40mm practice	OE
44G4-13	753042.98	985176.93	4	40MM SLUG	OE
44G4-16	753014.85	985190.18	3	40mm practice	OE
44G4-19	753007.31	985187.32	6	40mm practice	OE
44G4-20	753001.4	985198.13	6	40mm practice	OE
44G4-7	753036.87	985148.2	3	40 MM SLUG	OE
44H3-12	753128.59	985007.08	2	40mm practice	OE
44H3-29	753000.36	985054.93	6	40mm practice	OE
44H3-34	753071.76	985054.93	2	40mm practice	OE
44H3-4	753053.6	985011.4	4	40mm practice	OE
44H3-51	753091.72	985070.04	2	SLAP FLARE	OE
44H3-68	753197.26	985084.99	0	40mm practice	OE
44H3-72	753128.87	985100.06	8	40mm practice	OE
44H5-1	753001.39	985213.21	0	40MM PRATICE	OE
44H5-10	753085.47	985227.97	2	40MM PRATICE	OE
44H5-102	753133.13	985287.45	4	40MM	OE
44H5-109	753113.65	985289.92	1	40mm practice	OE
44H5-11	753090.45	985246.48	3	40mm practice	OE
44H5-112	753109.71	985278.45	4	40mm practice	OE
44H5-114	753125.6	985275.95	0	40MM PRATICE -Surf	OE
44H5-115	753121.06	985267.71	0	40MM PRATICE - Surf	OE
44H5-121	753084.26	985274.99	4	40mm practice	OE
44H5-122	753088.08	985259.34	2	40mm practice	OE
44H5-124	753064.66	985268.9	2	FLARE	OE
44H5-125	753089.52	985287.41	4	40mm practice	OE
44H5-13	753099.15	985243.63	6	40MM PRATICE	OE
44H5-132	753024.73	985290.9	1	40mm practice	OE
44H5-134	753023.3	985272.35	2	40mm practice	OE
44H5-136	753021.26	985254.27	1	40mm practice	OE
44H5-141	753001.72	985236.62	2	40mm practice	OE
44H5-144	753195.79	985300.13	3	40mm practice	OE
44H5-146	753116.22	985274.98	6	40mm practice	OE
44H5-20	753133.46	985222.79	0	40mm practice	OE
44H5-24	753131.08	985246.13	4	40MM PRATICE	OE
44H5-25	753132.62	985241.24	0	40MM PRATICE	OE
44H5-39	753160.86	985235.05	10	40MM PRATICE	OE
44H5-4	753038.07	985204.99	4	40MM PRATICE	OE
44H5-40	753160.62	985245.65	5	40MM PRATICE	OE
44H5-41	753160.5	985249.94	0	40MM PRATICE	OE
44H5-53	753189.61	985258.81	5	40MM PRATICE	OE
44H5-55	753173.01	985257.02	6	40mm practice	OE
44H5-57	753138.27	985249.98	6	40MM PRATICE	OE
44H5-6	753025.09	985237.14	0	40MM PRATICE	OE
44H5-61	753160.84	985265.02	6	40MM PRATICE	OE
44H5-68	753183.64	985270.51	3	40mm practice	OE
44H5-87	753160	985289.96	0	40MM - Surf	OE
44H5-88	753153.43	985290.44	4	40MM	OE
44H5-9	753068.68	985237.49	1	40mm practice	OE
44H5-94	753141.25	985291.51	4	40mm practice	OE
44H5-99	753142.21	985270.74	3	40MM	OE
44H6-14	753174.34	985397.27	0	40mm practice	OE
44H6-2	753137.78	985384.99	2	40mm practice	OE
44H7-15	753175.92	985414.98	4	40mm practice	OE
44H7-18	753177.7	985422.51	4	40mm practice	OE
44H7-21	753155.85	985427.31	4	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
44H7-26	753199.87	985429.51	12	40mm practice	OE
44H7-37	753197.85	985469.98	2	40mm practice	OE
44H7-49	753142.65	985475.94	2	SLAP FLARE	OE
44H7-55	753169.57	985475	4	40mm practice	OE
44H7-62	753156.16	985483.79	2	40mm practice	OE
44H7-68	753126.93	985442.57	2	SLAP FLARE	OE
44H7-79	753168.36	985486.05	2	40mm practice	OE
44H7-82	753174.04	985495.42	0	40mm practice	OE
44H7-90	753122.05	985451.96	2	40MM PART	OE
44H8-20	753231.58	985504.94	1	40mm practice	OE
44H8-28	753280.5	985505.67	2	40mm practice	OE
44H8-3	753043.03	985547.51	3	40mm practice	OE
44H8-36	753269.91	985516.61	3	40mm practice	OE
44H8-39	753297.02	985529.98	4	40mm practice	OE
44H8-63	753226.15	985589.62	3	40mm practice	OE
44H8-70	753198.58	985570.68	2	CS GRENADE	OE
44H8-73	753195.32	985595.22	0	40mm practice (2)	OE
44H8-74	753180.54	985596.39	0	CS GRENADE	OE
44H8-76	753159.01	985554.63	2	CS GRENADE	OE
44H8-81	753151.71	985594.06	2	40mm practice	OE
44H8-88	753011.4	985557.85	2	CS GRENADE	OE
44H9-16	753150.46	985605.97	3	Pop-up flare	OE
44H9-45	753261.18	985633.5	2	Pop-up flare	OE
44J10-12	753285.71	985713.73	4	Slap flare	OE
44J10-16	753287.2	985724.26	6	40mm practice	OE
44J10-19	753261.88	985736.71	3	Slap flare	OE
44J10-38	753257.48	985780.01	1	40mm practice	OE
44J7-1	753210.99	985429.45	3	40mm practice	OE
44J7-13	753295.26	985439.99	3	40mm practice	OE
44J7-17	753239.22	985435.29	2	40mm practice	OE
44J7-48	753239.65	985475.76	6	40mm practice	OE
44J7-57	753281.64	985495.76	8	40mm practice	OE
44J7-58	753272.5	985494.9	3	40mm practice	OE
44J7-67	753266.58	985495.25	3	40mm practice	OE
44L1-42	753436.06	984998.85	0	40mm practice	OE
44L1-47	753500.06	984993.68	6	40mm practice	OE
44L9-56	753450.1	985789.22	9	40mm practice	OE
45A11-10	737411.81	1013209.18	12	20mm frag	OE
45A11-11	737407.47	1013218.13	2	20mm	OE
45A11-13	737426.38	1013221.9	12	Butterfly bomb and fuze	OE
45A11-16	737449.89	1013246.11	12	20mm	OE
45A11-18	737472.55	1013220.78	4	20mm and frag	OE
45A11-2	737490.67	1013195.06	8	Lg frag and 20mm (2)	OE
45A11-7	737408.31	1013181.35	2	20mm	OE
45A11-8	737407.89	1013193.66	6	M61 fuze	OE
45A1-25	737445.74	1012197.51	2	FUZE	OE
45A1-29	737468.17	1012209.15	2	20MM	OE
45A1-3	737423.88	1012177.65	1	20MM	OE
45A13-1	737434.86	1013375.55	2	Fuze	OE
45A13-11	737421.34	1013397.28	6	Frag and 20mm	OE
45A13-13	737420.62	1013414.4	6	Fuze and frag 2"-6"	OE
45A13-15	737502.78	1013413.25	6	Bomb fuzes (2)	OE
45A13-17	737434.19	1013427.47	1	Frag and 20mm	OE
45A13-19	737470.04	1013447.34	8	20mm and frag	OE
45A13-2	737442.63	1013366.63	6	Fuze parts and 20mm	OE
45A13-20	737475.08	1013446.05	6	20mm (2)	OE
45A13-5	737499.04	1013362.31	4	20mm	OE
45A1-46	737427.48	1012242.47	2	FUZE	OE
45A1-47	737437.99	1012223.31	2	FUZE	OE
45A1-48	737449.78	1012222.46	4	FUZE	OE

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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45A1-51	737449.78	1012232.96	3	FUZE	OE
45A1-59	737485.14	1012259.51	0	20MM (surf)	OE
45A1-6	737453.83	1012180.06	6	20MM & FRAG	OE
45A1-61	737477.9	1012249.57	1	FUZE	OE
45A1-64	737451.91	1012246.59	4	20MM	OE
45A1-68	737437.28	1012245.03	2	20MM	OE
45A1-69	737448.36	1012256.1	2	FUZE ADPT.	OE
45A1-70	737442.39	1012254.97	3	20MM	OE
45A4-1	737445.75	1012459.48	3	75mm	OE
45A4-14	737441.5	1012494.65	1	Fuze	OE
45A4-18	737450.39	1012488.41	3	PD fuze	OE
45A4-19	737460.47	1012489.87	6	PD fuze	OE
45A4-21	737460.07	1012503.27	4	20mm	OE
45A4-33	737470.02	1012501.68	3	20mm	OE
45A4-4	737429.96	1012474.48	3	20mm	OE
45A4-40	737433.88	1012544.66	3	20mm, 57mm	OE
45A4-42	737432.95	1012569.6	1	M66	OE
45A4-44	737454.57	1012572.12	5	M66	OE
45A4-58	737452.08	1012606.87	2	Frag, fuze	OE
45A4-6	737409.13	1012471.96	4	Fuze, 20mm	OE
45A4-64	737503.07	1012593.66	2	Fuze	OE
45A4-66	737454.99	1012632.83	2	Fuze	OE
45A4-67	737444.44	1012636.21	6	Fuze	OE
45A4-69	737450.39	1012647.85	2	Fuze	OE
45A4-70	737422.52	1012652.18	3	Landmine fuze	OE
45B15-10	737595.67	1013602.22	5	57MM	OE
45B15-15	737580.04	1013630.81	3	FUZE	OE
45B15-18	737557.92	1013648.13	4	FUZE	OE
45B15-19	737545.24	1013653.48	3	FUZE	OE
45B15-2	737523.21	1013564.67	5	FUZE	OE
45B15-4	737586.67	1013582.67	4	FUZE	OE
45B15-6	737532.78	1013588.02	5	FUZE	OE
45B15-7	737546.15	1013586.75	6	FUZE (2)	OE
45B15-9	737581.32	1013600.81	6	75MM PROJECTILE	OE
45B3-16	737568.98	1012382.87	3	Fuze	OE
45B3-17	737565.1	1012376.3	2	Fuze	OE
45B3-23	737527.59	1012394.92	2	M66	OE
45B3-3	737533.35	1012364.11	3	Fuze	OE
45B3-33	737575.68	1012413.14	3	20mm	OE
45B3-35	737569.92	1012411	3	20mm	OE
45B3-37	737558.67	1012405.78	6	Frag, 20mm	OE
45B3-39	737552.5	1012415.02	3	20mm	OE
45B3-4	737575.01	1012362.5	1	20mm	OE
45B3-44	737519.3	1012415.7	2	Fuze	OE
45B3-45	737510.05	1012422.4	2	Fuze	OE
45B3-46	737507.5	1012447.19	3	20mm	OE
45B3-47	737517.55	1012455.77	3	20mm	OE
45B3-49	737536.45	1012460.19	0	Frag, 20mm	OE
45B3-57	737580.53	1012439.42	2	Fuze	OE
45B3-66	737538.59	1012432.85	2	Fuze	OE
45B3-7	737591.35	1012374.56	3	20mm	OE
45B9-1	737584.92	1012970.35	4	75mm projectile	OE
45B9-11	737516.43	1013030.61	6	75mm (1/2), frag	OE
45B9-12	737535.07	1013044.26	12	75mm, 20mm	OE
45B9-17	737568.88	1013023.02	6	Fuze, frag	OE
45B9-18	737525.75	1013029.74	6	20mm (5), fuze	OE
45B9-19	737562.6	1012977.72	6	Fuze	OE
45B9-2	737605.08	1012987.26	4	20mm	OE
45B9-24	737510.02	1013071.42	0	Frag, 75mm, fuze	OE
45B9-28	737593.09	1013091.31	12	Fuzes (2), frag (5)	OE

APPENDIX C
UXO AND OE RECOVERED
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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45B9-32	737550.02	1013075.79	0	Fuzes and frag to 2'	OE
45B9-34	737535.16	1013076.01	0	Frag, 20mm	OE
45B9-35	737514.39	1013087.81	6	Fuzes, frag, armor plate	OE
45B9-36	737518.32	1013079.5	6	Havar venturi and lg frag	OE
45B9-39	737604.68	1013140.5	4	Frag, 20mm, 60mm motor	OE
45B9-4	737534.2	1012998.31	6	Fuze, frag, 20mm	OE
45B9-5	737543.74	1013007.85	11	20mm, fuze	OE
45B9-9	737578.2	1013032.56	12	Lg frag, fuze	OE
45C13-10	737695.59	1013391.98	12	75MM FUZE	OE
45C13-12	737664.66	1013387.1	4	FUZE	OE
45C13-13	737654.89	1013381.78	4	20 MM	OE
45C13-14	737649.86	1013387.1	3	FUZE	OE
45C13-17	737692.19	1013413.14	12	ROCKET VENTURI	OE
45C13-23	737670.08	1013462.45	4	FUZE	OE
45C13-31	737679.66	1013513.87	4	FUZE	OE
45C13-32	737695.06	1013518.66	9	FUZE	OE
45C13-38	737637.44	1013545.81	5	FUZE	OE
45C13-39	737614.79	1013548.83	3	ROCKET VENTURI	OE
45C13-4	737654.15	1013361.51	4	BASE FUZE	OE
45C13-5	737702.84	1013360.33	6	FUZE (2)	OE
45C2-1	737699.96	1012262.89	3	75mm	OE
45C2-14	737675.06	1012355.71	4	Fuze	OE
45C2-16	737701.19	1012343.22	6	Base fuze	OE
45C2-18	737676.15	1012276.87	6	Base fuze	OE
45C2-2	737689.79	1012262.19	4	75mm	OE
45C2-3	737686.44	1012270.69	8	Fuzes (2)	OE
45C2-4	737696.2	1012286.71	4	75mm - HE	OE
45C2-5	737699.12	1012311.36	12	Fuzes (3), 20mm	OE
45C2-6	737693.83	1012316.1	6	Base fuze (2)	OE
45C6-1	737621.9	1012660.89	2	Fuze, 20mm	OE
45C6-10	737705.03	1012661.8	3	20mm	OE
45C6-12	737692.24	1012683.08	2	20mm	OE
45C6-15	737675.8	1012690.91	2	Fuze	OE
45C6-16	737660.01	1012684.52	1	M66 fuze	OE
45C6-18	737624.77	1012689.74	2	20mm, fuze parts	OE
45C6-20	737629.08	1012702.4	3	M103 fuze	OE
45C6-22	737604.94	1012694.83	1	20mm	OE
45C6-23	737642.52	1012713.75	3	20mm	OE
45C6-24	737646.31	1012709.19	3	M66	OE
45C6-27	737662.49	1012702.01	2	20mm (2)	OE
45C6-29	737672.27	1012707.75	3	20mm, frag	OE
45C6-3	737628.69	1012666.9	2	20mm	OE
45C6-35	737684.96	1012725.7	2	Fuze	OE
45C6-38	737661.73	1012735.37	4	Fuze, frag (2)	OE
45C6-39	737662.51	1012743.33	4	Frag (3), 20mm (2)	OE
45C6-44	737628.58	1012753.51	0	Fuze	OE
45C6-53	737698.76	1012745.69	6	Fuzes (4), 20mm (2)	OE
45C6-54	737697.72	1012718.15	8	Fuze, frag	OE
45C6-58	737695.38	1012731.15	3	20mm	OE
45D11-10	737742.67	1013202.65	12	Nose fuze, 20mm	OE
45D11-12	737775.7	1013204.23	6	75mm HE	OE
45D11-14	737776.6	1013221.2	8	Fuze, fuze parts, 20mm (5)	OE
45D11-15	737743.57	1013245.18	6	Frag, bomb fuze parts, 20mm (5)	OE
45D11-16	737749.45	1013250.16	6	75mm, frag, 20mm (5)	OE
45D11-17	737763.48	1013258.53	6	20mm (2), fence post	OE
45D11-18	737768.23	1013231.61	10	75mm, M83	OE
45D11-19	737752.85	1013235.23	8	20mm, frag	OE
45D11-2	737740.4	1013172.78	6	Nose fuze, frag	OE
45D11-3	737712.35	1013183.87	2	75mm HE and fuze	OE
45D11-5	737744.02	1013183.87	6	Havar venturi	OE

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UXO AND OE RECOVERED
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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45D4-12	737705.4	1012472.66	4	20mm (2)	OE
45D4-17	737740.15	1012485.76	2	20mm	OE
45D4-18	737745.09	1012483.88	0	20mm	OE
45D4-2	737730.66	1012460.23	6	20mm	OE
45D4-3	737732.66	1012472.52	3	M66 fuze	OE
45D4-5	737735.07	1012480.14	0	20mm and frag	OE
45D4-52	737705.2	1012494.97	4	20mm	OE
45D4-53	737704.93	1012501.36	3	20mm	OE
45D4-54	737709.87	1012506.57	6	Fuze	OE
45D4-57	737720.16	1012519.14	6	Fuze	OE
45D4-6	737722.11	1012467.98	4	20mm	OE
45D4-66	737737.27	1012534.11	4	20mm (2)	OE
45D4-67	737750.09	1012529.83	4	20mm	OE
45D4-69	737774.41	1012530.1	3	Bomb fuze	OE
45D4-70	737794.74	1012534.23	3	20mm frag	OE
45D4-71	737784.99	1012542.65	6	Heavy frag and 20mm	OE
45D4-72	737787.53	1012549.6	4	Fuze	OE
45D4-74	737780.45	1012559.09	6	Lg frag (2)	OE
45D4-75	737773.1	1012546.52	4	Fuze and frag	OE
45D4-77	737761.34	1012553.07	3	75mm HE	OE
45D4-78	737758.53	1012546.39	3	Frag and fuze	OE
45D4-79	737748.78	1012560.16	8	Fuze	OE
45D4-80	737739.96	1012550.4	8	20mm and fuzes (2)	OE
45D4-81	737734.88	1012558.69	5	20mm (2)	OE
45D4-82	737738.62	1012539.84	4	20mm and frag	OE
45D4-9	737720.1	1012477.34	3	20mm and frag	OE
45D9-11	737784.97	1013047.22	6	Fuze, 20mm	OE
45D9-12	737786.1	1013051.52	8	Fuze, 20mm	OE
45D9-14	737726.6	1013057.4	4	20mm frag	OE
45D9-18	737716.42	1012984.32	4	Frag, fuze	OE
45D9-19	737763.71	1012969.61	1	Base fuze	OE
45D9-3	737775.02	1012990.66	4	75mm, 20mm, fuze	OE
45D9-5	737801.26	1012992.69	3	75mm	OE
45D9-7	737782.03	1013015.54	16	20mm, lg frag	OE
45E1-12	737857.44	1012219.7	10	20mm, fuze	OE
45E1-17	737842.59	1012249.77	3	90mm	OE
45E1-18	737844.48	1012243.84	3	81mm mortar, fuze	OE
45E1-19	737851.1	1012232.37	8	75mm	OE
45E12-1	737887.23	1013260.79	10	Base plate, fuze	OE
45E12-10	737804.88	1013262.6	0	Frag, base plate, fuze	OE
45E12-12	737833.39	1013344.28	18	Frag, 20mm (5), bomb fuze - burial area	OE
45E12-13	737827.73	1013340.2	18	Base plate, 20mm (5), frag	OE
45E12-14	737805.11	1013329.12	4	Frag, 20mm	OE
45E12-16	737899.23	1013337.49	14	Frag (2), fuzes (2)	OE
45E12-18	737874.79	1013314.86	6	Fuzes (2), frag (2)	OE
45E12-19	737841.08	1013313.96	8	75mm	OE
45E12-2	737902.17	1013267.35	6	Fuze	OE
45E12-3	737894.93	1013270.29	6	Frag, 20mm	OE
45E12-4	737883.16	1013280.02	24	20mm, fuze, parts	OE
45E12-5	737852.85	1013273.69	12	Frag, 20mm (2), assoc. frag	OE
45E12-7	737890.63	1013333.64	8	Frag, fuze, base fuze	OE
45E12-8	737832.03	1013323.69	4	75mm projectile, frag	OE
45E12-9	737843.57	1013360.12	4	Wire, frag, 20mm	OE
45E1-3	737887.2	1012189.12	10	Venturi, 20mm	OE
45E13-1	737807.83	1013431.15	4	Metal scrap, fuze, plate	OE
45E13-11	737860.09	1013455.59	10	75mm	OE
45E13-14	737894.47	1013452.65	10	Frag, fuze, base plate	OE
45E13-16	737888.37	1013417.58	6	75mm	OE
45E13-17	737847.87	1013409.66	6	Base plate, 20mm, fuze	OE
45E13-18	737819.82	1013406.04	8	20mm, lg frag, 57mm	OE

APPENDIX C
UXO AND OE RECOVERED
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Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45E13-20	737818.91	1013379.12	6	Trash, 20mm	OE
45E13-3	737806.92	1013418.71	6	Frag, 20mm(s)	OE
45E13-4	737809.86	1013443.6	6	Base fuze, 155mm	OE
45E13-5	737833.84	1013444.28	6	Havar venturi, fuzes (5), 20mm	OE
45E13-6	737843.57	1013433.42	8	Fuze, frag, base plate	OE
45E13-7	737842.44	1013422.78	12	Base plate, 20mm(s), fuzes	OE
45E13-8	737848.1	1013426.18	14	Fuzes, frag, 20mm(s)	OE
45E13-9	737848.55	1013418.03	12	Frag (6), fuzes, 20mm (s)	OE
45E1-4	737900.96	1012198.02	6	Rkt motor, 57mm, fuze	OE
45E1-8	737822.46	1012204.76	8	57mm, frag	OE
45E4-1	737848.82	1012460.22	6	20mm frag	OE
45E4-11	737880.94	1012602.23	2	75mm	OE
45E4-12	737808.58	1012591.46	8	20mm pit	OE
45E4-13	737818.51	1012600.72	8	20mm (6)	OE
45E4-14	737836.41	1012618.88	8	20mm and fuze pit	OE
45E4-16	737876.3	1012618.71	2	Lg frag and 37mm	OE
45E4-18	737903.56	1012611.81	10	75mm (3) HE	OE
45E4-2	737838.09	1012460.72	12	20mm pit - stopped dig due to water	OE
45E4-3	737853.94	1012472.11	3	20mm	OE
45E4-4	737899.51	1012460.05	14	75mm, butterfly frag (2)	OE
45E4-5	737889.61	1012500.85	6	75mm HE fuze	OE
45E4-7	737819.1	1012524.63	7	20mm pit	OE
45E4-9	737880.61	1012567.05	2	Lg frag and 75mm	OE
45F3-10	737982.07	1012393.72	12	20mm, nails, frag	OE
45F3-11	737965.03	1012379.9	8	Heavy wire, fuze	OE
45F3-12	737960	1012376.83	12	Base fuze	OE
45F3-14	737916.28	1012393.86	12	Frag, fuze	OE
45F3-17	737937.51	1012416.48	4	75mm	OE
45F3-18	737944.96	1012445.36	4	75mm	OE
45F3-19	737950.56	1012452.48	4	75mm	OE
45F3-2	737993.32	1012376.38	18	Burn hole - 4.2" base, 20mm, nails	OE
45F3-6	737926.82	1012430.4	6	75mm APHE, M-83 (1/2)	OE
45F3-7	737969.88	1012449.81	18	75mm APHE, fuze	OE
45F3-8	737957.79	1012458.91	0	8" NUC sim round	OE
45F3-9	737915.96	1012446.96	1	75mm	OE
45F9-1	737912.69	1012969.72	6	75mm and 1/2 57mm	OE
45F9-14	737985.13	1012988.1	0	115mm HEAT	OE
45F9-25	737975.72	1013254.85	1	75mm	OE
45F9-26	737921.4	1013011.39	6	75mm	OE
45F9-30	737995.66	1013083.38	6	Frag and fuze	OE
45F9-33	737995.13	1013106.07	6	Frag (3) and 20mm	OE
45F9-35	737972.92	1013123.52	6	75mm (1/2)	OE
45F9-7	737941.41	1012983.24	6	20mm, bomb frag, fuze	OE
45G14-1	738005.25	1013463.58	2	FUZE	OE
45G14-12	738027.36	1013515.92	4	FUZE	OE
45G14-14	738044.89	1013533.72	4	FUZE	OE
45G14-16	738055.33	1013544.85	5	FUZE	OE
45G14-17	738053.8	1013550.83	4	FUZE	OE
45G14-4	738058.23	1013478.2	8	20 MM	OE
45G14-8	738064.58	1013499.3	3	FRAG & 20 MM	OE
45G14-9	738074.1	1013504.13	6	BASE FUZE	OE
45G2-1	738033.19	1012267.56	4	Frag, fuze	OE
45G2-11	738027.02	1012309.59	4	57mm - HE, fuze w/ detonator	OE
45G2-12	738012.51	1012323.28	0	75mm	OE
45G2-13	738040.9	1012320.4	6	120mm HEAT (MT)	OE
45G2-17	738005.9	1012295.49	10	Frag, 20mm	OE
45G2-2	738090.3	1012269.34	6	Base plates (2), 20mm, frag	OE
45G2-20	738100.05	1012292.75	12	Fuzes, Base plate	OE
45G2-3	738095.92	1012273.45	6	Frag, base plate, 20mm	OE
45G2-9	738061.68	1012304.52	3	75mm - HE	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45G6-10	738043.52	1012801.83	4	37MM APHE	OE
45G6-11	738049.13	1012819.66	3	20 MM & FUZE	OE
45G6-12	738043.09	1012828.86	2	FUZE	OE
45G6-19	738082.9	1012710.51	2	FUZE & 20 MM	OE
45G6-21	738031.17	1012760.79	3	FUZE	OE
45G6-23	738093.65	1012731.06	8	20 MM BURIAL AREA	OE
45G6-29	738075.97	1012857.75	2	FUZE	OE
45G6-36	738019.11	1012799.67	2	25 MM	OE
45G6-8	738066.58	1012763.22	2	FUZE & FRAG	OE
45H12-1	738161.67	1013295.86	6	75mm projectile	OE
45H12-10	738150.13	1013352.65	2	20mm, metal and scrap	OE
45H12-11	738140.4	1013335.23	0	Fuze	OE
45H12-12	738141.53	1013330.02	6	Frag (3), fuze at 12"	OE
45H12-13	738130.9	1013318.71	6	120mm case, frag	OE
45H12-15	738105.34	1013340.2	6	Lg frag, 20mm	OE
45H12-17	738109.41	1013298.8	6	20mm, frag	OE
45H12-18	738143.12	1013265.09	6	75mm (1/2)	OE
45H12-19	738172.76	1013285.68	6	Frag, fuze	OE
45H12-20	738145.61	1013295.18	6	Lg frag, 20mm	OE
45H12-3	738174.79	1013305.59	10	20mm, frag	OE
45H12-7	738180.45	1013340.43	4	Metal pail, 20mm, scrap	OE
45H12-9	738196.51	1013352.65	4	Lg frag, 20mm	OE
45H3-1	738155.4	1012424.9	12	Hole full of 20mm	OE
45H3-10	738112.38	1012434.02	12	Frag, 20mm	OE
45H3-18	738190.19	1012402.79	10	Frag, 20mm	OE
45H3-19	738159.87	1012389.19	10	Frag, fuze, 20mm	OE
45H3-5	738184.16	1012430.47	18	75mm, 20mm	OE
45H3-9	738200.11	1012411.43	12	Frag, 20mm	OE
45I13-12	738285.95	1013366.01	3	VENTED FUZE	OE
45I13-14	738233.86	1013406.61	4	75MM PROJECTILE	OE
45I13-16	738207.95	1013409.27	5	75MM	OE
45I13-20	738287.41	1013433.07	4	75MM PROJO	OE
45I13-7	738250.24	1013367.97	5	20 MM	OE
45I13-8	738253.88	1013370.91	6	FRAG & 20 MM	OE
45I13-9	738236.38	1013368.11	6	20 MM	OE
45I2-10	738279.93	1012339.84	3	75mm - HE	OE
45I2-13	738249.99	1012350.95	5	Frag, 20mm	OE
45I2-16	738268.81	1012279.52	2	Metal fuze	OE
45I2-5	738287.43	1012310.92	6	75mm shell, VT fuze	OE
45I2-7	738215.36	1012328.16	4	Fuze	OE
45I2-9	738264.96	1012339.98	2	57mm	OE
45J11-1	738399	1013160.11	0	75mm	OE
45J11-10	738384.52	1013207.62	3	Fuze, 20mm	OE
45J11-11	738393.34	1013210.34	3	Frag, components, fuze	OE
45J11-12	738357.6	1013180.02	6	75mm, frag	OE
45J11-17	738305.56	1013248.58	5	20mm, tail fuze, lg frag	OE
45J11-18	738311.9	1013253.1	6	Frag, fuze, components	OE
45J11-20	738392.66	1013257.63	10	Frag, 20mm	OE
45J11-4	738309.41	1013188.85	6	75mm frag, 20mm	OE
45J11-5	738312.58	1013205.14	5	20mm (2)	OE
45J11-9	738366.65	1013208.3	5	Bomb fuze, frag	OE
45J2-11	738315.53	1012264.68	3	FUZE	OE
45J2-14	738336.76	1012287.52	3	40MM PRATICE & 20 MM	OE
45J2-16	738345.01	1012306.44	3	BOMB FUZE	OE
45J2-17	738322.97	1012316.84	6	FUZE ADPT.	OE
45J2-3	738313.83	1012340.9	5	FUZE (2)	OE
45J2-8	738387.48	1012340.08	4	20 MM & FRAG	OE
45J8-1	738304.54	1012872.68	0	105MM (surf)	OE
45J8-10	738307.35	1012925.28	8	75MM BASE	OE
45J8-11	738364.86	1012957.27	4	105MM PROJO (MT)	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45J8-12	738397.56	1012957.54	3	FRAG & 20 MM	OE
45J8-14	738388.41	1012929.15	6	75MM & 20MM	OE
45J8-15	738390.31	1012863.73	12	FRAG & 20 MM	OE
45J8-3	738367.45	1012907.56	6	20 MM & FRAG	OE
45J8-5	738399.05	1012896.85	6	FRAG & 20 MM	OE
45J8-8	738403.31	1012863.62	2	20 MM	OE
45K10-11	738457.23	1013150.18	6	VT fuze	OE
45K10-15	738451.8	1013134.1	10	20mm (2), 90mm round	OE
45K10-19	738481.67	1013075.03	3	20mm, frag	OE
45K10-2	738484.62	1013127.54	2	57mm, frag	OE
45K10-3	738488.01	1013138.86	6	75mm, frag, 57mm	OE
45K10-5	738477.6	1013152.89	8	Fuze BP M61	OE
45K10-8	738461.75	1013137.73	6	Fuze parts, fuze, frag	OE
45K10-9	738410.83	1013145.65	7	Frag, 20mm, lg frag	OE
45K5-11	738484.9	1012587.4	8	Fuzes (2), 75mm frag, wire, and 20mm	OE
45K5-14	738482.86	1012657.66	4	75mm (1/2)	OE
45K5-17	738435.8	1012651.52	8	20mm (surf), frag, and thermal battery	OE
45K5-20	738487.4	1012571.48	6	Frag and 20mm	OE
45K5-4	738498.31	1012581.71	4	75mm WP	OE
45K7-12	738423.83	1012835.42	6	37mm, 20mm, frag	OE
45K7-14	738416.5	1012841.45	2	37mm base	OE
45K7-18	738514.15	1012838.56	3	40mm practice	OE
45K7-19	738501.85	1012846.42	2	Fuze and frag	OE
45K7-2	738434.04	1012785.66	16	20mm frag	OE
45K7-3	738465.45	1012767.86	4	75mm and frag	OE
45L11-1	738574.39	1013161.32	0	75mm (1/2) and fuze (VT)	OE
45L11-10	738595.76	1013193.82	4	Fuze (VT) and frag	OE
45L11-11	738511.42	1013216.49	48	250lb bomb body (3) - stopped digging at 4'	OE
45L11-14	738598.07	1013214.47	0	Frag, fuze, and 20mm	OE
45L11-15	738521.4	1013222.4	3	Frag and fuze	OE
45L11-16	738562.58	1013229.34	4	75mm projectile	OE
45L11-17	738584.84	1013229.49	6	Fuzes and frag	OE
45L11-19	738547.55	1013256.66	6	Frag and fuze	OE
45L11-2	738580.31	1013167.96	6	57mm w/ HE	OE
45L11-5	738535.25	1013200.46	5	Frag and fuze (VT)	OE
45L11-6	738567.74	1013184.72	6	Frag and 20mm	OE
45L11-7	738582.48	1013177.64	4	20mm and frag	OE
45L11-8	738590.85	1013204.22	6	Lg frag (2) and fuze (VT)	OE
45L11-9	738551.28	1013216.06	6	Frag and 20mm	OE
45L3-1	738513.82	1012378.23	2	Fuze, frag, 20mm	OE
45L3-11	738564.19	1012424.66	2	Fuzes (3)	OE
45L3-12	738595	1012433.69	6	Base plate, 20mm, frag	OE
45L3-15	738524.07	1012445.87	12	40mm parts w/ HE, 90mm	OE
45L3-16	738518.6	1012452.99	3	90mm (2)	OE
45L3-18	738528.73	1012452.99	6	Fuzes (3), 20mm	OE
45L3-19	738535.16	1012457.37	7	Grenade parts - HE	OE
45L3-2	738545.59	1012410.53	2	Frag, fuze	OE
45L3-3	738514.77	1012392.2	6	Frag, 20mm	OE
45L3-4	738517.35	1012384.88	6	Frag (2), fuze, 20mm	OE
45L3-6	738547.22	1012403.06	5	Nose fuze, 20mm	OE
45L3-7	738563.52	1012413.65	4	75mm APHE	OE
45L3-9	738506.35	1012411.88	4	20mm (3), base plate	OE
45L9-10	738696.82	1013004.62	0	20mm (2), frag, 60 seriel fuze	OE
45L9-12	738694.84	1013048.2	2	75mm	OE
45L9-14	738665.14	1012992.87	7	75mm	OE
45L9-17	738687.49	1013016.2	2	20mm and frag	OE
45L9-18	738699.72	1013012.94	8	3.5" rocket	OE
45L9-2	738509.4	1012972.25	24	20mm pit - hole still hot below 2'	OE
45L9-23	738653.23	1013034.15	0	M61 fuze	OE
45L9-26	738618.54	1013036.92	3	Frag and 20mm	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45L9-29	738518.22	1012991.75	0	20mm (6)	OE
45L9-3	738609.85	1013026.58	8	Lg plate, fuzes, frag	OE
45L9-30	738521.44	1012997.73	14	20mm (30) and frag	OE
45L9-31	738516.3	1013002.51	0	20mm (5)	OE
45L9-32	738511.52	1013005.38	8	20mm and frag	OE
45L9-33	738537.5	1012960.93	8	Frag and M66 fuze	OE
45L9-8	738675.74	1012994.81	6	20mm frag (2)	OE
45M6-1	738691.04	1012666.71	3	75mm and frag	OE
45M6-13	738664.9	1012734.24	3	20mm and frag	OE
45M6-15	738686.27	1012705.59	2	Nose fuze	OE
45M6-17	738653.3	1012686.94	0	Fuzes (2)	OE
45M6-20	738651.71	1012666.48	4	Frag and 20mm	OE
45M6-6	738632.39	1012722.64	6	20mm and frag	OE
45M6-9	738662.4	1012663.07	4	Fuze and frag	OE
45MP-10	736973.81	1012163.41	4	Fuze	OE
45MP-102	737335.81	1012252.66	4	Fuze	OE
45MP-103	737343.06	1012244.87	4	M-60 base fuze	OE
45MP-105	736874.3	1012366.48	3	57mm	OE
45MP-106	736883.02	1012349.04	12	Fuze	OE
45MP-110	736920.18	1012367.57	5	Fuze	OE
45MP-115	736952.07	1012351.87	2	Fuze	OE
45MP-116	736961.28	1012355.36	2	Fuze, 20mm	OE
45MP-117	736976.73	1012371.3	12	Fuze	OE
45MP-12	737044.3	1012153.57	6	VT fuze	OE
45MP-122	737004.38	1012372.8	3	Fuze	OE
45MP-124	737029.54	1012352.12	6	Fuze	OE
45MP-13	737063.95	1012141.79	4	Fuze	OE
45MP-15	737055.37	1012164.59	4	20mm	OE
45MP-17	737071.89	1012165.01	4	Fuze	OE
45MP-170	736792.02	1012474.22	6	Fuze	OE
45MP-172	736800.93	1012456.53	5	Fuze	OE
45MP-173	736824.59	1012455	6	Fuze	OE
45MP-179	736949.62	1012446.01	2	Fuze	OE
45MP-18	737093.65	1012148.48	6	57mm	OE
45MP-180	736959.63	1012466.04	8	Fuze	OE
45MP-181	736957.41	1012443.78	2	Fuze	OE
45MP-184	737052.76	1012451.77	3	Fuze	OE
45MP-185	737058.88	1012442.03	3	Fuze	OE
45MP-186	737069.45	1012446.76	4	57mm - WP	OE
45MP-189	737059.16	1012471.25	8	Fuze, frag	OE
45MP-190	737067.23	1012471.53	4	20mm	OE
45MP-194	737096.99	1012445.93	4	Fuze	OE
45MP-21	737102.85	1012170.66	8	57mm - HE	OE
45MP-250	737270.85	1012553.17	4	57mm - HE	OE
45MP-254	736875.25	1012557.53	5	Fuze	OE
45MP-255	737014.96	1012551.6	6	Nose fuze	OE
45MP-256	737111.6	1012548.38	3	Fuze	OE
45MP-262	736787.95	1012566.24	2	Fuze	OE
45MP-263	736865.35	1012564.67	4	75mm APHE	OE
45MP-264	736874.99	1012558.94	5	Fuze	OE
45MP-267	736898.19	1012562.59	6	Fuze	OE
45MP-269	736991.43	1012561.18	3	20mm	OE
45MP-270	737001.34	1012553.35	3	Fuze	OE
45MP-272	737014.12	1012553.88	6	Nose fuze	OE
45MP-274	737030.03	1012560.14	4	Fuze	OE
45MP-275	737055.85	1012557.27	3	Fuze	OE
45MP-276	737082.95	1012560.53	2	20mm	OE
45MP-278	737105.12	1012552.7	3	Fuze	OE
45MP-280	737114.51	1012557.92	4	Fuze	OE
45MP-288	737201.87	1012558.7	5	20mm	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-289	737210.21	1012567.83	6	Fuze	OE
45MP-292	737222.99	1012563.13	3	Fuze	OE
45MP-294	737234.21	1012561.05	12	Fuze	OE
45MP-296	737251.11	1012560.67	3	Fuze	OE
45MP-297	737263.1	1012560.41	2	20mm	OE
45MP-298	737270.67	1012570.06	6	Fuze	OE
45MP-299	737275.62	1012562.5	4	57mm - HE	OE
45MP-3	736819.07	1012138.62	3	Nose fuze	OE
45MP-305	736777.99	1012652.47	6	Fuze	OE
45MP-306	736827.54	1012661.31	3	Fuze	OE
45MP-307	736866.65	1012654.61	6	Fuze	OE
45MP-308	736940.31	1012661.84	4	Fuze	OE
45MP-311	736995.01	1012665.63	5	Havar venturi	OE
45MP-312	737013.22	1012664.55	3	75mm - HE	OE
45MP-314	737037.59	1012665.63	4	Fuze	OE
45MP-315	737081.25	1012658.39	4	20mm	OE
45MP-317	737101.61	1012667.5	4	RKT venturi	OE
45MP-318	737107.5	1012658.12	6	VT fuze	OE
45MP-321	737157.84	1012664.11	6	Frag, fuze	OE
45MP-323	737176.32	1012665.72	5	RKT venturi	OE
45MP-324	737189.71	1012664.11	3	57mm	OE
45MP-325	737204.98	1012656.07	4	37mm	OE
45MP-326	737213.82	1012655	8	Nose fuze	OE
45MP-328	737220.25	1012664.91	4	20mm	OE
45MP-330	737239.8	1012655	8	20mm	OE
45MP-331	737251.79	1012657.49	6	M-66 fuze	OE
45MP-332	737259.02	1012662.32	6	Fuze	OE
45MP-333	737265.99	1012655.62	2	20mm, frag	OE
45MP-335	737293.58	1012663.66	3	20mm (2)	OE
45MP-339	736752.68	1012771.45	3	20mm	OE
45MP-341	736827.05	1012773.8	4	20mm	OE
45MP-342	736870.8	1012752.59	2	20mm	OE
45MP-343	736887.96	1012761.68	6	Fuze	OE
45MP-344	736917.58	1012749.9	4	57mm - HE	OE
45MP-345	736924.31	1012761.01	3	Fuze	OE
45MP-348	736989.24	1012787.38	8	20mm	OE
45MP-350	736969.04	1012760.78	6	Fuze	OE
45MP-352	737007.08	1012752.36	2	Fuze	OE
45MP-353	737015.49	1012761.79	4	Fuze	OE
45MP-355	737035.02	1012752.36	5	75mm	OE
45MP-357	737034.01	1012761.45	6	Havar venturi	OE
45MP-358	737062.28	1012753.03	2	20mm	OE
45MP-359	737073.39	1012763.47	4	Fuze	OE
45MP-360	737011.12	1012787.04	6	37mm APHE	OE
45MP-361	737086.52	1012783	6	M-48 fuze	OE
45MP-364	737106.38	1012752.69	4	Fuze	OE
45MP-365	737129.95	1012754.71	2	Fuze	OE
45MP-366	737126.24	1012783.34	6	Fuze	OE
45MP-367	737152.84	1012794.45	4	Fuze	OE
45MP-368	737148.46	1012763.47	3	Fuze	OE
45MP-369	737148.8	1012754.71	6	Fuze, 20mm	OE
45MP-370	737161.59	1012763.81	4	Fuze	OE
45MP-371	737171.39	1012794.55	8	Fuze	OE
45MP-372	737180.48	1012794.88	2	Fuze	OE
45MP-374	737184.86	1012784.78	2	Fuze	OE
45MP-376	737206.07	1012785.46	2	Fuze	OE
45MP-378	737186.88	1012754.48	4	Fuze, frag	OE
45MP-379	737211.79	1012755.15	2	Fuze	OE
45MP-380	737212.13	1012762.9	6	Fuze	OE
45MP-382	737230.3	1012762.56	2	Fuze	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-384	737254.88	1012763.57	4	Fuze	OE
45MP-385	737248.82	1012754.14	2	Fuze	OE
45MP-387	737248.48	1012786.8	8	20mm (2), fuze	OE
45MP-388	737259.93	1012795.89	8	Fuze	OE
45MP-389	737261.95	1012787.81	1	20mm, frag	OE
45MP-390	737272.38	1012789.5	8	Fuze	OE
45MP-396	737281.47	1012754.14	4	RKT venturi	OE
45MP-4	736803.8	1012162.26	3	57mm - HE	OE
45MP-420	737065.19	1012852.6	4	Fuze	OE
45MP-423	737025.8	1012862.7	2	Fuze	OE
45MP-424	736965.88	1012858.33	1	Fuze	OE
45MP-425	736927.17	1012853.95	6	Frag, fuze	OE
45MP-427	736816.74	1012966.5	10	Havar venturi	OE
45MP-429	736936.07	1012957.66	8	Fuze	OE
45MP-430	736952.05	1012956.64	10	Fuze	OE
45MP-432	737003.67	1012964.19	4	M-66 fuze	OE
45MP-433	737008.77	1012957.39	3	20mm	OE
45MP-435	737030.87	1012957.05	4	Fuze	OE
45MP-436	737050.93	1012962.83	6	Fuze	OE
45MP-437	737057.72	1012956.03	7	Fuze, 20mm	OE
45MP-438	737076.76	1012963.17	6	Base fuze	OE
45MP-443	737152.58	1012963.51	4	20mm	OE
45MP-447	737195.41	1012964.53	6	Nose fuze	OE
45MP-448	737212.18	1012965.16	4	Frag, 20mm	OE
45MP-449	737220.34	1012957	4	20mm (2), frag	OE
45MP-450	737230.2	1012965.16	3	20mm	OE
45MP-451	737240.06	1012957	12	20mm, frag	OE
45MP-452	737249.58	1012956.66	4	Fuze	OE
45MP-453	737249.92	1012965.16	3	Fuze	OE
45MP-455	737297.85	1012938.98	4	20mm	OE
45MP-458	737282.93	1012983.9	6	Fuze	OE
45MP-459	737279.87	1013001.92	6	20mm, fuze	OE
45MP-461	737251.66	1013033.55	3	VT fuze	OE
45MP-463	737219.7	1013057.35	3	57mm - HE	OE
45MP-466	737171.89	1013060.23	3	20mm	OE
45MP-467	737158.97	1013069.75	3	Frag, 20mm	OE
45MP-468	737132.11	1013061.25	6	Fuze	OE
45MP-471	737110.36	1013068.39	4	Fuze	OE
45MP-475	737065.34	1013057.54	6	Frag, 20mm	OE
45MP-476	737048.34	1013067.41	4	Fuze	OE
45MP-477	737037.8	1013067.07	10	Fuze	OE
45MP-479	736982.38	1013066.39	6	40mm - HE	OE
45MP-480	736952.81	1013065.71	6	Fuze	OE
45MP-481	736924.93	1013055.5	6	Fuze	OE
45MP-482	736915.75	1013055.5	6	Fuze	OE
45MP-485	736760.03	1013141.19	6	37mm	OE
45MP-486	736769.5	1013162.84	7	Fuze	OE
45MP-487	736817.76	1013163.74	6	Fuze	OE
45MP-490	736896.08	1013145.82	6	Fuze	OE
45MP-493	736924.61	1013146.6	3	Fuze	OE
45MP-494	736943.77	1013168.5	2	57mm	OE
45MP-496	736999.28	1013170.45	4	Fuze	OE
45MP-498	737033	1013164.09	8	Fuze	OE
45MP-499	737042.38	1013153.92	4	57mm	OE
45MP-5	736843.76	1012143.22	6	Nose fuze	OE
45MP-501	737047.46	1013170.34	5	Fuze	OE
45MP-502	737063.1	1013171.91	8	Fuze	OE
45MP-503	737075.61	1013148.45	2	20mm	OE
45MP-506	737103.76	1013162.52	6	37mm	OE
45MP-507	737110.4	1013153.14	5	Fuze	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-510	737134.64	1013155.48	6	Fuze	OE
45MP-511	737149.5	1013146.1	10	Frag, fuze	OE
45MP-512	737156.14	1013149.62	4	Fuze	OE
45MP-514	737181.55	1013155.88	3	Havar venturi	OE
45MP-516	737189.37	1013165.65	3	Fuze	OE
45MP-517	737205.01	1013148.05	6	Fuze	OE
45MP-518	737208.13	1013169.95	4	Fuze	OE
45MP-520	737233.54	1013171.52	8	Fuze	OE
45MP-521	737241.36	1013161.74	7	Base fuze	OE
45MP-522	737238.63	1013153.92	3	20mm	OE
45MP-523	737226.12	1013147.66	4	Fuze	OE
45MP-525	737249.57	1013159	1	20mm	OE
45MP-526	737257.78	1013169.56	3	Fuze	OE
45MP-527	737253.48	1013147.66	7	Fuze	OE
45MP-531	737272.24	1013169.17	8	Fuze	OE
45MP-548	737257.89	1013259.68	3	Fuze	OE
45MP-549	737256.71	1013246.78	4	Fuze	OE
45MP-551	737246.94	1013239.74	3	Fuze	OE
45MP-554	737201.87	1013244.41	4	Fuze	OE
45MP-555	737209.3	1013259.27	3	37mm	OE
45MP-557	737235.88	1013274.52	6	Fuze	OE
45MP-558	737283.18	1013275.69	2	20mm (2)	OE
45MP-563	737122.51	1013278.43	6	Fuze	OE
45MP-565	737076.38	1013280.78	4	Fuze	OE
45MP-566	737060.35	1013262.4	3	20mm	OE
45MP-567	737050.58	1013238.55	0	20mm	OE
45MP-568	737038.85	1013239.72	4	Fuze	OE
45MP-569	736991.53	1013239.94	3	25mm	OE
45MP-570	736972.37	1013238.76	5	Fuze	OE
45MP-571	736926.63	1013281.78	6	Fuze	OE
45MP-572	736919.6	1013228.21	3	Fuze	OE
45MP-573	736910.21	1013239.16	12	Frag, fuze	OE
45MP-574	736877.77	1013279.43	4	Fuze	OE
45MP-575	736891.45	1013227.82	10	Fuze	OE
45MP-576	736876.99	1013227.42	4	Fuze	OE
45MP-577	736837.11	1013250.89	3	Fuze	OE
45MP-578	736806.62	1013226.64	7	Fuze	OE
45MP-579	736760.73	1013236.08	6	Fuze	OE
45MP-580	736619.22	1013224.74	6	Fuze	OE
45MP-581	736512.44	1013219.65	6	20mm, fuze	OE
45MP-583	736269.87	1013218.6	6	Fuze	OE
45MP-584	736847.87	1013372.08	6	Fuze	OE
45MP-585	736876.02	1013348.23	3	Fuze	OE
45MP-586	736906.12	1013346.28	6	Fuze	OE
45MP-587	736944.82	1013375.6	3	20mm (2)	OE
45MP-588	736957.72	1013374.04	3	Fuze	OE
45MP-590	737013.45	1013368.36	4	57mm - HE	OE
45MP-6	736857.98	1012164.77	6	Nose fuze	OE
45MP-616	737110.98	1013444.81	10	Base fuze	OE
45MP-617	737037.1	1013448.33	3	Fuze	OE
45MP-620	736863.68	1013473.02	6	Fuze	OE
45MP-622	736813.02	1013466.53	4	Fuze	OE
45MP-623	736918.77	1013466.87	10	37mm	OE
45MP-624	736966.38	1013465.17	4	Fuze	OE
45MP-625	737100.31	1013449.38	5	Fuze	OE
45MP-626	737098.61	1013458.22	8	Fuze	OE
45MP-627	737121.75	1013454.82	3	Fuze	OE
45MP-644	736883.65	1013542.82	18	Fuze	OE
45MP-646	736924.26	1013537.02	6	Fuze	OE
45MP-648	737041.34	1013541.24	5	20mm	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-649	737053.99	1013542.29	6	Fuze	OE
45MP-650	737063.48	1013545.98	6	20mm	OE
45MP-654	737086.55	1013557.71	6	Fuze	OE
45MP-655	737099.21	1013559.87	1	20mm	OE
45MP-656	737115.89	1013560.8	2	20mm	OE
45MP-660	737200.82	1013563.27	6	Fuze	OE
45MP-661	737212.25	1013556.48	7	Fuze, frag	OE
45MP-665	737206.03	1013636.74	4	Fuze	OE
45MP-666	737193.98	1013636.43	6	Fuze, frag	OE
45MP-668	737127.52	1013636.12	6	57mm - HE	OE
45MP-670	737200.78	1013659.62	2	20mm	OE
45MP-674	737130.61	1013666.42	3	Fuze	OE
45MP-675	737111.22	1013659.56	5	Fuze	OE
45MP-676	737092.06	1013645.34	6	Fuze	OE
45MP-677	737037.97	1013668.53	3	Fuze	OE
45MP-678	737020.35	1013631.12	5	Fuze	OE
45MP-679	737001.19	1013638.54	6	Fuze	OE
45MP-680	736970.28	1013634.83	4	Fuze	OE
45MP-682	736973.99	1013667.6	4	Fuze	OE
45MP-683	736944.32	1013668.22	2	Fuze, frag	OE
45MP-685	736847.64	1013668.5	2	VT fuze	OE
45MP-686	736799.73	1013668.5	3	PD Fuze	OE
45MP-687	736786.13	1013609.76	3	20mm	OE
45MP-689	736774.92	1013751.63	5	Fuze	OE
45MP-69	736865.54	1012244.01	12	Nose fuze	OE
45MP-690	736875.07	1013752.56	3	Fuze	OE
45MP-692	736922.7	1013763.01	4	Fuze	OE
45MP-693	736948.04	1013752.81	3	Fuze	OE
45MP-694	737068.76	1013757.42	3	20mm	OE
45MP-697	737117.59	1013746.91	3	57mm - HE	OE
45MP-698	737133.35	1013763.6	1	20mm	OE
45MP-7	736938.66	1012168.85	6	Nose fuze	OE
45MP-700	737175.08	1013757.42	3	Fuze	OE
45MP-701	737210.94	1013732.07	5	Fuze	OE
45MP-702	737219.59	1013696.82	4	20mm	OE
45MP-707	737292.84	1013775.63	3	Fuze	OE
45MP-709	737361.33	1013952.28	4	57mm	OE
45MP-71	736936.41	1012285.63	5	Nose fuze	OE
45MP-710	737378.64	1013977.32	4	Fuze	OE
45MP-73	736955.2	1012265.76	6	Fuze	OE
45MP-740	737504.15	1014069.53	3	Fuze	OE
45MP-742	737499.07	1014371.64	6	Fuze	OE
45MP-746	737596.83	1014189.9	3	Fuze	OE
45MP-748	737603.89	1014047.03	4	20mm	OE
45MP-749	737605.12	1014010.85	3	20mm	OE
45MP-751	737606.67	1013949.02	4	Fuze	OE
45MP-756	737606.39	1013889.78	4	20mm	OE
45MP-757	737597.73	1013875.25	3	Fuze	OE
45MP-759	737554.77	1013918.53	8	Fuze	OE
45MP-761	737562.8	1013870.61	4	Fuze	OE
45MP-762	737573	1013861.34	4	Fuze	OE
45MP-763	737596.5	1013845.88	2	Fuze	OE
45MP-765	737567.05	1013829.84	6	20mm, fuze	OE
45MP-766	737574.47	1013816.24	6	Fuze	OE
45MP-769	737556.54	1013765.54	4	VT fuze	OE
45MP-770	737545.1	1013725.96	6	Base plate, 20mm	OE
45MP-774	737534.37	1013682.35	8	Fuze	OE
45MP-775	737540.24	1013664.42	6	Fuze	OE
45MP-776	737554.15	1013662.87	2	20mm	OE
45MP-777	737567.44	1013665.04	6	Fuze (2)	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-778	737577.95	1013665.66	5	20mm	OE
45MP-779	737587.84	1013664.42	3	20mm	OE
45MP-780	737596.8	1013665.97	4	Fuze	OE
45MP-784	737601.58	1013815.19	3	Fuze	OE
45MP-786	737599.11	1013785.52	6	20mm	OE
45MP-789	737601.43	1013721.61	4	Fuze	OE
45MP-792	737648.41	1013712.03	4	20mm, fuze	OE
45MP-794	737704.97	1013726.87	4	Fuze	OE
45MP-796	737703.73	1013758.09	2	20mm, frag	OE
45MP-797	737704.66	1013770.77	4	Fuze	OE
45MP-803	737695.04	1013876.74	4	20mm	OE
45MP-804	737695.66	1013894.51	6	Fuze	OE
45MP-805	737703.56	1013913.39	3	Fuze	OE
45MP-812	737702.15	1014155.89	6	Fuze	OE
45MP-815	737190.46	1013965.1	3	Fuze	OE
45MP-816	737195.88	1013991.12	5	40mm practice	OE
45MP-818	737171.67	1014047.51	4	Fuze	OE
45MP-819	737169.55	1014138.53	4	20mm	OE
45MP-82	737077.51	1012262.15	6	Fuze	OE
45MP-820	737149.55	1014292.57	36	90mm - APHE	OE
45MP-823	737804.16	1013968.4	2	Fuze	OE
45MP-824	737803.75	1013981.26	3	Fuze, bolt	OE
45MP-827	737804.99	1014014.45	4	Fuzes (2)	OE
45MP-83	737101.41	1012272.63	8	Fuze	OE
45MP-830	737803.75	1014029.79	3	Base fuze	OE
45MP-831	737804.99	1014043.48	5	Fuze	OE
45MP-832	737824.9	1014055.1	2	Fuze	OE
45MP-833	737806.65	1014089.94	6	Fuze	OE
45MP-834	737823.24	1014100.31	12	Fuze	OE
45MP-835	737806.65	1014115.25	4	20mm	OE
45MP-837	737806.01	1014156.17	4	Fuze	OE
45MP-838	737819.29	1014175.26	2	Fuze	OE
45MP-839	737809.33	1014192.27	4	M-48 fuze	OE
45MP-840	737806.84	1014241.25	2	Fuze	OE
45MP-841	737817.63	1014266.56	8	Fuze	OE
45MP-842	737816.93	1014359.12	6	Fuze	OE
45MP-843	737815.27	1014384.85	6	Fuze	OE
45MP-848	737909.08	1014201.24	5	Fuze	OE
45MP-849	737900.53	1014130.37	5	105mm Ill - candle	OE
45MP-850	737902.61	1014100.49	3	Fuze	OE
45MP-854	737899.29	1014022.05	3	Fuze	OE
45MP-858	737896.44	1013945.38	4	Fuze	OE
45MP-859	737898.93	1013931.69	4	Fuze	OE
45MP-86	737105.97	1012250.33	4	Fuze	OE
45MP-862	738008.13	1013967.67	6	Fuze	OE
45MP-866	738008.13	1014045.69	12	Fuze	OE
45MP-867	738011.45	1014066.03	4	Fuze	OE
45MP-868	738013.11	1014088.03	4	Fuze	OE
45MP-87	737134.97	1012253.02	3	Fuze	OE
45MP-870	738006.21	1014154.4	3	Fuze	OE
45MP-874	738014.97	1014295.76	5	Fuze	OE
45MP-875	738003.35	1014312.77	2	20mm	OE
45MP-881	738100.95	1014472.2	4	Fuze	OE
45MP-882	738102.61	1014441.08	10	Fuze	OE
45MP-883	738108	1014415.76	4	Fuze	OE
45MP-89	737184.78	1012276.45	6	20mm	OE
45MP-890	738110.72	1014138.94	4	57mm - HE	OE
45MP-892	738109.48	1014077.52	6	Fuze	OE
45MP-893	738103.25	1014062.99	4	Fuze	OE
45MP-895	738106.57	1014015.68	3	Fuze	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45MP-896	738110.52	1013990.23	6	20mm	OE
45MP-897	738102.22	1013965.74	10	20mm	OE
45MP-9	736935.94	1012137.46	3	Fuze	OE
45MP-901	737785.58	1013745.07	2	37mm	OE
45MP-902	737791.39	1013769.97	2	Fuze	OE
45MP-906	737803.37	1013910.49	3	20mm	OE
45MP-907	737831.17	1013922.53	4	57mm	OE
45MP-908	737832.83	1013883.93	2	Fuze	OE
45MP-909	737834.08	1013850.73	2	57mm	OE
45MP-910	737836.57	1013832.05	2	Fuze	OE
45MP-911	737837.81	1013806.32	2	Fuze	OE
45MP-914	737875.51	1013745.88	2	20mm	OE
45MP-915	737888.37	1013747.54	4	Fuze	OE
45MP-917	737900.4	1013779.5	4	Fuze	OE
45MP-919	737904.3	1013838.65	5	Fuze	OE
45MP-920	737897.67	1013859.81	2	Fuze	OE
45MP-922	737895.18	1013904.22	4	Fuze	OE
45MP-924	737892.1	1013740.14	4	40mm practice	OE
45MP-926	737919.49	1013747.2	2	Fuze, 20mm	OE
45MP-93	737261.31	1012265.17	3	Fuze	OE
45MP-933	738005.44	1013865.89	2	Fuze	OE
45MP-934	738014.99	1013856.34	3	Fuze	OE
45MP-936	738015.4	1013819.82	4	Fuze	OE
45MP-937	738011.67	1013796.16	3	57mm	OE
45MP-938	738008.76	1013779.98	4	Fuze	OE
45MP-94	737275.27	1012262.48	3	Fuze	OE
45MP-945	738104.9	1013896.65	8	57mm - HE	OE
45MP-946	738099.09	1013879.22	6	Fuze	OE
45MP-947	738099.92	1013932.75	5	Fuze	OE
45MP-959	738065.93	1013744.24	4	Fuze	OE
45MP-966	737982.95	1013745.48	4	Fuze	OE
45MP-968	737924.88	1013720.25	6	Fuze	OE
45MP-97	737314.33	1012273.34	6	Fuze	OE
45MP-970	737801.27	1013865.14	4	M-66 fuze	OE
45N11-10	738718.32	1013233.84	8	20mm and lg frag	OE
45N11-11	738725.02	1013249.91	6	75mm and 20mm	OE
45N11-12	738740.11	1013256.9	4	75mm	OE
45N11-14	738779.23	1013253.96	18	75mm	OE
45N11-19	738737.85	1013222.6	8	20mm AP	OE
45N11-2	738729.92	1013170.04	6	105mm	OE
45N11-20	738744.67	1013228.05	18	75mm - hole still hot	OE
45N11-3	738738.57	1013169.9	1	75mm	OE
45N11-4	738732.57	1013175.9	0	T-bar fuze (M48-M51) and frag	OE
45N11-7	738793.16	1013213.87	3	Venturi base and 20mm	OE
45N11-8	738745.69	1013201.03	12	M66 fuzes (4)	OE
45N14-29			2	37mm APHE	OE
45N14-39			8	37mm APHE	OE
45N4-11	738754.45	1012619.42	4	Frag, fuze	OE
45N4-13	738747.65	1012612	4	Fuze, 20mm	OE
45N4-14	738743.17	1012608.3	6	Fuze, frag	OE
45N4-18	738710.41	1012606.75	6	Tail fuze, 20mm	OE
45N4-2	738750.59	1012645.98	4	Havar venturi	OE
45N4-20	738709.95	1012596.25	4	Frag, 20mm	OE
45N4-24	738712.63	1012464.71	4	Fuzes (2), frag	OE
45N4-26	738706.58	1012493.54	4	Frag, 20mm	OE
45N4-31	738762.1	1012510.12	4	Base fuze	OE
45N4-38	738717.03	1012547.79	3	VT fuze, frag	OE
45N4-8	738794.78	1012624.36	4	75mm	OE
45N4-9	738778.87	1012613.86	4	75mm	OE
45N8-10	738757.74	1012911.77	6	105mm and frag	OE

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UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
45N8-12	738710.82	1012934.51	6	75mm and frag	OE
45N8-18	738732.63	1012936.53	8	75mm and frag	OE
45N8-4	738772.27	1012867.33	6	Frag and 20mm	OE
45N8-7	738790.13	1012861.1	4	Metal sign, fuze, and adapter	OE
45N8-9	738778.22	1012903.46	0	M66 and frag (2)	OE
45P8-14	738965.66	1012944.13	6	75mm	OE
45P8-3	738920.09	1012879.24	2	20mm	OE
45P8-6	738983.46	1012862.89	0	Fuze and warhead w/ HE, 20mm, and 36" leaking pipe	OE
45P8-7	738975.29	1012879.93	12	75mm and frag	OE
46B9-7	749220.58	1006578.59	6	Tail fuze	OE
46C13-2	749300.16	1006943.39	0	60mm mortar body	OE
46C7-1	749360.1	1006349.61	0	Rifle grenade part w/ HE	OE
46D3-10	749473.89	1005970.86	1	40mm practice	OE
46D3-17	749438.69	1006005.15	12	40mm practice	OE
46D3-3	749444.14	1005942.62	2	Slap flare	OE
46D3-9	749479.7	1005959.1	6	40mm practice	OE
46E13-29	749507.63	1007075.85	0	M904 bomb fuze	OE
46E7-1	749577.39	1006332.79	0	40mm practice	OE
46E7-13	749521.57	1006376.77	0	40mm practice, scrap	OE
46E7-15	749484.86	1006371.89	12	40mm practice	OE
46E7-16	749487.23	1006377.07	3	40mm practice	OE
46E7-17	749498.92	1006379.73	10	40mm practice	OE
46E7-2	749584.94	1006343.16	4	Bomb fuze	OE
46E7-20	749486.04	1006392.9	12	Bomb fuze	OE
46E7-24	749564.36	1006395.12	4	40mm practice	OE
46E7-30	749484.56	1006422.07	8	40mm practice	OE
46E7-31	749523.65	1006429.18	3	M123 Fuze	OE
46E7-5	749540.67	1006337.24	5	40mm practice (2)	OE
46E7-6	749487.52	1006339.9	6	40mm practice	OE
46E7-7	749526.02	1006358.26	4	40mm practice	OE
46E7-9	749505.88	1006364.04	6	40mm practice	OE
46F13-10	749678.4	1007055.54	0	40mm practice	OE
46F13-7	749657.39	1006985.73	0	40mm practice	OE
46F15-22	749659.89	1007310.15	2	40mm practice	OE
46F15-23	749672.34	1007316.38	2	40mm practice	OE
46G13-17	749724.58	1007013.76	4	40mm practice	OE
46G13-20	749722.05	1007038.19	2	40mm practice	OE
46G13-24	749725.06	1007052.84	3	40mm practice	OE
46G13-27	749723.42	1007067.75	2	40mm practice	OE
46G13-28	749755.98	1007074.46	0	40mm practice	OE
46G13-29	749783.75	1007076.79	2	40mm practice	OE
46G13-30	749780.6	1007096.4	2	40mm practice	OE
46G13-35	749697.29	1007108.99	1	40mm practice	OE
46G5-1	749690.18	1006125.97	12	40mm practice	OE
46G5-12	749745.8	1006164.58	8	40mm practice	OE
46G5-13	749735.09	1006172.21	1	40mm practice	OE
46G5-17	749722.96	1006201.81	6	40mm practice	OE
46G5-18	749734.85	1006190.06	6	40mm practice	OE
46G5-2	749709.55	1006124.94	4	40mm practice	OE
46G5-21	749769.64	1006210.18	2	40mm practice	OE
46G5-3	749706.32	1006138.15	4	40mm practice	OE
46G5-4	749689.3	1006142.7	6	40mm practice	OE
46G5-44	749730.15	1006291.28	0	40mm practice	OE
46G5-5	749685.19	1006156.8	8	40mm practice	OE
46I2-45	749892.53	1006006.21	12	40mm practice	OE
46I5-1	749886.38	1006137.76	2	40mm practice	OE
46I5-13	749904.25	1006176.61	6	40mm practice	OE
46I5-14	749896.52	1006183.45	2	40mm practice	OE
46I5-15	749908.7	1006194.55	4	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
46I5-16	749919.66	1006196.71	4	40mm practice	OE
46I5-17	749958.5	1006190.49	8	40mm practice	OE
46I5-21	749965.81	1006202.94	6	40mm practice	OE
46I5-24	749913.71	1006212.69	2	40mm practice	OE
46I5-26	749890.97	1006215.8	4	40mm practice	OE
46I5-27	749884.48	1006212.28	6	40mm practice	OE
46I5-28	749918.31	1006224.33	4	40mm practice	OE
46I5-30	749933.01	1006250.35	4	40mm practice	OE
46I5-32	749899.72	1006240.33	4	40mm practice	OE
46I5-33	749889.7	1006241.55	6	40mm practice	OE
46I5-38	749922.2	1006284.41	8	40mm practice	OE
46J1-37	749984.36	1005908.65	1	Slap flare	OE
46J1-43	749999.57	1005950.32	0	40mm practice	OE
46J1-46	750035.07	1005952.24	1	40mm practice	OE
46J1-60	750059.57	1005989.1	0	40mm practice	OE
46J4-12	749988.7	1006070.43	0	40mm practice	OE
46J5-23	750061.89	1006250.12	3	40mm practice	OE
46J5-3	750023.94	1006147.27	4	40mm practice	OE
46J5-30	750038.81	1006261.59	4	Al frag, fuze	OE
46J5-38	750015.18	1006274.17	3	40mm practice	OE
46J5-4	750035.53	1006125.22	2	40mm practice	OE
46J5-42	750021.5	1006318.05	5	40mm practice	OE
46J5-6	750058.99	1006176.17	10	40mm practice	OE
46K5-11	750181.5	1006143.25	4	40mm practice	OE
46K5-12	750120.7	1006149.37	12	40mm practice	OE
46K5-22	750135.59	1006168.7	8	40mm practice	OE
46K5-23	750156.04	1006175.52	6	40mm practice	OE
46K5-24	750164.24	1006177.88	12	Flare	OE
46K5-27	750169.36	1006189.7	12	40mm practice	OE
46K5-28	750174.65	1006194.15	8	40mm practice	OE
46K5-29	750182.32	1006211	6	40mm practice	OE
46K5-30	750144.43	1006184.69	8	40mm practice	OE
46K5-31	750112.66	1006183.15	12	40mm practice	OE
46K5-33	750085.78	1006211.42	6	40mm practice	OE
46K5-36	750132.59	1006219.36	8	40mm practice	OE
46K5-4	750143.52	1006124.06	10	40mm practice	OE
46K5-40	750121.76	1006256.63	12	40mm practice	OE
46K5-41	750136.12	1006254.68	12	40mm practice	OE
46K5-42	750159.12	1006247.71	12	40mm practice	OE
46K5-43	750181.14	1006247.71	7	Flare	OE
46K5-48	750137.37	1006262.2	8	Fuze	OE
46K5-49	750139.88	1006268.19	8	Fuze	OE
46K5-5	750140.18	1006135.19	6	40mm practice	OE
46K5-6	750162.57	1006139.92	12	40mm practice	OE
46K5-62	750096.68	1006304.25	6	40mm practice	OE
46K5-67	750174.43	1006310.11	6	40mm practice	OE
46K5-7	750169.81	1006133.8	6	40mm practice	OE
46K5-8	750174.82	1006125.59	3	40mm practice	OE
46K7-10	750156.61	1006320.72	2	Flare	OE
46L1-10	750283.29	1005775.43	5	40mm practice	OE
46L1-19	750195.62	1005827.02	4	MK2 grenade	OE
46L1-20	750277.83	1005837.03	6	40mm practice	OE
46L1-21	750282.49	1005836.47	6	40mm practice	OE
46L1-22	750272.19	1005854.24	4	40mm flare	OE
46L1-23	750285.45	1005856.5	3	40mm practice	OE
46L1-24	750277.13	1005871.45	4	40mm practice	OE
46L1-37	750240.47	1005907.62	4	40mm practice	OE
46L1-4	750257.51	1005732.3	6	40mm practice	OE
46L1-41	750197.34	1005933.72	4	40mm practice	OE
46L1-45	750193.36	1005958.05	6	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
46L1-5	750260.75	1005737.52	1	40mm practice	OE
46L1-50	750227.47	1005971.44	10	40mm practice	OE
46L1-53	750266.73	1005999.18	6	40mm practice	OE
46L1-59	750195.05	1006022.97	8	40mm flare	OE
46L1-61	750207.57	1006045.02	6	40mm practice	OE
46L1-68	750194.89	1006094.98	9	Flare	OE
57F6-11	738744.78	1008711.94	4	105mm	OE
57F6-33	738675.43	1008780.81	0	MK75 fuze	OE
57F6-66	738672.59	1008758.54	6	CS grenade	OE
57H5-19	738885.17	1008684.66	4	Slap flare	OE
57H5-5	738888.02	1008649.07	6	MK25 fuze	OE
57J11-83	739113.6	1009260.3	0	30mm projectile	OE
57L10-79	739259.93	1009300.02	0	Trainer/Ptab 2.5 M/Soviet bomblet	OE
57L9-68	739288.41	1009102.47	2	MK25 - smoke fuze	OE
57M18-4	739400.04	1009943.95	1	20mm	OE
57MP-276	738755.28	1010632.47	6	SLAP FLARE	OE
57MP-282	738750.89	1010710.83	6	2.36 ROCKET WITH HEAD	OE
57MP-283	738754.26	1010720.96	4	2.36 ROCKET WITH HEAD	OE
57MP-285	738743.13	1010753.87	5	2.36 ROCKET WITH HEAD	OE
57MP-301	738850.32	1010561.05	4	2.36 ROCKET WITH HEAD	OE
57MP-307	738851.32	1010518.22	5	2.36 ROCKET MOTOR WITH HEAD	OE
EA2A1-1	747672.57	1007309.84	0	Slap Flare	OE
EA2MP-5	747849.35	1007320.82	3	Slap flare	OE
EA2MP-6	747851.49	1007330.9	2	Slap flare	OE
EA3A1-3	749433.31	1007379.11	12	M-2 fuze lighter, frag	OE
EA3B3-1	749519.25	1007592.1	1	Slap flare	OE
EA3D1-1	749765.04	1007365.48	0	Rifle grenade - illum. - expended	OE
EA3D1-2	749789.91	1007373.68	2	Rifle grenade - illum. - expended	OE
EM-1	737536.62	1008646.02	0	40mm practice	OE
EM-17	737536.79	1008790.26	0	40mm practice	OE
EM-2	737578.47	1008638.26	0	40mm practice	OE
EM-22	737492.59	1008821		40mm practice	OE
EM-24	737510.05	1008857.85		40mm practice	OE
EM-3	737589	1008637.01	4	40mm practice	OE
EM-4	737590.25	1008643.39		Sub-caliber round	OE
EM-5	737588.37	1008685.9		40mm practice grenade (piece)	OE
EM-7	737510.01	1008698.93		40mm practice	OE
EM-8	737497.54	1008741.18		40mm practice	OE
GRA1-10	737189.23	1008028.22	2	40mm practice same anom. as GRD3-1	OE
GRA1-11	737133.65	1008042.44	3	40mm practice	OE
GRA1-13	737162.09	1008050.01	2	40mm practice	OE
GRA1-14	737140.69	1008052.49	4	40mm practice.	OE
GRA1-15	737131.17	1008054.97	2	40mm practice	OE
GRA1-16	737157.26	1008024.96	2	40mm practice	OE
GRA1-17	737146.82	1008059.86	2	40mm practice	OE
GRA1-18	737149.43	1008065.48	2	40mm practice	OE
GRA1-19	737188.44	1008069.39	2	40mm practice	OE
GRA1-2	737061.95	1008054.33	2	40mm practice	OE
GRA1-20	737179.44	1008072.52	2	40mm practice	OE
GRA1-21	737163.91	1008084.66	2	35mm subcaliber round	OE
GRA1-24	737124.38	1008073.05	2	40mm practice	OE
GRA1-25	737121.38	1008077.48	2	40mm practice	OE
GRA1-26	737124.9	1008079.96	3	40mm practice	OE
GRA1-27	737147.34	1008090.01	2	40mm practice	OE
GRA1-28	737136.78	1008090.01	2	40mm practice	OE
GRA1-3	737109.83	1008042.45	2	40mm practice	OE
GRA1-30	737108.12	1008094.32	2	40mm practice	OE
GRA1-32	737111.6	1008060.07	2	40mm practice	OE
GRA1-33	737128.74	1008060.9	2	40mm practice	OE
GRA1-4	737124.83	1008039.06	3	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRA1-5	737127.12	1008009.95	2	35mm subcaliber round and nail	OE
GRA1-7	737141.34	1008024.96	2	40mm practice	OE
GRA1-8	737164.31	1008004.99	2	35mm subcaliber round	OE
GRA1-9	737186.23	1008018.95	2	35mm subcaliber round	OE
GRA2-3	736982.07	1008367.22	2	40mm practice	OE
GRA7-2	736984.98	1008674.67	3	40mm practice	OE
GRB10-10	737049.91	1008941.47	1	35mm subcaliber round	OE
GRB10-23	737094.18	1008916.71	1	40mm practice	OE
GRB10-26	737221.67	1008931.66	2	40mm practice	OE
GRB10-28	737171.25	1008968.19	1	40mm practice	OE
GRB10-3	737080.27	1008906.92	2	40mm practice	OE
GRB10-33	737206.09	1008994.36	3	40mm practice	OE
GRB10-35	737289.47	1008908.55	4	40mm practice	OE
GRB10-36	737283.4	1008919.26	3	40mm practice	OE
GRB10-37	737271.69	1008941.81	2	40mm practice	OE
GRB10-38	737268.65	1008949.04	3	40mm practice	OE
GRB10-39	737246.1	1008953.96	3	40mm practice	OE
GRB2-10	737086.86	1008278.47	3	40mm practice	OE
GRB2-11	737074.08	1008291.4	2	40mm practice	OE
GRB2-15	737079.6	1008339.16	1	40mm practice	OE
GRB2-16	737082.47	1008343.33	2	40mm practice	OE
GRB2-2	737052.37	1008155.49	2	40mm practice	OE
GRB2-5	737075.04	1008230.68	2	40mm practice	OE
GRB2-6	737080.06	1008235.42	2	40mm practice	OE
GRB2-7	737087.53	1008232.12	3	35mm subcaliber round	OE
GRB2-8	737089.97	1008238.73	1	40mm practice	OE
GRB2-9	737075.61	1008246.2	2	40mm practice	OE
GRB5-30	737067.33	1008572.84	3	40mm practice and wire	OE
GRB5-32	737038.96	1008579.78	1	40mm practice	OE
GRB5-33	737024.99	1008579.92	3	35mm subcaliber round	OE
GRB7-12	737011.01	1008654.76	2	35mm subcaliber round	OE
GRB7-40	737021.04	1008750.8	1	40mm practice	OE
GRB7-50	737044.26	1008803.57	1	35mm subcaliber round	OE
GRB7-7	737004.93	1008624.37	1	40mm practice	OE
GRC2-1	737186.53	1008102.23	1	35mm subcaliber round	OE
GRC2-10	737092.91	1008119.27	1	40mm practice	OE
GRC2-101	737171.2	1008366.64	1	40mm practice	OE
GRC2-102	737149.95	1008369.76	0	35mm subcaliber round	OE
GRC2-103	737144.95	1008370.3	0	35mm subcaliber round	OE
GRC2-104	737132.49	1008368.13	2	40mm practice	OE
GRC2-106	737111.11	1008369.35	2	40mm practice	OE
GRC2-110	737095	1008379.64	2	40mm practice	OE
GRC2-111	737116.79	1008382.75	3	40mm practice	OE
GRC2-112	737124.64	1008381.27	0	35mm subcaliber round (2)	OE
GRC2-113	737139.94	1008377.34	2	40mm practice	OE
GRC2-114	737154.96	1008377.61	1	35mm subcaliber round	OE
GRC2-116	737131.28	1008386.27	2	35mm subcaliber round	OE
GRC2-117	737129.92	1008392.77	2	40mm practice	OE
GRC2-119	737145.08	1008398.59	1	40mm practice	OE
GRC2-12	737121.9	1008133.97	2	35mm subcaliber round	OE
GRC2-120	737135.34	1008399.14	3	40mm practice	OE
GRC2-121	737112.6	1008399.68	4	40mm practice	OE
GRC2-122	737107.46	1008398.87	3	40mm practice	OE
GRC2-123	737092.43	1008400.08	2	40mm practice	OE
GRC2-124	737124.78	1008396.02	4	40mm practice	OE
GRC2-125	737119.91	1008399.95	3	40mm practice	OE
GRC2-14	737164.59	1008125.94	2	40mm practice	OE
GRC2-16	737187.51	1008131.42	2	40mm practice	OE
GRC2-17	737181.44	1008130.83	2	40mm practice	OE
GRC2-18	737174.97	1008131.42	2	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRC2-19	737187.51	1008142.98	4	40mm practice	OE
GRC2-2	737143.83	1008104.97	2	40mm practice	OE
GRC2-22	737169.88	1008164.33	3	40mm practice	OE
GRC2-23	737145.79	1008175.89	3	40mm practice	OE
GRC2-24	737109.95	1008164.33	4	40mm practice	OE
GRC2-25	737096.63	1008163.16	1	40mm practice	OE
GRC2-26	737111.71	1008173.73	2	40mm practice	OE
GRC2-27	737104.86	1008173.15	1	40mm practice	OE
GRC2-28	737093.7	1008174.91	2	40mm practice	OE
GRC2-29	737168.99	1008188.8	2	40mm practice	OE
GRC2-3	737158.52	1008112.42	2	40mm practice	OE
GRC2-30	737164.93	1008190.7	1	35mm subcaliber round	OE
GRC2-31	737145.03	1008186.91	3	40mm practice	OE
GRC2-32	737130.01	1008184.47	2	40mm practice	OE
GRC2-33	737112.41	1008184.47	3	40mm practice	OE
GRC2-34	737089.27	1008185.82	1	40mm practice	OE
GRC2-35	737097.52	1008190.83	2	40mm practice	OE
GRC2-36	737104.42	1008193.81	4	40mm practice	OE
GRC2-37	737136.23	1008195.3	3	40mm practice	OE
GRC2-38	737137.45	1008202.2	4	40mm practice	OE
GRC2-39	737148.28	1008205.45	4	35mm subcaliber round	OE
GRC2-4	737127.19	1008100.27	4	40mm practice	OE
GRC2-40	737157.35	1008196.79	6	40mm practice	OE
GRC2-42	737176.84	1008195.98	2	40mm practice	OE
GRC2-43	737149.9	1008210.6	2	35mm subcaliber round	OE
GRC2-44	737104.97	1008211.95	2	40mm practice	OE
GRC2-45	737106.86	1008221.56	1	40mm practice	OE
GRC2-46	737157.48	1008219.53	1	40mm practice	OE
GRC2-47	737182.11	1008226.17	3	40mm practice	OE
GRC2-48	737167.5	1008225.08	3	40mm practice	OE
GRC2-49	737162.9	1008226.71	3	40mm practice	OE
GRC2-5	737121.11	1008103.99	2	40mm practice	OE
GRC2-50	737147.47	1008226.98	1	40mm practice	OE
GRC2-51	737110.92	1008229.42	3	40mm practice	OE
GRC2-52	737118.23	1008235.24	1	40mm practice	OE
GRC2-54	737154.37	1008235.1	1	35mm subcaliber round	OE
GRC2-55	737182.39	1008235.51	2	40mm practice	OE
GRC2-56	737157.41	1008243.26	4	40mm practice	OE
GRC2-57	737144.55	1008242.32	1	40mm practice	OE
GRC2-58	737137.51	1008239.88	2	40mm practice	OE
GRC2-59	737132.51	1008245.29	1	40mm practice	OE
GRC2-6	737119.94	1008113.2	2	40mm practice	OE
GRC2-61	737112.34	1008241.23	12	35mm subcaliber round and 40mm practice	OE
GRC2-62	737114.91	1008249.49	2	40mm practice	OE
GRC2-63	737107.47	1008251.12	1	40mm practice	OE
GRC2-64	737136.3	1008256.39	4	35mm subcaliber round	OE
GRC2-65	737155.38	1008257.34	2	35mm subcaliber round	OE
GRC2-67	737175.01	1008268.44	3	40mm practice	OE
GRC2-68	737187.46	1008274.81	2	40mm practice	OE
GRC2-7	737108.19	1008100.47	2	40mm practice	OE
GRC2-70	737101.24	1008268.99	2	40mm practice	OE
GRC2-71	737107.47	1008275.21	3	40mm practice	OE
GRC2-72	737139.95	1008280.49	2	40mm practice	OE
GRC2-75	737182.45	1008282.52	2	40mm practice	OE
GRC2-78	737170	1008297.32	3	40mm practice	OE
GRC2-79	737134.94	1008299.48	2	40mm practice	OE
GRC2-8	737112.5	1008112.22	6	40mm practice	OE
GRC2-80	737127.5	1008300.97	3	40mm practice	OE
GRC2-81	737112.48	1008294.34	2	40mm practice	OE
GRC2-82	737089.33	1008307.06	2	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRC2-85	737178.93	1008307.47	2	40mm practice	OE
GRC2-86	737170	1008322.5	2	40mm practice	OE
GRC2-88	737104.22	1008321.14	2	40mm practice	OE
GRC2-9	737103.88	1008106.93	1	40mm practice	OE
GRC2-90	737110.04	1008334	2	40mm practice (2)	OE
GRC2-91	737099.89	1008339.42	2	40mm practice	OE
GRC2-92	737109.9	1008341.45	1	40mm practice	OE
GRC2-93	737124.93	1008341.18	3	40mm practice	OE
GRC2-94	737162.42	1008332.65	1	40mm practice	OE
GRC2-95	737171.89	1008336.31	6	40mm practice	OE
GRC2-96	737171.07	1008346.74	2	40mm practice	OE
GRC2-97	737144.95	1008347.96	3	40mm practice	OE
GRC2-99	737119.91	1008348.5	1	40mm practice	OE
GRC5-10	737134.01	1008422.59	1	40mm practice	OE
GRC5-101	737301.8	1008482.31	1	40mm practice	OE
GRC5-13	737093.46	1008431.99	4	35mm subcaliber round	OE
GRC5-15	737110.07	1008445.06	1	35mm subcaliber round	OE
GRC5-17	737095.42	1008443.96	1	35mm subcaliber round	OE
GRC5-19	737154.28	1008431.99	3	40mm practice	OE
GRC5-20	737166.12	1008435.05	2	40mm practice	OE
GRC5-30	737296.45	1008440	1	40mm practice	OE
GRC5-32	737303.42	1008421.3	2	40mm practice	OE
GRC5-33	737310.38	1008415.56	2	40mm practice	OE
GRC5-35	737315.63	1008407.61	1	40mm practice	OE
GRC5-5	737120.94	1008405	2	40mm practice	OE
GRC5-56	737353.81	1008500.22	1	40mm practice	OE
GRC5-58	737314.48	1008474.31	1	40mm practice	OE
GRC5-60	737308.86	1008451.58	2	40mm practice	OE
GRC5-67	737299.24	1008466.44	1	40mm practice	OE
GRC5-8	737164.05	1008412.57	6	40mm practice	OE
GRC5-9	737157.7	1008420.02	1	40mm practice	OE
GRC6-78	737376.18	1008517.82	1	40mm practice	OE
GRC6-79	737380.78	1008504.94	2	40mm practice	OE
GRC6-80	737363.03	1008502.5	2	40mm practice	OE
GRC6-81	737353.55	1008501.42	2	40mm practice	OE
GRC6-82	737349.62	1008507.38	3	40mm practice	OE
GRC6-83	737355.04	1008529.07	2	40mm practice	OE
GRC6-85	737329.37	1008522.56	1	40mm practice	OE
GRC6-88	737313.11	1008522.56	2	40mm practice	OE
GRC6-89	737307.01	1008527.71	2	40mm practice	OE
GRC6-90	737310.13	1008510.09	2	35mm subcaliber round	OE
GRC6-91	737309.72	1008500.06	3	40mm practice	OE
GRC6-92	737302.68	1008502.5	3	40mm practice	OE
GRC6-94	737300.37	1008525	1	40mm practice	OE
GRC6-95	737296.85	1008532.45	2	40mm practice	OE
GRC7-2	737107.96	1008603.91	3	40mm practice	OE
GRC7-3	737100.52	1008612.26	1	40mm practice	OE
GRC7-36	737107.13	1008698.73	4	40mm practice	OE
GRC7-4	737135.36	1008611.21	2	35mm subcaliber round	OE
GRC7-42	737122.43	1008719.52	2	35mm subcaliber round	OE
GRC7-52	737107.47	1008814.39	6	40mm practice	OE
GRC7-53	737127	1008830.38	1	40mm practice	OE
GRC7-54	737092.45	1008836.94	3	35mm subcaliber round	OE
GRC7-55	737110.03	1008841.41	1	40mm practice	OE
GRC7-56	737117.47	1008847.81	4	40mm practice	OE
GRC7-58	737095.58	1008871.05	3	40mm practice	OE
GRC7-7	737125.39	1008623.87	2	35mm subcaliber round	OE
GRD1-23	737322.07	1008020.71	3	40mm practice	OE
GRD1-24	737319.4	1008025.67	2	40mm practice	OE
GRD1-25	737318.19	1008034.91	3	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRD1-26	737323.28	1008044.83	2	40mm practice	OE
GRD1-27	737315.91	1008052.33	2	40mm practice	OE
GRD1-28	737345.38	1008038.26	2	35mm subcaliber round and 40mm practice	OE
GRD1-29	737346.32	1008030.36	2	40mm practice	OE
GRD1-30	737355.16	1008039.87	2	40mm practice	OE
GRD1-31	737358.24	1008034.51	1	40mm practice (2)	OE
GRD1-32	737339.35	1008017.5	2	40mm practice	OE
GRD1-33	737351.81	1008017.23	2	40mm practice	OE
GRD1-35	737366.41	1008002.36	2	40mm practice	OE
GRD1-36	737365.25	1008018.05	2	40mm practice	OE
GRD1-37	737374.49	1008029.44	2	35mm subcaliber round	OE
GRD1-38	737364.98	1008046.05	2	40mm practice	OE
GRD1-39	737371.27	1008042.3	2	40mm practice	OE
GRD1-40	737384.67	1008052.35	2	40mm practice (2)	OE
GRD1-41	737385.34	1008034.8	2	40mm practice	OE
GRD1-43	737383.19	1008012.43	2	40mm practice	OE
GRD1-44	737395.65	1008012.7	0	35mm subcaliber round	OE
GRD1-46	737415.34	1008047.66	2	40mm practice	OE
GRD1-47	737434.63	1008026.09	2	40mm practice	OE
GRD1-50	737420.96	1008094.31	1	35mm subcaliber round	OE
GRD1-51	737400.6	1008070.6	2	35mm subcaliber round	OE
GRD1-52	737391.36	1008074.89	2	40mm practice	OE
GRD1-54	737382.79	1008099.94	0	40mm practice	OE
GRD1-55	737339.79	1008099.27	1	40mm practice	OE
GRD1-56	737360.69	1008090.56	2	40mm practice	OE
GRD1-57	737342.21	1008086.41	2	40mm practice	OE
GRD1-58	737360.42	1008077.97	2	40mm practice	OE
GRD1-60	737358.68	1008072.34	2	40mm practice	OE
GRD1-61	737380.38	1008067.38	2	40mm practice	OE
GRD1-62	737420.69	1008054.79	2	40mm practice	OE
GRD1-63	737399.26	1008056.53	4	40mm practice	OE
GRD1-64	737378.9	1008062.43	2	40mm practice	OE
GRD1-65	737368.32	1008063.1	2	40mm practice	OE
GRD1-66	737348.63	1008056.67	2	40mm practice (2)	OE
GRD1-67	737337.21	1008056.56	3	40mm practice	OE
GRD1-68	737331.45	1008064.87	2	40mm practice	OE
GRD1-70	737311.1	1008077.33	2	40mm practice	OE
GRD1-71	737310.16	1008085.37	2	40mm practice	OE
GRD1-76	737293.82	1008072.37	5	40mm practice	OE
GRD1-96	737365.23	1008028.9	2	40mm practice	OE
GRD4-10	737261.75	1008120.03	3	40mm practice	OE
GRD4-100	737232.44	1008375.57	4	40mm practice	OE
GRD4-105	737271.3	1008233.25	3	40mm practice	OE
GRD4-11	737245.04	1008127.9	2	40mm practice	OE
GRD4-12	737285.04	1008129.83	2	40mm practice	OE
GRD4-14	737285.04	1008142.2	3	40mm practice	OE
GRD4-15	737270.1	1008137.87	2	40mm practice	OE
GRD4-16	737245.04	1008128.06	2	40mm practice	OE
GRD4-17	737246.17	1008134.81	3	40mm practice	OE
GRD4-18	737239.42	1008133.85	2	40mm practice	OE
GRD4-19	737234.92	1008140.76	2	40mm practice	OE
GRD4-2	737207.45	1008109.75	2	40mm practice	OE
GRD4-20	737215	1008144.77	2	40mm practice	OE
GRD4-21	737197.49	1008140.76	3	40mm practice	OE
GRD4-23	737207.45	1008158.27	3	40mm practice	OE
GRD4-24	737205.04	1008165.34	2	40mm practice	OE
GRD4-25	737233.8	1008164.22	3	40mm practice	OE
GRD4-26	737251.63	1008157.95	2	40mm practice	OE
GRD4-28	737255.83	1008176.09	1	40mm practice	OE
GRD4-29	737279.97	1008185.97	1	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRD4-3	737215.32	1008107.98	3	40mm practice	OE
GRD4-30	737284.18	1008196.02	3	40mm practice	OE
GRD4-31	737261.34	1008196.67	3	40mm practice	OE
GRD4-32	737270.08	1008201.53	3	40mm practice	OE
GRD4-33	737262.63	1008202.82	3	40mm practice	OE
GRD4-34	737225.53	1008203.63	2	40mm practice	OE
GRD4-35	737211.28	1008196.18	1	35mm subcaliber round	OE
GRD4-36	737195.08	1008188.08	3	40mm practice	OE
GRD4-37	737215	1008199.1	3	40mm practice	OE
GRD4-38	737215	1008209.63	2	40mm practice	OE
GRD4-39	737197.51	1008210.6	2	40mm practice	OE
GRD4-4	737224.96	1008107.34	6	40mm practice	OE
GRD4-40	737266.84	1008212.55	4	40mm practice	OE
GRD4-41	737287.42	1008214.82	3	35mm subcaliber round	OE
GRD4-42	737246.11	1008218.22	2	40mm practice	OE
GRD4-43	737207.55	1008222.43	3	40mm practice	OE
GRD4-44	737202.53	1008224.05	2	35mm subcaliber round	OE
GRD4-45	737192.49	1008224.7	2	40mm practice	OE
GRD4-46	737284.99	1008224.21	4	40mm practice	OE
GRD4-47	737290.01	1008228.27	2	40mm practice	OE
GRD4-48	737286.83	1008233.03	2	40mm practice	OE
GRD4-49	737249.08	1008229.79	3	40mm practice	OE
GRD4-5	737232.51	1008112.64	4	40mm practice	OE
GRD4-50	737240.01	1008230.6	2	40mm practice	OE
GRD4-52	737214.41	1008240.48	1	40mm practice	OE
GRD4-53	737207.45	1008241.13	3	40mm practice	OE
GRD4-54	737200.81	1008240.97	2	35mm subcaliber round	OE
GRD4-55	737198.21	1008249.4	2	40mm practice (2)	OE
GRD4-56	737246.65	1008242.1	1	40mm practice	OE
GRD4-57	737283.26	1008245.83	3	40mm practice	OE
GRD4-58	737268.52	1008258.63	3	40mm practice	OE
GRD4-59	737255.08	1008262.85	2	40mm practice	OE
GRD4-6	737223.84	1008120.35	4	40mm practice	OE
GRD4-60	737248.76	1008266.57	2	40mm practice	OE
GRD4-61	737225.59	1008263.66	2	40mm practice	OE
GRD4-62	737219.92	1008253.61	2	40mm practice	OE
GRD4-63	737213.93	1008257.17	2	40mm practice	OE
GRD4-64	737192.54	1008260.9	3	40mm practice	OE
GRD4-65	737205.02	1008264.3	3	40mm practice	OE
GRD4-66	737205.02	1008269.81	3	40mm practice	OE
GRD4-67	737210.2	1008269.81	1	40mm practice	OE
GRD4-68	737210.85	1008275	2	5.56 blank and 35mm subcal	OE
GRD4-69	737224.62	1008277.92	2	40mm practice	OE
GRD4-7	737250.02	1008113.44	6	40mm practice	OE
GRD4-70	737266.74	1008282.78	1	40mm practice	OE
GRD4-71	737275	1008283.75	2	40mm practice	OE
GRD4-72	737281.81	1008273.86	2	40mm practice	OE
GRD4-73	737283.91	1008281.64	1	40mm practice	OE
GRD4-74	737278.73	1008294.12	1	40mm practice	OE
GRD4-75	737219.27	1008283.75	1	40mm practice	OE
GRD4-76	737207.61	1008280.51	2	35mm subcaliber round	OE
GRD4-77	737205.02	1008285.53	2	35mm subcaliber round	OE
GRD4-78	737207.45	1008291.85	4	40mm practice	OE
GRD4-79	737290.2	1008296.84	2	40mm practice	OE
GRD4-8	737287.45	1008100.1	2	40mm practice	OE
GRD4-80	737288.58	1008308.67	2	40mm practice	OE
GRD4-81	737277.57	1008305.11	3	35mm subcaliber round	OE
GRD4-82	737268.82	1008307.54	2	40mm practice	OE
GRD4-83	737280	1008310.78	2	40mm practice	OE
GRD4-86	737226.21	1008302.68	2	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRD4-88	737216.65	1008326.33	2	40mm practice	OE
GRD4-89	737211.31	1008325.69	2	40mm practice	OE
GRD4-9	737285.04	1008108.3	1	40mm practice	OE
GRD4-90	737222.49	1008329.74	1	40mm practice	OE
GRD4-91	737242.41	1008329.9	3	40mm practice	OE
GRD4-93	737257.48	1008344.81	1	35mm subcaliber round	OE
GRD4-94	737204.99	1008336.38	4	35mm subcaliber round	OE
GRD4-95	737204.99	1008346.91	2	40mm practice	OE
GRD4-96	737194.95	1008345.45	0	5.56 blank and 40mm practice	OE
GRD7-11	737256.47	1008662.02	2	40mm practice	OE
GRD7-15	737215.07	1008683.03	1	40mm practice	OE
GRD7-16	737199.59	1008678.18	1	40mm practice	OE
GRD7-17	737206.47	1008688.35	1	35mm subcaliber round	OE
GRD7-18	737191.31	1008697.11	1	35mm subcaliber round	OE
GRD7-27	737227.57	1008730.09	4	40mm practice	OE
GRD7-29	737271.65	1008737.6	1	40mm practice	OE
GRD7-31	737250.08	1008758.56	2	40mm practice	OE
GRD7-32	737212.56	1008772.32	1	40mm practice	OE
GRD7-33	737189.89	1008759.49	2	40mm practice	OE
GRD7-34	737250.14	1008804.32	2	40mm practice	OE
GRD7-35	737211.68	1008816.83	6	40mm practice	OE
GRD7-36	737287.66	1008819.64	3	40mm practice	OE
GRD7-37	737285.79	1008824.02	2	40mm practice	OE
GRD7-38	737277.66	1008834.34	2	40mm practice	OE
GRD7-39	737257.18	1008837.62	1	40mm practice	OE
GRD7-40	737246.08	1008852.48	2	40mm practice	OE
GRD7-41	737217.62	1008855.29	4	40mm practice	OE
GRD7-44	737286.41	1008754.72	1	40mm practice	OE
GRE10-1	737327.75	1008913.39	3	40mm practice	OE
GRE10-11	737479.51	1008910.99	1	40mm practice	OE
GRE10-19	737485.62	1008951.55	3	40mm practice	OE
GRE10-22	737415.27	1008960.84	2	40mm practice	OE
GRE10-23	737407.13	1008954.51	3	40mm practice	OE
GRE10-25	737455.8	1008967.57	4	40mm practice	OE
GRE10-3	737386.66	1008940.11	2	40mm practice	OE
GRE10-4	737378.18	1008937.51	3	40mm practice	OE
GRE10-5	737399.89	1008911.28	2	40mm practice	OE
GRE10-7	737450.09	1008900.42	2	40mm practice	OE
GRE10-8	737451.56	1008925.07	1	40mm practice	OE
GRE10-9	737445.57	1008930.39	2	40mm practice	OE
GRE2-10	737374.89	1008125.05	2	35mm subcaliber round	OE
GRE2-11	737371.87	1008119.43	2	35mm subcaliber round	OE
GRE2-119	737301.09	1008304.35	3	40mm practice (3)	OE
GRE2-12	737364.89	1008118.34	2	40mm practice	OE
GRE2-120	737309.85	1008303.8	2	40mm practice	OE
GRE2-121	737312.32	1008299.96	2	40mm practice	OE
GRE2-125	737334.09	1008302.16	1	40mm practice	OE
GRE2-127	737349.84	1008304.07	1	40mm practice	OE
GRE2-129	737321.7	1008313.22	1	40mm practice	OE
GRE2-13	737355.71	1008120.53	1	40mm practice	OE
GRE2-130	737308.17	1008315.71	2	40mm practice (3)	OE
GRE2-131	737302.38	1008315.29	1	40mm practice	OE
GRE2-133	737308.59	1008326.47	1	40mm practice	OE
GRE2-134	737297.41	1008327.85	1	40mm practice	OE
GRE2-135	737301.14	1008331.16	3	40mm practice	OE
GRE2-136	737319.63	1008327.3	1	40mm practice	OE
GRE2-137	737334.94	1008325.23	1	40mm practice	OE
GRE2-138	737365.99	1008318.33	1	40mm practice	OE
GRE2-139	737374.82	1008329.51	2	40mm practice	OE
GRE2-14	737364.48	1008129.84	2	40mm practice (2)	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRE2-140	737359.92	1008333.1	2	40mm practice	OE
GRE2-141	737339.36	1008333.23	1	40mm practice (2)	OE
GRE2-142	737331.22	1008335.3	2	40mm practice	OE
GRE2-143	737335.36	1008340.14	1	40mm practice	OE
GRE2-144	737344.19	1008341.65	2	35mm subcaliber round	OE
GRE2-145	737359.64	1008339.03	2	40mm practice	OE
GRE2-146	737366.27	1008345.1	2	40mm practice	OE
GRE2-147	737382	1008344.28	1	40mm practice	OE
GRE2-149	737354.81	1008354.49	2	40mm practice	OE
GRE2-15	737367.35	1008125.87	2	40mm practice	OE
GRE2-150	737326.11	1008344.55	2	40mm practice	OE
GRE2-151	737327.35	1008348.97	1	40mm practice	OE
GRE2-152	737328.46	1008354.35	3	40mm practice	OE
GRE2-153	737309.83	1008343.72	3	40mm practice (2)	OE
GRE2-155	737317.56	1008355.73	3	40mm practice (2) and 35mm subcaliber round	OE
GRE2-156	737312.31	1008360.29	2	40mm practice	OE
GRE2-157	737301.97	1008353.25	2	40mm practice (2)	OE
GRE2-159	737366.81	1008363.21	2	40mm practice	OE
GRE2-16	737347.36	1008124.23	2	40mm practice	OE
GRE2-162	737347.35	1008365.42	1	35mm subcaliber round	OE
GRE2-163	737349.69	1008369.83	1	35mm subcaliber round	OE
GRE2-164	737342.38	1008372.04	1	40mm practice	OE
GRE2-165	737337.41	1008375.63	1	40mm practice	OE
GRE2-166	737329.82	1008368.45	2	40mm practice	OE
GRE2-169	737315.88	1008365.97	2	40mm practice	OE
GRE2-17	737336.27	1008120.53	2	40mm practice	OE
GRE2-18	737324.9	1008121.21	1	40mm practice	OE
GRE2-187	737347.49	1008317.22	1	40mm practice	OE
GRE2-190	737297.69	1008245.77	3	40mm practice	OE
GRE2-192	737321.19	1008116.59	2	40mm practice	OE
GRE2-2	737319.83	1008111.9	2	40mm practice	OE
GRE2-24	737327.37	1008142.99	0	35mm subcaliber round	OE
GRE2-25	737374.89	1008140.12	2	40mm practice	OE
GRE2-26	737312.44	1008149.57	3	40mm practice	OE
GRE2-27	737289.57	1008151.49	3	40mm practice	OE
GRE2-3	737324.9	1008108.34	2	40mm practice	OE
GRE2-30	737365.61	1008155.56	3	40mm practice	OE
GRE2-5	737342.02	1008110.26	2	40mm practice	OE
GRE2-54	737304.81	1008202.68	2	35mm subcaliber round	OE
GRE2-56	737297.41	1008200.9	2	40mm practice	OE
GRE2-57	737319.87	1008208.02	1	40mm practice	OE
GRE2-58	737346.99	1008204.46	2	40mm practice	OE
GRE2-59	737351.23	1008205.01	2	35mm subcaliber round	OE
GRE2-60	737357.39	1008208.02	6	Blank 2.23, 40mm practice (2)	OE
GRE2-61	737385.02	1008211.72	6	40mm practice	OE
GRE2-62	737337.36	1008209.66	1	40mm practice	OE
GRE2-63	737322.3	1008212.95	2	40mm practice	OE
GRE2-64	737291.76	1008215.82	2	40mm practice	OE
GRE2-65	737332.43	1008216.92	2	40mm practice	OE
GRE2-66	737355.3	1008219.66	3	40mm practice	OE
GRE2-67	737387.35	1008224.45	2	40mm practice	OE
GRE2-68	737374.89	1008226.51	1	40mm practice (2)	OE
GRE2-69	737361.74	1008229.52	2	40mm practice	OE
GRE2-7	737376.8	1008110.39	2	40mm practice	OE
GRE2-71	737344.48	1008231.71	2	40mm practice	OE
GRE2-72	737338.6	1008234.86	2	40mm practice	OE
GRE2-73	737328.87	1008224.86	3	40mm practice	OE
GRE2-74	737313.81	1008227.33	4	40mm practice (2)	OE
GRE2-75	737307.37	1008227.47	2	40mm practice	OE
GRE2-76	737302.03	1008226.51	2	35mm subcaliber round	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRE2-78	737299.29	1008237.19	2	40mm practice (2)	OE
GRE2-79	737307.37	1008232.4	2	40mm practice (2)	OE
GRE2-8	737384.88	1008100.26	2	Same as GRED1-4 - 40mm practice	OE
GRE2-80	737309.84	1008238.43	2	40mm practice (3)	OE
GRE2-81	737304.91	1008238.84	2	40mm practice (2)	OE
GRE2-9	737380.64	1008119.71	3	40mm practice	OE
GRE7-1	737298.9	1008603.72	3	40mm practice	OE
GRE7-23	737335.91	1008706.12	1	40mm practice	OE
GRE7-24	737330.12	1008706.73	2	40mm practice	OE
GRE7-25	737330.12	1008714.49	1	40mm practice	OE
GRE7-30	737332.56	1008729.78	1	40mm practice	OE
GRE7-33	737320.09	1008738.76	1	40mm practice	OE
GRE7-42	737370.05	1008809.93	3	40mm practice	OE
GRE7-43	737360	1008818.91	2	40mm practice	OE
GRF2-1	737400.33	1008099.61	3	35mm (M73)	OE
GRF2-10	737411.48	1008166.33	6	40mm practice	OE
GRF2-11	737394.92	1008174.54	2	40mm practice	OE
GRF2-13	737479.94	1008197.41	5	40mm practice	OE
GRF2-14	737443.3	1008197.7	3	40mm practice	OE
GRF2-15	737400.2	1008193.89	6	40mm practice	OE
GRF2-18	737416.18	1008211.63	1	40mm practice	OE
GRF2-19	737437.58	1008213.69	2	40mm practice	OE
GRF2-2	737420.81	1008099.46	2	35mm subcaliber round	OE
GRF2-20	737447.49	1008227.02	0	40mm practice	OE
GRF2-21	737416.71	1008223.21	1	35mm subcaliber round	OE
GRF2-22	737397.06	1008235.97	1	40mm practice	OE
GRF2-24	737456.58	1008246.23	6	40mm practice	OE
GRF2-25	737407.47	1008251.95	1	35mm subcaliber round	OE
GRF2-27	737451.31	1008263.68	2	35mm subcaliber round	OE
GRF2-28	737457.46	1008271.16	2	40mm practice	OE
GRF2-29	737439.98	1008279.13	2	40mm practice	OE
GRF2-30	737432.51	1008279.43	4	40mm practice	OE
GRF2-31	737405.68	1008275.17	1	35mm subcaliber round	OE
GRF2-33	737422.54	1008292.04	4	40mm practice	OE
GRF2-36	737416.67	1008305.09	3	40mm practice	OE
GRF2-37	737404.95	1008299.66	4	40mm practice	OE
GRF2-4	737396.85	1008111.95	2	40mm practice	OE
GRF2-40	737409.64	1008319.17	1	35mm subcaliber round	OE
GRF2-41	737392.34	1008325.77	2	35mm subcaliber round	OE
GRF2-42	737452.45	1008331.78	3	40mm practice	OE
GRF2-43	737424.98	1008346.27	4	40mm practice	OE
GRF2-48	737410.76	1008363.57	4	35mm subcaliber round	OE
GRF2-50	737414.42	1008374.28	3	35mm subcaliber round	OE
GRF2-51	737438.17	1008393.34	3	35mm subcaliber round	OE
GRF2-52	737404.98	1008395.44	1	40mm practice	OE
GRF2-53	737410.55	1008396.17	1	40mm practice	OE
GRF2-54	737452.48	1008398.23	3	40mm practice	OE
GRF2-55	737447.65	1008399.99	3	40mm practice	OE
GRF2-56	737419.31	1008383.9	3	40mm practice	OE
GRF2-6	737406.29	1008138.68	2	40mm practice	OE
GRF2-7	737474.98	1008140.86	2	40mm practice	OE
GRF2-8	737417.47	1008154.66	6	40mm practice	OE
GRF2-9	737399.9	1008153.21	5	40mm practice	OE
GRF5-16	737412.45	1008474.93	1	40mm practice	OE
GRF5-3	737404.98	1008403.96	1	35mm subcaliber round	OE
GRF5-5	737389.78	1008410.23	1	40mm practice	OE
GRF5-6	737402.58	1008421.03	1	40mm practice	OE
GRF6-1	737457.76	1008502.24	1	40mm practice	OE
GRF6-10	737418.73	1008522.31	1	35mm subcaliber round and 40mm practice	OE
GRF6-13	737424.73	1008527.75	0	35mm subcaliber round	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRF6-14	737437.83	1008529.84	1	40mm practice	OE
GRF6-26	737447.73	1008545.31	1	35mm subcaliber round	OE
GRF6-3	737418.73	1008512.28	2	40mm practice	OE
GRF6-4	737413.72	1008514.78	1	35mm subcaliber round	OE
GRF6-43	737479.61	1008569.86	4	40mm practice	OE
GRF6-54	737411.31	1008582	3	40mm practice and bolt	OE
GRF6-8	737436.71	1008519.8	2	40mm practice	OE
GRF7-1	737396.23	1008607.98	2	35mm subcaliber round	OE
GRF7-11	737450.08	1008634.51	5	40mm practice	OE
GRF7-13	737450.08	1008644.93	2	40mm practice	OE
GRF7-16	737397.65	1008651.25	5	40mm practice	OE
GRF7-17	737467.44	1008658.36	2	40mm practice	OE
GRF7-20	737432.62	1008662.18	2	40mm practice	OE
GRF7-21	737446.04	1008664.07	1	40mm practice	OE
GRF7-22	737470.2	1008669.6	3	40mm practice	OE
GRF7-23	737437.2	1008681.45	3	40mm practice	OE
GRF7-24	737447.62	1008687.61	2	40mm practice	OE
GRF7-25	737433.25	1008694.08	1	40mm practice	OE
GRF7-27	737412.72	1008701.04	3	40mm practice	OE
GRF7-28	737406.09	1008704.83	3	35mm subcaliber round	OE
GRF7-30	737470.2	1008707.51	12	40mm practice	OE
GRF7-31	737462.78	1008706.09	2	40mm practice	OE
GRF7-32	737456.94	1008701.35	3	40mm practice (2)	OE
GRF7-36	737430.19	1008717.37	2	40mm practice	OE
GRF7-37	737402.71	1008717.84	4	40mm practice	OE
GRF7-38	737418.35	1008724.47	2	40mm practice	OE
GRF7-4	737446.44	1008609.71	4	40mm practice (2)	OE
GRF7-40	737468.88	1008731.58	2	35mm subcaliber round	OE
GRF7-45	737414.08	1008736.95	2	35mm subcaliber round	OE
GRF7-46	737410.13	1008745.17	3	40mm practice	OE
GRF7-47	737395.76	1008741.53	2	40mm practice	OE
GRF7-5	737475.81	1008599.92	8	40mm practice and pieces of scrap	OE
GRF7-50	737457.51	1008765.7	6	40mm practice and pieces of scrap	OE
GRF7-51	737455.77	1008772.81	2	40mm practice	OE
GRF7-52	737437.61	1008769.34	3	40mm practice	OE
GRF7-53	737480.09	1008774.71	3	40mm practice	OE
GRF7-54	737425.13	1008774.17	2	35mm subcaliber round	OE
GRF7-55	737420.08	1008773.38	2	35mm subcaliber round	OE
GRF7-6	737472.66	1008620.45	2	40mm practice	OE
GRF7-61	737477.4	1008795.65	1	40mm practice	OE
GRF7-62	737465.24	1008798.02	6	40mm practice	OE
GRF7-64	737446.77	1008827.88	3	40mm practice	OE
GRF7-65	737435.08	1008832.46	3	40mm practice	OE
GRF7-66	737462.62	1008844.09	2	40mm practice	OE
GRF7-68	737475.73	1008870.94	1	40mm practice	OE
GRF7-69	737390.61	1008867.62	2	40mm practice	OE
GRF7-7	737447.71	1008616.03	3	40mm practice	OE
GRF7-70	737390.76	1008888.47	3	40mm practice	OE
GRF7-72	737427.72	1008893.05	2	40mm practice	OE
GRF7-73	737452.54	1008730.71	1	40mm practice	OE
GRF7-74	737394.97	1008854.9	3	40mm practice	OE
GRF7-8	737441.07	1008619.98	2	40mm practice	OE
GRF7-9	737435.86	1008631.98	3	40mm practice	OE
GRG1-2	737506.69	1008040.76	1	40mm practice	OE
GRG2-2	737550.7	1008139.34	3	40mm practice	OE
GRG2-3	737588.44	1008157.5	2	40mm practice	OE
GRG2-4	737492.57	1008233.03	3	35mm subcaliber round	OE
GRG2-5	737497.43	1008234.31	3	35mm subcaliber round	OE
GRG2-7	737522.45	1008276.07	1	40mm practice	OE
GRG2-8	737532.56	1008311.75	1	40mm practice	OE

APPENDIX C
UXO AND OE RECOVERED
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRG5-1	737495.44	1008595.24	1	35mm subcaliber round	OE
GRG5-2	737490.94	1008569.33	1	40mm practice	OE
GRG5-23	737567.08	1008526.29	1	35mm subcaliber round	OE
GRG5-28	737567.4	1008488.27	3	40mm practice	OE
GRG5-29	737542.61	1008479.03	3	40mm practice	OE
GRG5-30	737589.72	1008415.46	1	35mm subcaliber round	OE
GRG5-31	737546.25	1008404.69	2	40mm practice	OE
GRG5-32	737523.03	1008406.49	2	40mm practice	OE
GRG5-6	737581.28	1008559.41	2	40mm practice	OE
GRG5-7	737546.81	1008555.58	3	40mm practice	OE
GRMP-47	737245.58	1007762.99	1	40mm practice	OE
GRMP-5	737123.89	1007972.49	2	40mm practice	OE
GRMP-50	737300.03	1007827.91	4	40mm practice	OE
GRMP-52	737332.48	1007769.87	3	40mm practice	OE
GRMP-54	737232.45	1007870.63	3	40mm practice	OE
GRMP-55	737235.75	1007889.07	4	40mm practice	OE
GRMP-56	737330.35	1007897.87	3	40mm practice	OE
GRMP-58	737157.39	1007990.72	3	40mm practice	OE
GRMP-59	737293.53	1008002	5	40mm practice	OE
GRMP-6	737069.41	1007945.75	2	40mm practice	OE
GRMP-60	737342.35	1007995.86	1	35mm subcaliber round	OE
GRMP-61	737351.7	1007999.43	2	40mm practice	OE
GRMP-62	737329.15	1007955.7	2	40mm practice	OE
GRMP-63	737374.53	1007997.78	2	40mm practice	OE
GRMP-64	737367.11	1007980.45	2	40mm practice	OE
GRMP-65	737369.31	1007954.32	2	40mm practice	OE
GRMP-67	737359.13	1007913.61	4	40mm practice	OE
GRMP-68	737357.48	1007902.6	2	40mm practice	OE
GRMP-7	737111.97	1007902.78	2	40mm practice	OE
GRMP-70	737383.33	1007899.85	4	40mm practice	OE
GRMP-71	737364.98	1007762.83	3	40mm practice	OE
GRMP-85	737239.84	1007951.93	2	40mm practice	OE
GRMP-86	737305.7	1007907.33	2	40mm practice	OE
GRMP-87	737337.38	1007956.37	3	40mm practice	OE
GRMP-88	737352.57	1007870.86	2	40mm practice	OE
GRMP-89	737352.03	1007755.04	2	40mm practice	OE
GRMP-94	737307.56	1007478.96	1	35mm subcaliber round	OE

APPENDIX D

LETTER FROM SCRAP DEALER

SENECA IRON & METAL
444 Rt 414
Waterloo, NY 13165
(315) 539-0536

December 19, 2000

Dear Sir or Madam:

We have received two loads of scrap material from the Seneca Army Depot site. The first load was received on 9/20/00 and weighed 5,540 lbs. The second load was received on 12/14/00 and weighed 13,480 lbs. Seneca Iron picked up this material with out charge to the Seneca Army Depot, in Romulus, NY or to USA Environmental. Inc.

Sincerely,

Lynn Williams

Lynn Williams

Total 19,020 LBS (9.51 tons) turned in to above Company and Certification Letters from both USA Environmental, Inc. and R.E.M.T.C. were provided to Above named Company on the dates indicated above. Frank J Magner, SUXOS
USA Environmental, Inc.

APPENDIX E

DEMOLITION ACTIVITIES

APPENDIX E
DEMOLITION ACTIVITIES
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Date	Quantity	Demolition Supplies	Location	Quantity	Type	Disposition[1]
7/12/2000			SEAD 57	1	37mm HE (live)	BIP
7/12/2000			SEAD 57	1	40mm HE (live)	BIP
8/3/2000	14	Shaped Charges	SEAD 46	1	3.5' rocket warhead	Demo
8/3/2000	8	1Lb. Boosters	SEAD 45	1	Stokes mortar/Prac	Vent
8/3/2000	14	Electric Blasting Caps	SEAD 45	5	57mm/HE	Demo
8/3/2000	50 ft.	100 gpf Detonating Cord	SEAD 45	2	75mm/HE	BIP
8/3/2000			SEAD 45	4	75mm/APHE	BIP
8/3/2000			SEAD 45	1	105mm/HE	Demo
8/3/2000			SEAD 45	1	105mm/WP	Demo
8/3/2000			SEAD 45	7	M66 Base Fuze	BIP
8/3/2000			SEAD 45	1	PD nose Fuze	BIP
8/3/2000			SEAD 45	15	Rifle Grenade Fuze	Demo
8/3/2000			SEAD 45	2	Half Shells from Buterfly Bomblet	Demo
8/3/2000			SEAD 45	1	20mm/HE unfuzed	Demo
8/3/2000			SEAD 45	1	Tail Fuze Unknown	BIP
8/3/2000			SEAD 45	1	Fuze Component Unknown	BIP
8/8/2000	2	Electric Blasting Cap	SEAD 57	1	EOD Trainer (Pipe Device)	BIP
8/8/2000	2	1 Lb.Orange Cap Booster				
8/8/2000	6 ft.	100 gpf Detonating Cord				
8/28/2000	6	Electric Blasting Caps	SEAD 45	1	75mm projo APHE (Fuzed)	BIP
8/28/2000	10 ft.	100 gpf Detonating Cord	SEAD 45	1	Bounding Mine (Fuzed)	BIP
8/28/2000	2	Shaped Charges	SEAD 45	1	M66 Base Fuze (Armed)	BIP
8/28/2000	3	1Lb. Boosters	SEAD 45	2	57mm projo. (Unfuzed)	Demo
8/28/2000			SEAD 45	1	3.5 Rkt. Warhead (Unfuzed)	Demo
8/28/2000			SEAD 45	1	37mm projo. (Unfuzed)	Demo
8/30/2000	4	Electric Blasting Cap	SEAD 45	8	57mm HE projo.	Demo
8/30/2000	14	1 Lb.Orange Cap Booster	SEAD 45	3	75mm HE projo.	Demo
8/30/2000	30 ft	100 gpf Detonating Cord	SEAD 45	6	M66 Base Fuze	BIP
8/30/2000			SEAD 45	6	Rifle Grenade Fuze	Demo
8/30/2000			SEAD 45	3	105mm Smoke	Demo
8/30/2000			SEAD 45	2	155 Smoke	Demo
8/30/2000			SEAD 45	1	Nose Fuze	Demo
8/30/2000			SEAD 45	2	Base Fuze	Demo
8/30/2000			SEAD 45	1	75 mm APHE projo.	BIP
8/30/2000			SEAD 45	2	2.36 WP	Demo
8/30/2000			SEAD 45	1	75mm HE projo.(Fuzed)	BIP
9/14/2000	2	Electric Blasting Cap	Grenade	30	M73, 35mm subcal rocket (LAW)	BIP
9/14/2000	100 ft.	100 gpf Detonating Cord				
9/18/2000	2	Electric Blasting Cap	SEAD 46	2	M123 Base Fuze Chem Long Delay	BIP
9/18/2000	1	1 Lb.Orange Cap Booster		2	Rifle Grenade Smoke	BIP
9/18/2000	6 ft.	100 gpf Detonating Cord				
9/26/2000	2	Electric Blasting Cap	Grenade	16	M73, 35mm subcal rocket (LAW)	BIP
9/26/2000	50 ft.	100 gpf Detonating Cord				
10/2/2000	2	Electric Blasting Cap	SEAD 17	1	Point detonating Fuze	BIP
10/2/2000	3 ft.	100 gpf Detonating Cord				
10/2/2000	1	Shape Charge				
10/13/2000	2	Electric Blasting Cap	SEAD 44A		40 mm Grenade , Pratice M407A1 6g. RDX	BIP
10/13/2000	3 ft.	100 gpf Detonating Cord				
	1	Shape Charge				
10/14/2000	2	Electric Blasting Cap	Grenade	60	M73, 35mm subcal rocket (LAW)	BIP
10/14/2000	100 ft.	100 gpf Detonating Cord				
10/16/2000	2	Electric Blasting Cap	EOD 2	1	M48 Series Base Fuze	BIP
10/16/2000	1	1 Lb.Orange Cap Booster				
10/16/2000	6 ft.	100 gpf Detonating Cord				
10/18/2000	2	Electric Blasting Cap	SEAD 57	1	20 mm projo. HE	BIP

[1] BIP - Blown in Place, Demo - Item moved and detonated with other movable UXO or OE, Vent - Suspected inert item confirmed with perforators

APPENDIX E
DEMOLITION ACTIVITIES
SENECA ARMY DEPOT ACTIVITY OE EE/CA

Date	Quantity	Demolition Supplies	Location	Quantity	Type	Disposition[1]
10/18/2000	3 ft.	100 gpf Detonating Cord				
10/18/2000	1	Shape Charge				
10/26/2000	10	Electric Blasting Cap	SEAD 45	1	75mm APHE projo. (Unfuzed)	Demo
10/26/2000	175 ft.	1 Lb.Orange Cap Booster	SEAD 45	23	75mm projo. (Unfuzed)	Demo
10/26/2000	37	Shape Charge	SEAD 45	2	155 Ilum projo. (Unfuzed)	Demo
10/26/2000	22	100 gpf Detonating Cord	SEAD 45	4	57mm HE projo (Unfuzed)	Demo
10/26/2000			SEAD 45	1	105mm WP, projo. (Unfuzed)	Demo
10/26/2000			SEAD 45	4	M66 Fuze Base Detonating	BIP
10/26/2000			SEAD 45	8	Smoke Canister	Demo
10/26/2000			SEAD 45	6	20mm HE projo.	Demo
10/26/2000			SEAD 45	1	37mm HE projo. (Unfuzed)	Demo
10/26/2000			SEAD 45	3	Rifle Grenade (Unfuzed)	Demo
10/26/2000			SEAD 45	6	Misc Fuze Components	Demo
10/26/2000			SEAD 45	1	Unknown Fuze W. Booster	BIP
10/26/2000			SEAD 45	1	Unknown Warhead only	Demo
10/26/2000			SEAD 45	1	BDU33/MK 76 Pratice	Vented
10/26/2000			SEAD 45	1	81mm Mortar, HE (Unfuzed)	Demo
10/26/2000			SEAD 45	1	106mm HE Projo. (Unfuzed)	Demo
10/26/2000			SEAD 45	1	5" projo HE Unfuzed	Demo
10/26/2000			SEAD 45	2	115mm Projo. HE (Unfuzed)	Demo
10/26/2000			SEAD 45	3	4.2" Mortar, WP (Unfuzed)	Demo
10/26/2000			SEAD 45	3	90mm Projo HE (Unfuzed)	Demo
10/31/2000	1	Electric Blasting Cap	SEAD 57	1	MK2 Type Grenade, Frag. HE w/Fuze	BIP
10/31/2000	6 ft.	1 Lb.Orange Cap Booster			MK30 type pratice grenade, (Unfuzed)	Vented
10/31/2000	1	Shape Charge				
10/31/2000	1	100 gpf Detonating Cord				
11/1/2000	2	Electric Blasting Cap	SEAD 44A	1	40mm Grenade , Pratice M407A1 6g. RDX	BIP
11/1/2000	1	1 Lb.Orange Cap Booster		1	Rifle Grenade Smoke	BIP
11/1/2000	6 ft.	100 gpf Detonating Cord				
11/13/2000	4	Electric Blasting Cap	SEAD 45	35	20mm prpjo. HE	Demo
11/13/2000	30 ft.	1 Lb.Orange Cap Booster	SEAD 45	1	m66 Fuze w/ Tracer	BIP
11/13/2000	8	Shape Charge	SEAD 45	1	3' Stokes Mortar, Pratice	Vented
11/13/2000	10	100 gpf Detonating Cord	SEAD 45	3	M48 Fuze	Demo
11/13/2000			SEAD 45	2	Fuze, VT	Demo
11/13/2000			SEAD 45	1	57mm projo. HE (Unfuzed)	Demo
11/13/2000			SEAD 45	2	37mm projo. HE (Unfuzed)	Demo
11/7/2000	8	Electric Blasting Cap	Grenade Range		M73, 35mm subcal rocket (LAW)	BIP
11/7/2000	10 ft.	1 Lb.Orange Cap Booster			Mechanical Time Fuze	BIP
11/7/2000	1	100 gpf Detonating Cord				
11/30/2000	2	Electric Blasting Cap	SEAD 46	1	M83 4 lb. Frag. Bomb	
11/30/2000	1	1 Lb.Orange Cap Booster				
11/30/2000	6 ft.	100 gpf Detonating Cord				
12/4/2000		Thermal Treatment	SEAD 45	2,906	20mm Projo.	
12/4/2000		R.E.M.T.C.		677	Misc fuzes	
12/20/2000	78	Electric Blasting Cap	SEAD 45	2	M407A1, 40 mm grenade prac. (Live)	BIP
12/20/2000	35	1 Lb.Orange Cap Booster	SEAD 45	5	75mm projo. HE	Demo
12/20/2000	2,380	100 gpf Detonating Cord	SEAD 45	3	M66 Fuze (Live)	Demo
12/20/2000	53	Shape Charge	SEAD 45	4	VT Fuze (Live)	Demo
12/20/2000			SEAD 45	5	Unknown Bomb Fuze (Live)	Demo
12/20/2000			SEAD 45	9	Subcaliber Rocket (Live)	BIP
12/20/2000			SEAD 45	4	M48 Fuze Live	Demo
12/20/2000			SEAD 45	1	M52 series Fuze (Live)	Demo
12/20/2000			SEAD 45	1	M103 Fuze (Live)	Demo
12/20/2000			SEAD 45	10	57mm projo. (Live)	Demo
12/20/2000			SEAD 45	14	105mm Projo. HE	Demo
12/20/2000			SEAD 45	2	105 mm projo. Illumination	Demo
12/20/2000			SEAD 45	200	20mm projo. HE	Demo
12/20/2000			SEAD 45	2	120mm projo. HE	Demo

[1] BIP - Blown in Place, Demo - Item moved and detonated with other movable UXO or OE, Vent - Suspected inert item confirmed with perforators

APPENDIX F

INSTITUTIONAL ANALYSIS

FINAL

INSTITUTIONAL ANALYSIS REPORT

SENECA ARMY DEPOT
ROMULUS, SENECA COUNTY, NEW YORK

Prepared For:

SENECA ARMY DEPOT ACTIVITY
and
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
and
HUNTSVILLE CENTER

Contract No. DACA87-95-D-0018
Delivery Order No. 0052

Prepared By:

PARSONS
100 SUMMER ST
BOSTON, MA 02110

JANUARY 2004

Table of Contents

1.0 Purpose of Study

1.1 Introduction

This Institutional Analysis Report was prepared Parsons Engineering Science, Inc. for the Department of the Army, Huntsville Division, Corps of Engineers, under contract number DACA87-95-D-0018. The report is prepared to support the institutional control alternative plans for action that are included in the Seneca Army Depot Engineering Evaluation/Cost Analysis (EE/CA). Local and state authorities that will support and exert long-term jurisdiction of the institutional control measures proposed for Seneca Army Depot are presented. Each institutional control alternative is described, and the level or degree of support required for each is described.

1.2 Institutional Controls/UXO Education

Institutional controls rely on the existing powers and authorities of other government agencies to protect the public at large from OE risks. Instead of direct removal of the OE from the site, these plans rely on behavior modification and access control strategies to reduce or eliminate OE risk. This analysis documents which government agencies have jurisdiction over Seneca Army Depot and assesses their capability and willingness to assert control which would protect the public at large from explosives hazards. This report also documents the obligation of the government, corporate or private landholders of OE contaminated lands to protect citizens from safety hazards under the law.

1.3 Study Approach

Parsons has prepared this detailed analysis of institutional control and UXO education alternatives in accordance with guidance developed by the Huntsville Division, Army Corps of Engineers. This analysis supports the development of institutional control and UXO education alternative plans of action. If these strategies are to be successful, the cooperation of local and state authorities and private interests is required. Representatives of local, state and federal government agencies with jurisdiction over Seneca Army Depot have been interviewed as to their concern and capability to exercise institutional controls over the future use of Seneca Army Depot. Other stakeholders have also been identified and interviewed to determine their commitment to future use of Seneca Army Depot and interest and involvement in institutional controls and UXO education. This study includes outlines of these interviews, discussion of potential control strategies, and recommendations for specific control strategies.

1.4 Study Overview

This study outlines which agencies have jurisdiction over Seneca Army Depot and assesses their capabilities and willingness to support and enforce short and long-term institutional control measures. Section 2.0 summarizes the site background, the institutional control and UXO education methodology,

and interviews with agencies that have site jurisdiction and/or react with current and future land users. Section 3.0 describes the proposed institutional control and UXO education alternatives. The effectiveness, implementability, and cost of each alternative is discussed, and management execution, and support roles are defined. Section 4.0 presents institutional control and UXO education recommendations to reduce the risk of exposure to ordnance.

2.0 Institutional Controls

2.1 Site Background

2.1.1 Site Description.

SEDA consists mostly of former farmland that has been overgrown by dense underbrush between buildings and within the igloo area. Woodlands predominate in most of the areas that are not immediately associated with a former facility or building complex, there is slight change in topographic relief trending towards Seneca Lake to the west.

The 10,587-acre Seneca Army Depot Activity (SEDA) facility was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army (DOA) since that date. From its inception in 1941 until 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the SEDA under its Base Realignment and Closure (BRAC) process. This recommendation was approved by Congress on September 28, 1995 and the Depot is scheduled for closure by July 2001.

2.1.2 Site History

Construction of the Seneca Ordnance Depot began in June 1941, and two years later, in 1943, the Depot began its mission of receipt, storage, maintenance, and supply of military items, including munitions and equipment. As the amount of ammunition on base increased following World War II, the mission of the base shifted from the supply of ordnance to the storage and disposal of it.

In July of 1998, the U.S. Army Corps of Engineers (USACE) conducted a site visit and historical data collection effort. The findings are documented in the Archives Search Report (ASR). Based on the findings, portions of the property within the former facility boundary were recommended for an ordnance and explosives (OE) investigation (USACE, 1998). Based on the ASR recommendations, an Engineering Evaluation/Cost Analysis (EE/CA) was conducted at the site. The EE/CA focused on characterizing OE contamination, analyzing risk management alternatives, and recommending feasible OE exposure reduction alternatives for eleven areas of interest (AOIs)

Ordnance stored at SEDA included all classes of ammunition and explosives except chemical ammunition other than smoke. The potential OE in the AOIs included small arms, 40mm rifle-fired grenades, practice grenades, fuzes, flares, various sizes of HE projectiles, 3.5-inch rockets, detonation cord, blasting caps, and demolition materials.

2.2 Methodology

2.2.1 Response Strategies.

There are three general categories of response strategies to ordnance remaining on sites formerly used for defense.

- Removal,
- Access Control, and
- Behavior Modification.

The last two strategies are called institutional control and UXO education response strategies. These strategies require local cooperation, responsible land-use control, and/or police powers for enforcement. These strategies are inherently non-federal and require a high level of community involvement. Institutions, defined as local and state governmental agencies and other organizations that can assist, are the vital element needed to implement any of the recommended institutional controls and UXO education. These strategies, like all response plans, start with data collection, including obtaining responses to the following questions:

- What institutions hold control over the site?
- What authority do they have?
- Do they have specific responsibility in land-use control and/or public safety?
- What capabilities do they have?
- What resources do they have?
- Are they willing to play a role?

2.2.2 Analysis Methodology.

The methodology used to analyze potential institutional control and UXO education strategies/alternatives for reducing the risk associated was the basis for the development of institutional controls:

- Based on knowledge of the area, discussions with USACE, and preliminary telephone calls to the various institutions, current and future users of the land will be determined.
- A preliminary telephone interview will be conducted with personnel including representatives from Huntsville USACE, the LRA, BRAC, the New York Department of Environmental Conservation NYSDEC, Cayuga County, representatives from the towns of Romulus Varick, and Parsons Engineering Science.
- From the interviews, institutions that have been determined to possess jurisdiction will be identified. The intent of the interviews will be to determine the degree of jurisdiction and the to assess their capability and willingness to assert control over the ordnance contaminated land.

- Basic data will be collected on questionnaire forms.
- An Institutional Summary will be produced for each institution selected for review.
- This Institutional Analysis Report will be produced from the data collected.

2.3 Scope of Work/Selection Criteria

2.3.1 Interview Selection.

The following criteria was utilized in the selection of agencies to be interviewed:

- Have contact with current users of the property.
- Have contact with future users of the property.
- Have technical capability for access control and/or behavior modification strategies.
- Can provide a variety of sources (i.e., print, and visual) that would provide complete coverage/contact with users.
- Can repeat the same or different strategy at a later date.
- Have authority to assist in implementation of institutional controls.
- Have responsibility for land-use control and/or public safety.
- Expressed an ability and willingness to assist.

2.3.2 Interview Categories.

The "yet to be named parties" are considering the use of Seneca Army Depot as a conservation/ recreation area. If the property is deeded to the "To be named parties" in the future, said parties will exercise primary responsibility for the land. The County IDA Coordinator and a representative of the County Planning Department will be interviewed; as well as representatives from The Army; the Corps of Engineers; and the IDA Committee.

2.4 Interview Summary

2.4.1 Interview Topics.

Seventeen topic areas concerning the interviewee and the organization represented. The primary topics are listed below:

- Name and Title of Respondent Interviewed.
- Name and Address of Organization.
- Type of Organization.
- Overall Purpose of the Organization.
- Basis for Creation of Organization.
- Jurisdictional Level of Organization.
- Is there any sunset provision set upon your Organization?
- Power and/or Authority of Organization.
- Geographic Area Served by Organization.
- Organization Concern for Public safety and Related Land Management.
- Organization Work Categories.
- Organization Work Subjects.
- Organization Contacts.
- Organization Public Safety /Management Rules and Regulations.
- Does Organization Have Jurisdiction over Other Organizations. If so, who?
- Does your organization have the power to limit land use?
- Does your organization have the power to limit land use?
- Miscellaneous Interview Information.

2.4.2 Interview Results.

The topic areas identified above were reviewed with the interviewees and are summarized in this section in the chronological order of the interviews. The completed institutional survey data forms are included in Appendix F

3.0 Institutional Control and UXO Education Alternatives

Risks related to ordnance contamination may be managed through conventional removals, access control, public awareness programs, or a combination of strategies. It is important to understand that the risk associated with ordnance contamination is associated with three causative factors that if completely avoided would prevent an ordnance-related accident. These three factors are:

- Presence,
- Access, and
- Behavior.

If there is no presence of ordnance on the site (none located on site), then there is no possibility of an ordnance-related accident. If ordnance exists onsite, but people do not have access, then there will be no accident. Even if ordnance exists onsite and people have access to the ordnance, if their behavior is appropriate, then there will be no accident. An accident requires all three events or circumstances to be present. No accident will happen if any one causative factor is missing. Each factor provides the basis for a separate implementation strategy. Access control and behavior modification through public awareness are institutional controls.

3.0.1 Public Awareness

Discussions of alternatives and the recommendations presented in this Institutional Analysis Report are based on the assumption that informing and educating the public to the potential risks associated with the ordnance remaining on Seneca Army Depot will reduce the possibility of injury. However, it is also understood that public awareness may incite a reverse reaction to a small segment of the population that may view the dangerous handling of ordnance as an adventure. This possibility must be accepted with the understanding that there will always be some portion of he populace who refuse to heed warnings or follow directions.

3.1 Physical Removal

A strategy that engages the presence of ordnance is a removal action. Although physical removal is a means of reducing risk, it is not an institutional control alternative and will, therefore, not be discussed further in this report. Physical removal, including its effectiveness, implementability and cost are discussed in the Engineering Evaluation/Cost Analysis (EE/CA).

3.1.1 Removal and Human Behavior

There are many instances where removal of surface or subsurface ordnance is the appropriate and recommended alternative for reduction of the risk associated with ordnance contamination. Removal produces a condition where there is less ordnance onsite. If human behavior is the same before and after

the removal, then the risk is substantially reduced. However, if the removal results in a behavior that is less cautious or less informed than the behavior prior to removal, then a situation exists where some risk may be intensified. Therefore, it is recommended that any removal action at Seneca Army Depot Activity be augmented with behavior modification strategy/alternatives, which includes education and information programs.

3.1.2 Removal Responsibility

Contracted removal actions to reduce the risk of exposure to ordnance are typically coordinated through the Army Corps of Engineers (USACE), Huntsville District. That agency is responsible for preparation and negotiation of scopes of services, fees, and schedules, and for retaining organizations skilled in the removal of ordnance to provide the removal services. Also, the USACE, Huntsville District is responsible for coordinating public information concerning the removal activities being performed to local government and the public at large. Day-to-day operations are executed and managed by the contractor in accordance with a Work Plan and Health and Safety Plans, which are approved by the USACE, Huntsville District prior to the start of work.

3.2 Access Control

Access controls limit the use of the contaminated property. Control can be accomplished by implementing various restrictions or dedicating the property to compatible use. The target strategy is to remove the human element from the chain of events that could lead to an accident. Access control can be facilitated in the form of signage, fencing, land-use restrictions, and/or regulatory control.

3.2.1 Signage

Sign posting is typically completed to inform people that entry is prohibited or that activities within the property are restricted in some manner. Defiance of these restrictions may be subject to disciplinary legal action. Signage is typically one element of a plan that uses the concept of respect for property rights. Trespass laws are the key element of enforcement and cooperation between landholders, law enforcement, and the general public. These laws are encouraged by other elements of the plan. The link between not trespassing and explosive safety must be made. Signs informing the public of potential dangers could be created and posted around the area to prevent or discourage entry or discourage physical contact with ordnance. Signage is only effective if the signs are well placed and maintained.

3.2.2 Fencing

As with signage, fencing is typically one element of a plan that is dependent upon the concept of respect for property rights. Trespass laws are the key element of enforcement and cooperation between landholders, law enforcement, and the general public. These laws are encouraged by other elements of the plan. The link between not trespassing and explosive safety must be made. Fences provide a physical barrier to inadvertent entry. Therefore, it may be easier to enforce trespass strictures. Fencing is only effective with the cooperation of local officials and the community with funding and technical

support from the federal government. The federal government owns all of the property at Seneca Army Depot Activity. The perimeter of Seneca Army Depot Activity is currently fenced with the original three strand barbed wire fence.

3.2.3 Land Use Restrictions and Regulatory Control

Land Use Restriction and Regulatory Controls provide an effective institutional control that can be exercised over areas where ordnance is present. Through these controls, local government can dictate the type of development that will occur on a site, and the methods in which that development occurs. The Land Reuse Authority (LRA) has written and adopted a Reuse Plan and Implementation Strategy that defines the kinds of uses that may occur on the Seneca Army Depot Activity property. The reuse plan is a very general guidance to allow for specific uses that conform to the land uses dictated by the Plan.

3.2.4 Effectiveness

Although they are not considered as the most effective institutional controls, signs and fencing do provide some information and restraint based upon the concept of respect for property rights. Fencing, if implementable, can be somewhat effective in reducing the risk of exposure to ordnance contamination. The existing three-strand barbed wire perimeter fencing does little to prevent access. It does serve as a demarcation of the property boundaries and communicates a warning that access is not permitted. The fence does not prevent access for those wanting to enter the property. Fencing the entire perimeter with a type of fencing more difficult to access would be extremely expensive although not much more effective. Fencing does not keep out those who are determined to enter the property from cutting through or going under or over the fence.

The posting of signs along the perimeter and within the interior of the property provides "on the spot" warnings of the potential presence of ordnance. The signs can be prepared to provide a warning of the potential presence of ordnance and the hazards of physical contact. The signs can also include instructions as to how a sighting should be reported. These signs can be posted along the perimeter of the property and within the interior to serve as reminders of potential hazard. Signs become convenient targets for vandalism and must be maintained to be effective.

Regulatory powers can be used to control the type, location, design, construction materials and techniques of all development that occurs on site. These controls provide Seneca County and the towns or Romulus and Varick the ability to inform potential developers about the danger of ordnance, require additional ordnance surveys in areas where excavation will occur, and deny clearing and construction where significant ordnance is found and not removed. However Seneca County currently has no system of land use restrictions, and permitting established. These methods of land use have the possibility to be very effective tools as institutional controls only if the enforcement laws are in place to support them.

3.2.5 Implementation

When Seneca Army Depot Activity is redeveloped, additional fencing may be installed but not as a deterrent to shield users from potential ordnance. It is recommended that a system of clear, concise signs be prepared and erected throughout the property along vehicular and pedestrian access ways. The signs should warn about the potential existence of ordnance, warn about the hazards of physical contact, and provide information on how to report any sightings. The presence of this sign system is an institutional control intended to modify behavior.

Land use and permitting restrictions do not currently exist in Seneca County to provide direction and control in the location, type and approach to construction. However inadequate the current land use restrictions are, they should still be applied as an institutional control measure combined with other measures to reinforce their effectiveness. The current land use and permitting restrictions could be modified through the adoption of zoning to include concerns for the existence of ordnance.

It could be recommended that the towns of Romulus and Varick establish a zoning committee as a planned development-zoning district specifically for the design, construction and control of the newly adopted property. The requirements of this special committee can be written to provide the towns and County even more control in the clearing and construction that occurs. Specific depths of ordnance surveys could be required for various types of construction with those requiring greater excavation also requiring deeper ordnance removal. Clearing and construction can be required to occur only in areas subjected to ordnance surveys where no ordnance has been found or ordnance has been removed.

3.2.6 Cost

The cost of signage for the property can be estimated assuming that 50 signs will be prepared. The signs will be painted metal approximately four (4) square feet each, mounted on a eight (8) foot 4x4 pressure treated wood post sunk two (2) feet in the ground and secured with concrete. The cost to cut and paint each sign is $75.00, plus the cost of wood at $8.00 each, and installation of $10.00 each equals a total cost of $93.00 per sign for a total of $4,650.00 for 50 signs installed. The signs will have to be maintained and replaced from time to time as they fade or are vandalized. Assume an average cost of $20.00 per sign per year maintenance, or $1,000.00 per year.

3.2.7 Management, Execution, and Support Roles

Installation of the sign system would be a part of the property reuse process. The future shareholder will be required to have a plan showing the vehicular roadways, parking areas, and pedestrian pathways planned throughout the facility. Locations for signs that will maximize their effectiveness can be designated and the signs installed upon completion of the property transfer.

3.3 Public Awareness Program

3.3.1 Behavior Modification

Behavior modification relies on the personal responsibility of the site user. Even if the ordnance exists and there is open access to it, there is no risk if the behavior is appropriate. For behavior to be appropriate, one must understand the situation and voluntarily react in a responsible manner. The power of the federal government is limited in any situation where local enforcement is available. Therefore, the local authorities must be convinced that the risks are sufficient to warrant their participation. The concept of behavior modification through public awareness extends to agencies that have jurisdiction over the site. Some behaviors that must be modified may belong to the local government such as the local town authorities to be made aware of the hazards that exist on the former depot properties. Raising public awareness for the hazards that exist within Seneca Army Depot Activity can be facilitated in a variety of ways. These will be discussed in the following paragraphs. Modification of behavior through public awareness is essentially an education/information process. The various techniques to be discussed include the following:

- Notice - Deed notifications/restrictions, notifications during property transfers, and notification during permitting;
- Education classes - Including ordnance identification, safety presentations to various audiences, preparation of packages for administrative and public officials;
- Printed media - Including brochures and news articles;
- Visual media - Including videotapes and local television programs;
- Exhibits/displays; and
- Ad hoc committee.

3.3.2 Land Use Controls

Behavior modification can be facilitated through land use controls. The towns of Romulus and Varick currently have no zoning in place to use as a land use control mechanism. Language is currently being added to the town charter to help provide zoning and help enforce land use control. Until zoning is adopted, No enforcement of deed restrictions is in place other than the property owner responsibility to uphold the law. This process however is currently being updated and revised to include the recent inception of federally held lands into the town's jurisdiction. Until zoning is established in the towns of Romulus and Varick a deed restriction would have little effect without being enforced. Even at the building inspector level there is no current requirement other than enforcing a setback distance from neighboring properties established to control land use. The use of zoning would be the most direct and effective tool for behavior modification because zoning would require a level of planning and review in order for certain development actions to occur. This level of zoning detail can include specific requirements for the development of ordnance contaminated property.

Ideally a commission similar to the current RAB or LRA would be authorized at the town and county level that has the authority to restrict uses of property in the public interest on the basis of health, safety and welfare. Within this committee would be representatives from the federal level, the state level

the county and the local towns to enforce land use restrictions on the once federally held property. This committee could also be used to remove or offer variances to imposed land use restrictions as site conditions change or land use requirements change.

3.3.3 Notice

Appropriate notice can exert a strong influence on one's behavior. When notice of ordnance contamination is given, it can affect the expectations of potential users. Appropriate uses can be sought, and the land may still be used for economic gain. However, the contamination must be considered in the design and use of any site improvements or activities. Notices can be placed on a property in at least three ways: deed notification/restriction, notification during any property transfers, and notification during any permitting process. As the new owner and developer of the land, it can be assumed that the future stakeholder will understand the hazards of the potential ordinance on-site and will adhere to any and all restrictions placed on the property during the transfer of property from the federal government.

3.3.3.1 Deed Notifications/Restrictions

Notifications of ordnance contamination and restrictions of use could be placed on the deeds of any properties that are made available for use through the BRAC closure process. Seneca County will be advised as to the presence of ordnance on-site.

3.3.3.2 Notification During Property Transfers

In general, property owners have a responsibility to protect the public from dangers associated with their property. In the case of the excessing of ordnance contaminated property, a liability exists that should be disclosed to prospective buyers or lessors. In this case, the new owner is yet to be established, whomever the new owner is they will need to be fully advised as to the presence of ordnance on the site.

3.3.3.3 Notification During Permitting

Typically controls are in place to protect property owners and their neighbors through approvals or permits required to develop properties in certain ways. Permit approvals generally ensure that proper notice is given, reasonable plans have been prepared that consider the presence of endangered species, wetlands, or other concerns, and that the land is being developed for an appropriate use. Permits combine all of the benefits of approvals and get a legally binding commitment for certain behavior. The assumption that permits can be revoked for cause provides enforcement under local authority.

3.3.3.4 Effectiveness

The most effective institutional controls that can be exercised over the ordnance contaminated land are the land use controls that will need to be established through permitting, deed restriction, zoning and public notice. Although no current zoning exists and permitting does not specifically relate to ordnance contamination, they can be amended to provide direction and control in the location and approach to construction that includes concerns for the existence of ordnance. It is recommended that

the local towns establish a federal properties committee as a planned development zoning committee specifically for the design, construction and control of the transferred property. The requirements of this special committee can be written to provide the towns and County control in the clearing and construction that occurs as it relates to ordnance. Requirements can be instituted for specific depths of ordnance surveys for various types of construction with those requiring greater excavation to require deeper ordnance removal. Clearing and construction can be required to occur only in areas subjected to ordnance surveys where no ordnance has been found or ordnance has been removed. Permits for clearing and construction would be approved by this committee, than issued only after the subject plans meet the committee requirements. The resulting institutional control is one of the most effective institutional portion of an institutional control package.

3.3.3.5 Implementation

Seneca County in conjunction with the BRAC office and the local communities can implement the preparation and approval of a team of agencies to track changes in land use, permit and deed restriction compliance. Additional permitting requirements will be required as a part of their daily business utilizing Community Development and Legal Staff expertise. The USACE, Huntsville District will make available recommendations for ordnance survey requirements that can be included in the new County laws.

3.3.3.6 Cost

It is assumed that nominal costs would be incurred by Seneca County through the use of existing staff expertise.

3.3.3.7 Management, Execution, and Support Roles

As stated, Seneca County in conjunction with the towns of Romulus and Varick can implement the recommendations through its normal staff procedures with oversight approval by the BRAC office.

3.3.4 Printed Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with ordnance contamination. One of the major avenues available to facilitate this awareness and understanding is through printed media. This media may be in the form of brochures, fact sheets, newspaper articles, and other information packages. The opportunity to disseminate information through the printed media is readily available and can be easily facilitated. Through the use of printed media, residents within the region and from outside the region can be informed about the existence of ordnance contamination within Seneca Army Depot Activity.

3.3.4.1 Brochures/Fact Sheets

Brochures and/or fact sheets can be produced that describe the history of Seneca Army Depot Activity, and include information on the presence of ordnance. Text and graphics can be used to describe how to identify ordnance, warnings to avoid physical contact in any way, instructions for dealing with ordnance if encountered, including how to report ordnance sightings. These brochures or fact sheets could be produced by USACE, but should also include local sponsorship and ownership. These brochures could be distributed as follows:

- Provided to conservation area visitors at gate when entrance fee is paid.
- Direct mail to all residents in Seneca County including the municipalities.
- Enclosed in tax or power bills.
- Enclosed as flyer in local press.
- Provided through educational systems to all students in the region.
- Provided to all recreational groups/clubs.
- Provided to all professional groups/clubs.
- Provided to all civic groups/clubs.
- Provided to all military personnel.

3.3.4.2 Newspaper Articles/Interviews

Newspaper articles and interviews with local residents, the USACE, and other institutions can be printed to further educate the public concerning the ordnance contamination at Seneca Army Depot Activity. These articles can be very informative, and can be presented in a positive manner. This kind of participation by local press can effectively reduce the risk of improper handling of ordnance. Continued coverage annually should result in better information and understanding as to the actual prevalence of and hazards of ordnance. Interviews with people who lived in the area when Seneca Army Depot Activity was active or who actually were stationed or worked at the Depot would add interest to these articles.

3.3.4.3 Information Packages for Public Officials

The officials of Seneca County and the local municipalities should be aware of the ordnance contamination at Seneca Army Depot Activity. As local officials, they should be provided with more detailed, current information on the concept of Institutional Controls and on the extent of ordnance contamination at Seneca Army Depot Activity. An information package produced by USACE, possibly using maps from the Engineering Evaluation and Cost Analysis (EE/CA) Report defining primary areas of concern, would be valuable for the public officials. Recommended maps would include the boundary, the proposed plan of the county park, and an abstract of studies completed to date. This abstract should include a brief history of Seneca Army Depot Activity, areas of greatest concern, types and potential danger of the ordnance discovered, USACE contacts, and other contacts to discuss safety concerns

3.3.4.4 Effectiveness

Providing information via printed media would be a very effective method of modifying behavior by educating the public at large and public officials about the presence of ordnance within Seneca Army Depot Activity and its potential impact. Production and dissemination of brochures/fact sheets, newspaper articles and interviews, and the production and distribution of information packages for public officials would all be very effective institutional controls. Distribution of the brochures or fact sheets on a one-time basis would effectively educate the public. However, to be fully effective over an extended period of time, the message must be reinforced. Redistribution of originally produced printed media that has been updated if necessary is recommended at regularly scheduled intervals. Ongoing exposure to information about ordnance contamination should result in a more enlightened public. When the public uses the conservation area, they will have been previously exposed to the potential presence of ordinance and aware not to have physical contact with the ordnance. Also, ongoing distribution will provide information to new residents, visitors, or others not currently aware of the ordnance contamination. The addition, reinforcement, and augmentation of current knowledge is desirable in order to keep the realization of ordnance contamination and the potential hazards in the minds of people at all times.

3.3.4.5 Implementation

Information concerning the ordnance contamination at Seneca Army Depot Activity, and the cleanup presently being coordinated by the USACE, has been dipublished in newspaper articles. This program of information sharing has been the responsibility of the US Army Public Affairs Office (PAO) at SEADA. . The PAO also provides news releases whenever they are needed. The PAO has scheduled continuing this dissemination of information until the property is excessed to Seneca County. Seneca County can easily continue this provision of information via printed media with assistance from the SENECA after the land is excessed to the Town. The USACE will provide the funding and production for brochures, fact sheets, and information packages. Local institutions should readily agree to assist in distribution of the information.

3.3.4.6 Cost

Brochures/Fact Sheets The estimated cost to produce an original professional quality, two-color brochure/fact sheet designed as a folded 81/2 x 11 format suitable as a mailer or handout is approximately $10,000.00. This brochure could be prepared to include primarily graphics with minimal text in bullet form to provide information about the presence, identification, handling and reporting of ordnance. The cost to print and distribute the brochure will depend on the number of copies to be distributed. Assume that 100,000 brochures are to be printed and mailed at a cost of $0.50 each, and 10,000 brochures are to be printed and distributed by local institutions at $0.25 each. The total cost for design and preparation of the brochure, printing of 20,000 copies and mailing of 10,000 copies will be $62,500.00. The estimated annual cost to reinforce the message (assuming two (2) mailings per year,

providing an additional 1,000 brochures per year, and the labor associated with periodic editing and updating of the brochures/fact sheets) is $5,000.

Newspaper Articles/Interviews There would be no cost for this type of public education.

Information Packages for Public Officials The brochure discussed in 3.3.4.6.1 above could be utilized together with abstracts of additional information on ordnance cleanup, mapping, and proposed plans can be provided to local officials for $1,000.00. This cost assumes that 50 information packages are prepared at a cost of $20 each.

3.3.4.7 Management, Execution, and Support Roles

To provide information via printed media, USACE must first produce the brochure/fact sheet. This can be executed directly by USACE or through a contractor with experience in the production of communications vehicles for public education programs. Distribution can be facilitated by mailing the printed materials directly to all residents of the Seneca County, and the other municipalities within the County. Support from local institutions and volunteer groups will be needed to disseminate the information to all of the effected parties.

3.3.5 Classroom Education

Public awareness can be facilitated through the classroom. The public needs to understand that ordnance exists within Seneca Army Depot Activity and to be able properly identify and avoid ordnance if encountered. A properly educated public is more likely to make correct decisions related to the safe and proper precautions of found ordnance. Classroom education can be offered in two major categories:

- Ordnance identification, and
- Safety.

3.3.5.1 Ordnance Identification

Although everybody that enters Seneca Army Depot Activity needs to be aware of the potential risk associated with ordnance; it may not be necessary for everybody to be trained in ordnance identification. The basic message should be not to touch anything that looks like ordnance, shrapnel, or any other unidentified material. However, it may be prudent to properly educate public officials and institutions that have a role that they must provide within Seneca Army Depot Activity. Ordnance identification classes would be valuable for the following institutions: Seneca County, and other municipalities, and the school districts within the County. Ordnance identification classes are conducted at various times and locations around the nation. It may be possible to schedule classes and transport public officials to these classes. Or, the USACE may wish to consider bringing experts in the detection and identification of ordnance to the area to provide the education. An ideal opportunity to provide ordnance identification classes would be in conjunction with scheduled removal actions in the cleanup of

Seneca Army Depot Activity. Ordnance experts could make videos, that could then be made available to public officials to view at their leisure.

3.3.5.2 Ordnance Safety

The affected public should be educated about the potential dangers associated with ordnance and should understand the safety procedures to follow should they encounter any suspected ordnance item. Safety presentations should be made to all public and private primary and secondary schools in the region.

3.3.5.3 Effectiveness

Providing education through the classroom would be a very effective method of modifying behavior by informing the public and public officials concerning the presence of ordnance at Seneca Army Depot Activity and how to safely deal with the ordnance. Ordnance identification and ordnance safety classes/education would be very effective institutional controls. However, to be fully effective over a period of time, the message must be reinforced. Ordnance identification classes should be conducted on a regularly scheduled basis (possibly every 2 to 3 years) and ordnance safety should be incorporated as a regular part of the current classes.

3.3.5.4 Implementation

Providing classroom education should be easily implementable. With USACE providing the funding and the educational information package, local institutions should agree to participate and support the program. The most difficult part of the process will be coordinating efforts with an ordnance expert who will be retained to educate public officials in ordnance identification and scheduling the maximum number of public officials per class. Implementation will be most easily facilitated during a time when an ordnance expert is scheduled to be onsite for a removal action.

3.3.5.5 Cost

The estimated cost to retain the services of an ordnance expert (including preparation, classroom training time, travel, and per diem) to provide ordnance identification education is approximately $5,000. The estimated cost to provide the necessary information and to assist the institutions that are willing to include ordnance safety into their current education process is approximately $5,000. The total estimated cost to implement classroom education alternative would be $10,000. The estimated annual cost to reinforce the classroom education process (assuming ordnance identification classes once every 3 years and periodic update and supplementing of the information concerning ordnance safety) is approximately $3,000 per year.

3.3.5.6 Management, Execution, and Support Roles

To facilitate the classroom education alternative, USACE must first contact all institutions that are willing to assist in the ordnance safety education process and make information available to them. As a minimum, local institutions and groups should be contacted and efforts should be coordinated with them. USACE must also retain the services of ordnance experts, who have been trained in the proper identification and handling of ordnance. There are many firms that specialize in this area with individuals who have prepared and presented ordnance identification classes in the past. Ideally, the contractor that is awarded a site cleanup contract would be able to assist in this ordnance identification process. As an alternative to coordination of all classroom education through the USACE, this work can be executed via a contract professional with experience in the production and facilitation of education and information programs.

3.3.5 Visual Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with ordnance contamination. One of the major avenues available to facilitate this awareness and understanding is through visual media, in the form of videotape programs for use during presentations and for broadcast on local television stations. The opportunity to disseminate information through the visual media is readily available and can be easily facilitated.

3.3.6.1 Videotapes

Professional quality videos can be produced that describe the history of Seneca Army Depot Activity, how to identify ordnance, safety procedures associated with avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered. The videos can be produced by USACE, but should include interviews with local citizens, local sponsorship, and local ownership. Videotapes can be produced for use in classrooms throughout the region. Copies should also be provided to local libraries, colleges and universities, Seneca County, and other municipalities. These institutions could make the videotapes a part of permanent exhibits/displays. Once the conservation area is functional, a permanent video presentation could be shown there.

3.3.6.2 Television

Local television stations would provide excellent local access of programs about the presence of ordnance at Seneca Army Depot Activity. Various public service programs could be presented on how to identify ordnance, safety procedures associated with avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered. All television stations are anxious to provide local information reporting and programming. It is suggested that the television programs include interviews with USACE personnel, local residents, and others who have knowledge of the history and understanding of the

ordnance at Seneca Army Depot Activity. A short 10-minute video could be produced to educate the public through the institutions and groups discussed in the preceding paragraph.

3.3.6.3 Effectiveness

Providing information using visual media would be an effective method of modifying behavior by educating the public concerning the presence of ordnance at Seneca Army Depot Activity. Production and dissemination of videotapes and presentation of the message over local television would be effective institutional controls. The visual media is becoming one of the most popular formats for educating the public. Taking advantage of the available avenues for presenting the visual media would be effective. However, the message must be reinforced. Frequent and regularly scheduled re-broadcast of the original television presentation is recommended. Periodic updating of the videotapes is recommended to ensure the accuracy and timeliness of the information presented. Additional footage and editing of the original videotapes may be required every 2 to 3 years.

3.3.6.4 Implementation

Providing information via the visual media should be easily implementable. With USACE providing the funding and producing the videotapes, local television stations should readily agree to assist in distribution of the information. Local public television stations in Seneca County could provide assistance to the PAO in its public awareness campaign in the cleanup efforts at Seneca Army Depot Activity. Management at this excellent public resource could be contacted to access interest and commitment to ongoing assistance in this public awareness program.

3.3.6.5 Cost

The estimated cost to produce a professional quality 10-minute videotape for television broadcast and distribution to the local institutions is approximately $50,000. The estimated cost to copy and distribute videotapes to various institutions and to television stations would depend on the number of copies needed. However, assuming 50 copies at $20 each (including the cost of the videotape, dubbing, and postage) the cost would be approximately $1,000. Therefore, the total estimated cost to implement the information via visual media would be $51,000. The estimated annual cost to reinforce the message (assuming updating of the videotape once every 3 years at a cost of $5,000 per update and distribution) would be $2,000 per year.

3.3.6.6 Management, Execution, and Support Roles

To provide information via visual media, USACE must first produce the videotape. This can be executed directly by USACE or through a contract professional with experience in the production of public information and education programs. Support from the local television stations and other organizations and institutions will be needed for broadcast of the videotapes and to make them readily available to the public.

3.3.7 Exhibits/Displays

Placing exhibits/displays in museums or other areas where the public will be exposed to educational information can be an effective method of raising and preserving general awareness and educating the public on the possible risk associated with the ordnance at Seneca Army Depot Activity. The most logical location for this display is the visitors center of the conservation area once it is completed. Other locations exist within the cities and county where a display would receive exposure and would aid in informing and educating the public about the possible risk associated with ordnance. Some of these locations include the County Administration Building, City Hall, and the lobbies of banks and other institutions. Also, a mobile display could be prepared to be moved from one location to another to obtain exposure to the maximum number of potentially affected people. This mobile display could be exhibited at many locations throughout the region including those listed above.

3.3.7.1 Effectiveness

The presentation of information through exhibits/displays is an effective method of modifying behavior by educating the public concerning the presence of ordnance at Seneca Army Depot Activity. Producing displays and presenting them in museums and other areas of high public exposure would be an effective institutional control. The more people that visit a museum or area where the information is displayed, the more effective is the alternative. At the present time, providing information about ordnance would be most effective through the use of a mobile display at various locations. A permanent display at the new Conservation area will be very effective once the area is transferred. An exhibit or display becomes outdated either through changes in the information or wear and tear and must be updated or replaced every four to five years. This updating is recommended periodically to ensure the condition, accuracy and timeliness of the information presented.

3.3.7.2 Implementation

Providing information via exhibits and mobile displays should be implementable. With USACE providing the funding and producing the displays, the local institutions will probably be pleased to host the display for a limited time. The primary concern will be the transport and relocation of the mobile display to the various locations. This task may be accepted by the County or by a specific group such as a civic club or private institution. This effort will require additional coordination and effort.

3.3.7.3 Cost

The estimated cost to purchase a mobile exhibit and properly design and prepare it for display is $6,000. The estimated cost to prepare a permanent display for the conservation area is approximately $4,000. Therefore, the cost to prepare one permanent and one mobile display is $10,000. The estimated annual cost to update and reinforce the message on the displays is $1,000 per year.

3.3.7.4 Management, Execution, and Support Roles

To provide information via mobile and permanent displays, the USACE must first produce the displays. This can be executed directly by USACE or through a contract professional with experience in the production of public information and education programs. Cooperation from Seneca City and from other institutions will be needed to provide the space for the mobile display. Support will be needed by one of the local institutions, possibly Seneca County, to assist in displaying and relocating the mobile display.

3.3.8 Internet Web Site

The creation of a Web Page on the Internet could be a very effective method of raising and preserving general awareness and educating the public about Seneca Army Depot Activity. The Web Page could be designed to include the history of Seneca Army Depot Activity, the region, and sites of historical and ecological significance, flora and fauna. The fact that ordnance exists on the site would also be explained together with how it is identified, procedures for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered.

3.3.8.1 Effectiveness

The Internet Web page would be less effective than some of the other alternatives in facilitating public awareness. However, it would be the very effective in presenting in-depth information about Seneca Army Depot Activity and the presence of ordnance and safety precautions to avoid an ordnance mishap. This website could become a site for the new regional park when it is completed.

3.3.8.2 Implementation

Creation of a Web Site should be implementable. USACE could provide the funding and oversee the design of a Web Site that would provide the information that should be included in such a site. When Seneca Army Depot Activity is ultimately deeded to the future owner and developed as conservation/ recreation area, the Web Site could be about the area as a whole with the ordnance information included and areas where ordnance may be located identified.

3.3.8.3 Cost

The cost to design a Web Site varies from $50.00 to $100 per hour. Assume that the design would require 50 hours at $75.00 per hour including review, revisions, and placing the site on the web. The total cost would be $3,750.00.

3.3.8.4 Management, Execution, and Support Roles

To create a Web Site USACE should coordinate with Seneca County agencies. There are advertising professionals in the Rochester and Syracuse region who could be contracted to prepare the Web Page and establish it on the Internet.

3.3.9 Ad Hoc Committee

Creation of an Ad hoc committee, composed of influential members of the community and a representative from the USACE would serve as a mechanism for facilitating implementation of the original recommendations and for ensuring reinforcement of these recommendations. Additionally, the overall effectiveness of each of the in-place alternatives can be analyzed regularly, and other methods of modifying behavior through public awareness can be evaluated (see paragraph 3.3.7).

3.3.9.1 Effectiveness

The Ad hoc committee would be very effective in providing information and understanding to citizen volunteers who then would be active in facilitating broader public awareness. This ad hoc committee would be overseen by the Seneca County IDA and would included representatives from the various user groups at Seneca Army Depot Activity. These groups should include, but not be limited to: Seneca County, Native Americans, the Advantge group, The New York Department of Corrections, and neighborhood representatives. The existing restoration advisor board (RAB) committee has been successful in providing and maintaining open communication between the USACE ordnance cleanup process and the public at large. This type of committee can be the most effective mechanism for ensuring the implementation of the other recommended alternatives.

3.3.9.2 Implementation

Creation of an Ad hoc committee should be easily implementable. The existing RAB committee has been very successful. That committee could continue to function after the cleanup is completed and Seneca Army Depot Activity is excessed to Seneca County. There will be significant public interest in the future of and potential public use of Seneca Army Depot Activity.

3.3.9.3 Cost

The members of the Ad hoc committee would not be paid for their time. Therefore, the estimated cost to implement this alternative would be approximately $2,000 for the first year and $1,000 for each subsequent year. The costs would include retaining services of a stenographer to record meeting minutes, plus cost associated with purchase of stationary, copying, telephone calls, and other miscellaneous expenses.

3.3.9.4 Management, Execution, and Support Roles

To create an Ad hoc committee, USACE must contact influential members of the community and form the committee. Meeting rooms and a stenographer must be secured. It is suggested that a minimum of 2 meetings be conducted the first year and at least one per year thereafter.

3.3.10 Other Methods of Behavior Modification Through Public Awareness.

Although this report includes the most common, appropriate, and effective institutional control alternatives available at this time, other methods of educating, informing, and modifying the behavior of the public currently exist and will continue to be improved upon. Other technological advances are anticipated that will result in the creation of new opportunities to improve the information/education process. Other public awareness programs not addressed in the previous sections of this report have not been fully developed and may warrant further consideration at a later date. It is imperative that the USACE and the local institutions stay attuned to new and innovative methods to keep the public informed. It is likely that the recommendations presented in this report may become obsolete at some time in the future.

4.0 Recommendations

This section of the Seneca Army Depot Activity Institutional Analysis (IA) includes a list of recommended institutional control and UXO education alternatives that could be implemented at Seneca Army Depot Activity. The selection of the recommended alternatives was based upon the description and evaluation of the alternatives presented in Section 3.0; discussions with CENCH, Seneca County officials and staff; professional experience with IA's; and an overall knowledge of the site and conditions. The recommendations presented are intended for implementation in all areas of Seneca Army Depot Activity. They are considered to be appropriate methods for reducing the risk of ordnance hazard to the public. The recommended institutional control and UXO education alternatives are considered to be an effective complement to other removal activities at Seneca Army Depot Activity, as discussed in the Engineering Evaluation/Cost Analysis.

4.1 Recommended Alternatives

All of the institutional control and UXO education alternatives presented and discussed in Section 3 are effective and could be implemented. Those recommended below have been selected as providing the approach to control through the education vehicle that appears to have the greatest potential of reaching the largest number of people. The rationale for selection of the recommended implementation alternatives is included with the recommendations. The recommendations are summarized in Table 4-1.

- Establish an AD HOC committee - The formation of a committee to oversee the future reuse of the former depot property would be the most effective control to monitor the property and protect both the public and the property owner. This future commission could be prepared and executed by County, Local, and Army staff. The committee would include the town planning board and the County Commission to oversee its direction and longevity. This newly established committee could be funded by the federal government to review any proposed future land use on the property. The Army should include specific development requirements for ordnance survey for construction or grading and evaluation in its permitting requirements for the property into the future.

- Land Use Restrictions and Regulatory Control – The use of deed restrictions and land use control has the potential to be a very effective form of institutional control. This option could be instituted as the control of land use and permitting by the town is modified to include zoning and land use control. Although this alternative has the potential to be a very effective control there is currently no operating agency State, County, or Local that has the authority to enforce land use restrictions on the former federal property. Even though this control is not fully developed within the towns the option to apply deed restriction and notice should be applied to protect the former and future landowners

- Signage - Although signage is generally not considered as a stand alone institutional control, it provides a very effective reminder of the existence and hazards of ordnance if placed on site. A total of 50 signs can be prepared and placed on site for an estimated $4,650.00. Maintenance of the signs will cost an average of $1,000.00 annually.

- Printed Media/Brochure - A brochure prepared and distributed by direct mail to all residents of Seneca County and distributed at the conservation area entrance when the transferred property is open to the public will provide a very effective means of educating the public, especially property users about ordnance contamination. The fact sheet can be easily implemented using PAO and CENCH information and distribution lists. The fact sheets could also be included as a flyer either in tax bills or in power bills. The estimated cost to prepare and distribute the fact sheet is $115,000 plus $20,000 annually for updating and additional mailings.

- Newspaper Articles/Interviews - Positive newspaper articles that discuss the existence of ordnance, the potential danger, and how that danger can be minimized through education will serve as a very effective tool for educating the public at no cost to the CENCH or Seneca County.

- Visual Media – One visual media program including a 10-minute videotape for local television, classroom and other use, would very effective tools in educating the public about ordnance safety. Through television and classrooms, these programs could reach a majority of the people in the region. The estimated cost of preparation of the 10-minute videotape is $51,000. The estimated annual cost to maintain the videos and update them every 3 years averages $2,000.00 per year.

- Classroom Education – The presentation of programs at local schools, Seneca College, and Washington State University would be a very effective tool in educating the public about ordnance contamination. When the new County Regional Park is opened, classes on ordnance contamination would be a viable adjunct to the other educational activities proposed for the park facilities. The cost to set up a program on ordnance safety classroom presentations including the input of ordnance experts is estimated to include an initial cost of $ 10,000,00, with an ongoing annual cost of $3,000 for reinforcement.

- Ad hoc committee - The existing RAB Committee has been successful it providing public input to the CENCH cleanup program. This committee should be maintained to continue its role in coordinating information about ordnance contamination at Seneca Army Depot Activity with the public at large. This committee should provide an effective means of ensuring implementation of the other recommended alternatives. The cost to reorganize the committee from a CENCH advisory capacity to a Seneca County advisory capacity is estimated at $2,000 for the first year with an ongoing annual cost of $1,000.

4.1.1 Phasing of Alternatives

These alternatives are presented in the recommended order of importance. The most important institutional control is the County's ability to control development. This control is a given and will require no additional funding to implement. Newspaper coverage of ordnance and ordnance safety also results in no additional funding requirements. The funding for signage could be a part of the overall development cost of the property, thereby excluding the need for additional funds to be committed. If funding is available for only one of the remaining recommended approaches to education, the preparation and distribution of the printed brochure is recommended. The preparation of the two visual media presentations is almost as equally effective as the brochure, but if a choice has to be made, the brochure is recommended because of its availability to be presented to all that enter the site when the property is opened.

4.1.2 Alternatives Not Recommended

Those alternative institutional controls not recommended are viable educational tools, but are felt to be either inappropriate for this venue or will not reach as much of the population. The rationale for these controls not being included is as follows:

- Fencing – As stated, fencing is not considered as an institutional control. However, since it was included as a possible deterrent to access, further explanation is necessary. Access control via fencing is not recommended because fencing the entire area with a fence that might actually limit access would be economically and physically prohibitive. Even if a high quality fence is installed, it can be breached as easily as any fencing.

- Information Packages to Public Officials - The provision of information to public officials in the region would be politically expedient and should be done. However, this is not considered as one of the most effective tools for public education of ordnance safety, and, therefore, was not recommended.

- Exhibit/Display - The preparation of an Exhibit/Display would be educational, but it will require a high degree of maintenance and relocation and will not reach as many individuals as the recommended brochures and media presentations.

- Internet Web Site - The establishment of a web site on the Internet provides information only to those who access that web page. While the creation of a web site may be desirable at some time, it would not reach a broad enough cross section of the region to be considered effective.

4.1.3 Cost

The estimated total cost to implement the seven (7) recommended institutional control alternatives is $196,400. An additional cost of approximately $28,000.00 per year is estimated to reinforce the programs recommended. Neither of these costs include the labor and cost for personnel from various institutions, such as Seneca County, for their time spend coordinating and managing the institutional controls.

4.2 Management, Execution and Support Roles

To implement any of the recommended institutional control and UXO education alternatives, the CENCH must first provide the funding and produce the necessary media (i.e., brochures, videos, and classroom information). Support from many of the local institutions will be needed to disseminate the information to the public at large. Institutions that could play a major role in execution of the recommended alternatives include:

- Seneca County;
- School Districts;
- Chambers of Commerce;
- Tourist Commission
- Local Service Organizations;
- Local Civic Organizations
- Local. Professional Organizations,
- Local Television Stations;
- Local Radio Stations; and
- Local Newspapers.

Table 4-1. Institutional Control and UXO Education Alternatives

Alternative	Effectiveness	Implementation	Initial Cost	Annual Cost
Access Control - Fencing - Signage - Land Use Restrictions and Regulatory Control	- Effective in defining limits of ownership. - Effectively reinforces warnings on site / must be maintained - Effective in restricting development & process.	- Implementable - Implementable - Existing, can be modified	- Not Determined - $4,650.00 - Minimal, Local staff.	- Not Determined - $1,000.00 - Minimal, Local staff.
Notice - Deed Notification - At Property Transfer - At Permitting	Effective	Implementable, but entire property will be in public ownership	Minimal	Minimal
Zoning -Restrict areas for separate uses (Industrial, residential, Conservation, Planned Commercial)	Effective if the zoning laws are in place to support the restrictions	Zoning does not currently exist in either town	Minimal	Minimal
Printed Media - Brochures/Fact Sheets - Newspaper Articles - Information Packages	Effective	Implementable	$115,000	$20,000
Classroom Education - Ordnance Identification - Ordnance Safety	Effective	Implementable	$10,000	$3,000
Visual Media - Videotapes - Television	Effective	Implementable	$51,000	$2,000

Alternative	Effectiveness	Implementation	Initial Cost	Annual Cost
Exhibits/Displays	Somewhat effective but high maintenance and mobility	Implementable, but cost & high maintenance not justified	$10,000	$1,000
Internet Web Site	Somewhat effective.	Implementable	$3,750	Not Determined
Ad hoc Committee	Effective means of ensuring implementation of other alternatives	Implementable	$2,000	$1,000

APPENDIX A

INSTITUTIONAL DATA SURVEY FORMS

Seneca Army Depot Institutional Analysis

Date: _____
Time: _____
Place: _____

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: _____

   Title: _____

2. Name and address of organization: _____

   _____

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
☐ State Government	☐ Civic or Service Org.	☐ Recreation
☐ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   _____

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
☐ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

   _____

6. What is the jurisdictional level of the organization?

☐ National	☐ County
☐ State of New York	☐ Other _____

7. Are there any sunset provisions associated with your organization?

   ☐ Yes ☐ No

8. What powers and/or authorities does your organization exercise?

- ☐ Make Laws
- ☐ Make Rules
- ☐ Make Policy
- ☐ Taxing Power
- ☐ Purchase Property
- ☐ Condemn Land
- ☐ Make Contracts
- ☐ Sell Bonds
- ☐ Receive Gifts
- ☐ Land Use Control
- ☐ Enforce laws
- ☐ Other (specify below)

_____

9. What geographic area(s) is (are) served by the organization?

_____

10. Does your organization have a concern or responsibility for public safety and related land management?

☐ Yes ☐ No.

If yes please describe,

_____

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

- ☐ Regulation
- ☐ Finance
- ☐ Operation of existing facilities
- ☐ Maintenance of existing facilities
- ☐ Planning new facilities
- ☐ Engineering and/or construction
- ☐ Advisory
- ☐ Enforcement
- ☐ Basic research
- ☐ Legislative involvement
- ☐ Public education
- ☐ Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

- ☐ Public safety
- ☐ Recreational use of water/land resources
- ☐ Conservation of wildlife
- ☐ Management of resources related to water
- ☐ Control of land use
- ☐ Environmental preservation
- ☐ other _____

13. What organizations do you regularly come in contact with during the course of work?

_____

14. What specific regulations/rules dealing with public safety /management does your organization use?

- ☐ Federal laws/regulations
- ☐ Other sources
- ☐ Agency rules/policies
- ☐ State laws/regulations

15. Does your organization have jurisdiction over other organizations?

☐ Yes ☐ No

If yes, please list these organizations.

a. _____

b. _____

c. _____

16. Does your organization have the power to limit land use?

☐ Yes ☐ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ☐ No

18. Other Information: (summary)

_____

_____

APPENDIX B

QUESTIONNAIRE FROM NYSDEC

Seneca Army Depot Institutional Analysis

Date: 02/08/00
Time: 14:00
Place: Telephone Interview

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: Robert K. Scott

   Title: Deputy Permit Administrator, supervisor of Air Quality Team

2. Name and address of organization: New York State Dept. of Environmental Conservation 6274 East Avon Lima rd. Avon, NY. 14414-9519

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
■ State Government	☐ Civic or Service Org.	☐ Recreation
☐ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   Protect and Manage the natural resources of New York State

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
■ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

   Article three of state charter

6. What is the jurisdictional level of the organization?

☐ National	☐ County
■ State of New York	☐ Other

7. Are there any sunset provisions associated with your organization?

☐ Yes ■ No

8. What powers and/or authorities does your organization exercise?

☐ Make Laws	☐ Purchase Property	■ Receive Gifts
■ Make Rules	☐ Condemn Land	☐ Land Use Control
■ Make Policy	■ Make Contracts	■ Enforce laws
☐ Taxing Power	☐ Sell Bonds	☐ Other (specify below)

Land use control over fresh water wetlands and costal waterways

9. What geographic area(s) is (are) served by the organization?
New York State

10. Does your organization have a concern or responsibility for public safety and related land management?

■ Yes ☐ No

If yes please describe,

Air, land, and water protection and management of natural resources

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

■ Regulation	■ Advisory
☐ Finance	■ Enforcement
■ Operation of existing facilities	☐ Basic research
■ Maintenance of existing facilities	■ Legislative involvement
■ Planning new facilities	■ Public education
■ Engineering and/or construction	■ Resource use and management

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

4 Public safety	6 Control of land use
3 Recreational use of water/land resources	5 Environmental preservation
2 Conservation of wildlife	☐ other _____
1 Management of resources related to water	

13. What organizations do you regularly come in contact with during the course of work?

State, County, Local, Federal

14. What specific regulations/rules dealing with public safety /management does your organization use?

☐ Federal laws/regulations	☐ Agency rules/policies
☐ Other sources	■ State laws/regulations (permits)

15. Does your organization have jurisdiction over other organizations?

■ Yes ☐ No

If yes, please list these organizations.

a. County

b. Town

c. _____

16. Does your organization have the power to limit land use?

■ Yes ☐ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ■ No

18. Other Information: (summary)

NYSDEC can only limit land use in freshwater wetlands and areas of coastal erosion

In the case of Seneca Army Depot property NYSDEC has a lead role in the cleanup of hazardous and non hazardous wastes at Seneca Army Depot Activity. The Federal Facility Agreement gives them a regulatory role in the "Cleanup" of all Solid Waste Management Units at the Depot. Once the cleanup is completed NYSDEC will not be obligated to the FFA and will hold no jurisdiction over the property other than the freshwater wetlands.

Parsons Engineering Science, Inc.

Telephone Conservation Memorandum

Call to: Robert Scott **Of**: NYSDEC Permit Administrator

Date: February 8, 2001 **Time:** 15:00-15:20
Telephone Number: 351-585-9326

Initiated by: Ben McAllister **Copies:** file

Subject: Request for information about permitting process of the DEC with regards to land use controls at Seneca Army Depot Activity.

The following questions were asked to Robert Scott NYSDEC permit administrator for Region 8. (word's in italics are his responses)

Does any permit currently exist to protect the Conservation/ Recreation reuse of the former Seneca Army Depot property?

No permit exists to keep that property a conservation property. NYSDEC can only issue permits for freshwater wetlands impact and hazardous waste cleanup.

Do you know of any state Environmental permitting authority that would regulate the property to a specific use?

The New York State "Home Rule" does not allow the state to dictate what a town will do with its property.

Does the local building inspector need to check with NYSDEC to approve a building permit?
Only if that permit has a freshwater wetland or coastal erosion impact. Other than that the building inspector does not have to contact the state regarding the issuance of a permit

APPENDIX C

QUESTIONNAIRE FROM ROMULUS TOWN COUNCIL

Seneca Army Depot Institutional Analysis

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1 Name of Respondent. KENNETH C. RISEMER.

Title Town of Romulus Councilman.

2. Name and address of organization Town of Romulus.
Willard N.Y. 14588.

3 Type of organization (check one)

- ☐ Private Business
- ☐ Federal Government
- ☐ State Government
- ☒ Local Government
- ☐ Special District
- ☐ Civic or Service Org.
- ☐ Professional Society

Special Interest Group
- ☐ Environmental
- ☐ Recreation
- ☐ Other

4. What is the overall purpose of this organization?

Govern the Town of Romulus.

5. What is the basis for the creation of your organization?

- ☐ Federal Law
- ☒ State Law
- ☐ Local Law
- ☐ Other (specify)
- ☐ Public Charter
- ☐ Special Act
- ☐ Private Charter

6 What is the jurisdictional level of the organization?

- ☐ National
- ☐ State of New York
- ☐ County
- ☐ Other Township.

7. Are there any sunset provisions associated with your organization?

- ☐ Yes
- ☐ No

8 What powers and/or authorities does your organization exercise?

- [x] Make Laws
- [ ] Make Rules
- [x] Make Policy
- [x] Taxing Power
- [x] Purchase Property
- [x] Condemn Land
- [x] Make Contracts
- [x] Sell Bonds
- [ ] Receive Gifts
- [x] Land Use Control
- [x] Enforce laws
- [ ] Other (specify below)

9 What geographic area(s) is (are) served by the organization? Township of Romulus.

10. Does your organization have a concern or responsibility for public safety and related land management?

- [x] Yes
- [ ] No

If yes please describe,

11 Which of the following categories of work best described your organization's activities (more Than one may be checked)?

- [x] Regulation
- [x] Finance
- [x] Operation of existing facilities
- [ ] Maintenance of existing facilities
- [ ] Planning new facilities
- [ ] Engineering and/or construction
- [x] Advisory
- [x] Enforcement
- [x] Basic research
- [ ] Legislative involvement
- [x] Public education
- [ ] Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

- [ ] Public safety
- [ ] Recreational use of water/land resources
- [ ] Conservation of wildlife
- [ ] Management of resources related to water
- [ ] Control of land use
- [ ] Environmental preservation
- [ ] other All of The Above.

13 What organizations do you regularly come in contact with during the course of work?

RE: SEAD - FED, STATE & County officials. - U.S. Army.

14 What specific regulations/rules dealing with public safety /management does your organization use?

- [ ] Federal laws/regulations
- [x] Other sources – Town Land use ordinance.
- [ ] Agency rules/policies
- [x] State laws/regulations

15 Does your organization have jurisdiction over other organizations?

- [x] Yes
- [ ] No

If yes, please list these organizations.

a. Town of Romulus Planning Board

b. Town Land use ordinances - Developers

c. ______

16 Does your organization have the power to limit land use?

☒ Yes ☐ No

17. If so does your organization have the power to enforce land use restrictions?

☒ Yes ☐ No

18. Other Information: (summary)

As a councilman & a RAB member - I'm becoming increasingly concerned about the rapid withdrawal of the Army & associated turnover of the facilities for public use. I'm not sure that cleanup is as thorough as promised & needed. I have the feeling that dollars are speaking louder than words & associated cleanup.

Parsons Engineering Science, Inc.

Telephone Conservation Memorandum

Call to: Anne Margret **Of**: Town of Romulus Assessor

Date: February 7, 2001 **Time:** 11:30-11:45

Telephone Number: 351-585-9326

Initiated by: Ben McAllister **Copies:** file

Subject: Request for information about permitting process in the town of Romulus

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The following questions were asked of Anne Margaret town assessor for Romulus in italics were her responses.

Does any County enforcement of deed restrictions exist within the town of Romulus?
Currently no enforcement of deed restrictions exists at a county or town level, the deed once established is housed in the county clerks office and a copy is given to the town assessor.

Is the lack of town zoning due to the fact that the town is so rural and they have never had to deal with the problems facing them with restricted property on the former army depot?
That is correct Romulus is a very rural town that has never had these problems and because of that no system is in place to deal with them. The town planning board will need to adopt a system to track deeds and impose some form of land use control through zoning.

Are there currently any permits other than building permits associated with the former army depot needed to build within the town?
The only permits that I am aware of are DEC permits regarding the housing at the lake that was part of the depot, but those permit are associated with the lake and do not apply to the remainder of the depot property.

Is there currently any building permit system that checks the deed registered at the county clerks office with the application of a building permit?
No, Romulus building inspector only checks setback from neighboring properties in his process for approving building permits.

APPENDIX D

QUESTIONNAIRE FROM SENECA COUNTY IDA

▸▸▸ FAX COVER SHEET ◂◂◂

SENECA COUNTY
INDUSTRIAL DEVELOPMENT AGENCY

From the office of Patricia Jones, Project Coordinator

One DiPronio Drive
Waterloo, New York 13165-1681
Phone: 315-539-1727
Fax: 315-539-2036

TO: Ben McAllister
FAX #: 781-401-2043
FROM: Pat Jones
DATE: 2/16/01
E: Questionnaire
PAGES: 5
(Including Cover Page)

We are transmitting from a Hewlett Packard OfficeJet Series 500 fax machine.
Please call 315-539-1727 *if you do not receive all pages.*

Ben:

I had my boss, Glenn Cocke, complete this form.

Pat Jones

Seneca Army Depot Institutional Analysis

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: Glenn R. Cooke

   Title: Executive Director

2. Name and address of organization: Seneca County Industrial Development Agency

   One DiPronio Drive, Waterloo, NY 13165

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
☐ State Government	☐ Civic or Service Org.	☐ Recreation
☒ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   Facilitate Economic Development in Seneca County

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
☒ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

6. What is the jurisdictional level of the organization?

☐ National	☒ County
☐ State of New York	☐ Other _____

7. Are there any sunset provisions associated with your organization?

   ☐ Yes ☒ No

8. What powers and/or authorities does your organization exercise?

☐ Make Laws	☒ Purchase Property	☒ Receive Gifts
☐ Make Rules	☒ Condemn Land	☐ Land Use Control
☒ Make Policy	☒ Make Contracts	☐ Enforce laws
☐ Taxing Power	☒ Sell Bonds	☐ Other (specify below)

Tax Abatement/Business Finance

9. What geographic area(s) is (are) served by the organization?

Seneca County, New York

10. Does your organization have a concern or responsibility for public safety and related land management?

☒ Yes ☐ No

If yes please describe,

Concern that projects are safe and conform to land use controls.

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

☐ Regulation	☐ Advisory
☒ Finance	☐ Enforcement
☐ Operation of existing facilities	☒ Basic research
☐ Maintenance of existing facilities	☒ Legislative involvement
☒ Planning new facilities	☐ Public education
☒ Engineering and/or construction	☐ Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

☐ Public safety	☐ Control of land use
☐ Recreational use of water/land resources	☐ Environmental preservation
☐ Conservation of wildlife	☒ other Job creation and retention
☐ Management of resources related to water	

13. What organizations do you regularly come in contact with during the course of work?

Empire State Development; US Commerce; NYS Transportation; NYS Dept of Environmental Conservation

14. What specific regulations/rules dealing with public safety /management does your organization use?

☒ Federal laws/regulations	☐ Agency rules/policies
☐ Other sources	☒ State laws/regulations

15. Does your organization have jurisdiction over other organizations?

NO

☐ Yes ☒ No

If yes, please list these organizations.

a. _____

b. _____

c. _____

16. Does your organization have the power to limit land use?

☐ Yes ☒ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ☒ No

18. Other Information: (summary)

_____

_____

Parsons Engineering Science, Inc.

Telephone Conservation Memorandum

Call to: Harrett Haynes **Of**: Seneca County Town planner

Date: February 7, 2001 **Time:** 10:30-10:45

Telephone Number: 315-539-1723

Initiated by: Ben McAllister **Copies** : file

Subject: Request for information about permitting process in Seneca County

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The following questions were asked of Harriet Haynes in italics were her responses.

Is there any avenue in place today to track deed restricted properties in the town of Romulus or Varick?
As of today no formal process exists as no zoning exists in Romulus today, There is has been an effort to put zoning language on the books within the town of Romulus but as of today no process exists.

Is there any way to track a deed restriction within the town once it has been established?
The deed is registered by the county clerk, with a copy given to the town administrator for the local records. However, there is no formal way to track the deed unless it is requested by a party.

If an interested party wanted to build on a deed restricted property what would stop them from doing so?
To build on a deed restricted property a variance would be needed from the town planning committee, Other than filing for a variance there is currently no governing agency that tracks deeds to assure compliance to the restriction.

Is there any notice given when a deed restricted property is transferred from one party to another?

The Town assessors' office is notified when a piece of property is transferred, but only for tax purposes and public record.

Is it correct in saying as of now no zoning exists within the town of Romulus to help control land use.

Currently no zoning exists within Romulus although an effort is being made to adopt a zoning policy. New York State laws prohibit a town from zoning a portion of the town it is either the whole town or nothing, in Romulus it is a rural community and the people do not want to be told what they can and cannot do with their property.

APPENDIX E

ARTICLE V, SECTION I OF DRAFT ZONING ORDINANCES, TOWN OF ROMULUS

ZONING CODE, TOWN OF VARICK

ARTICLE V. GENERAL STANDARDS FOR ALLOWED USE AREAS/ZONES RELATED TO ENVIRONMENTAL CONCERNS

Section 1. General

All property previously a part of SEAD (Seneca Army Depot) may have deed restrictions imposed for environmental concerns. All development activities shall conform with these restrictions. Permit applicants shall provide a copy of the deed with the application.

ZONING CODE

TOWN OF VARICK

SENECA COUNTY, NEW YORK

Prepared by the Seneca County Planning Department

August 18, 1975

Note: 1988 changes attached at back —

The preparation of this report was financially aided through a grant from the U.S. Department of Housing and Urban Development under the Comprehensive Planning and Assistance Program authorized by Section 701 of the Housing and Urban Development Act of 1965 as amended. The report was prepared under the Comprehensive Planning Program for the New York State Division of Community Affairs. It was financed in part by the State of New York.

Section 101 - Title

101.1 -- This Ordinance shall constitute and be known as the "Zoning Ordinance of the Town of Varick, New York" and may be cited as such.

Section 102 - Purpose and Intent

102.1 -- The purpose of this ordinance is to encourage appropriate and orderly physical development; promote public health, safety, and general welfare; classify, designate and regulate the location and use of buildings and structures; and for said purposes may divide the Town of Varick into districts of such number, shape and area as may be deemed best suited to carry out these regulations.

Section 103 - Interpretation

103.1 -- In interpreting, construing and applying the provisions of this Ordinance, such provisions shall be held to be the minimum requirements for the protection of the public health, safety and general welfare of the public.

103.2 -- For the purpose of this Ordinance, all words used in the present tense include the future tense. All words in the plural number include the singular number, and all words in the singular number include the plural number. The word "person" includes a firm, association, organization, partnership, trust, company, or individual. The word "shall" is mandatory and directory. The word "may" is permissive. The word "used" includes "designed, intended, or arranged to be used".

Section 104 - Conflict with Other Laws

104.1 -- Whenever the requirements of this Ordinance are at variance with the requirements of any other lawfully adopted rules, regulations, ordinances, easements, covenants, or other agreements between parties, the most restrictive or those imposing the higher standards shall govern.

Section 105 - Validity and Severability

105.1 -- In case any section or provision of this Ordinance shall be held invalid in any court, the same shall not affect any other section or provision of this Ordinance, except so far as the section or portion so declared invalid shall be inseparable from the remainder of any portion thereof.

Section 106 - Enactment and Effective Date

106.1 -- This Ordinance shall take effect immediately after the same shall have been published and posted, as provided by the Laws of the State of New York.

106.2 -- This ordinance is adopted pursuant to Article 16, Town Law and Section 130, Subdivision 1, Town Law.

Flood or Flooding:

A general or temporary condition of partial or complete inundation of normally dry land areas from:

(a) the overflow of streams, rivers, or other inland areas of water
(b) abnormally rising lake waters resulting from severe storms or hurricanes.
(c) the unusual and rapid accumulation or runoff of surface waters from any source.

It also includes the collapse or subsidence of land along the shore of a lake or other water body as a result of erosion or under-mining as a result of waves or currents of water suddenly caused by an unusually high water level in a natural body of water accompanied by a severe storm or by an unanticipated force of nature such as a flash flood, or by some similar unusual and unforseeable event which results in flooding.

100-Year Flood:

The highest level of flood that, on the average, is likely to occur once every one-hundred (100) years (i.e., that has a 1 percent chance of occurring each year).

Flood Plain or Flood-Prone Areas:

A normally dry land area that is susceptible to flooding.

Special Flood Hazard Area:

That area of the flood plain that, on the average, is likely to be flooded once every one hundred (100) years.

Flood Proofing:

Any combination of structural and non-structural additions, changes, or adjustments to properties and structures which reduce or eliminate flood damage to lands, water and sanitary facilities, structures, and contents of buildings.

Floodway*:

That portion of the flood plain area or Special Flood Hazard Area of a community that must be reserved in order to discharge the 100 year flood without cumulatively increasing the water surface elevation more than one foot at any point.

Habitable Floor:

Any floor used for living, including working, sleeping, eating, cooking or recreation, or a combination thereof. It shall not include a floor used only for storage purposes.

Mobile Home:

A detached, single family dwelling unit with any or all of the following characteristics:

1. Manufactured as a relocatable dwelling unit intended for year around occupancy and for installation on a site without a basement or a permanent foundation;

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* Floodway area to be designated by the United States Department of Housing and Urban Development in the future.

2. Designed to be transported, after manufacture on its own chassis, and connected to utilities after placement on a mobile home stand;

3. Designed to be installed as a single-wide or double-wide unit with only incidental unpacking and assembling operations.

4. Designed and manufactured as the type of unit which would require, after January 15, 1974, a seal as provided for in the State Code for Construction and Installation of Mobile Homes.

For purposes of this ordinance dwelling units which are pre-built in two parts and transported to, and assembled on, a permanent foundation, are not considered mobile homes.

Mobile Home Park: A parcel of land where two or more mobile homes are parked or which is planned and improved for the placement of mobile homes.

Non-Conforming Use: Any use of any building, structure or land existing at the time of enactment of this Ordinance which does not conform to the use regulations of the district in which it is situated.

Non-Conforming Building or Structure: A building or structure which in its design or location upon a lot does not conform to the regulations of this Ordinance for the zone in which it is located.

Non-Conforming Lot: A lot of record existing at the date of the passage of this Ordinance which does not have the minimum width or contain the minimum area for the zone in which it is located.

Structure: Any existing or proposed walled or roofed building that is or is to be affixed to a permanent site.

Substantial Improvement: Any repair, alteration, reconstruction, or improvement of a structure, the cost of which equals or exceeds $2,000 or 50% of the actual cash value of the structure before improvement, whichever is less. Substantial improvement is started when the first alteration of any structural part of the building commences.

The specific purposes for which land or a building is designed, arranged, intended or for which it is or may be occupied or maintained.

SECTION 201 - Establishment

201.1 -- The Town of Varick shall be divided into the following types of districts which shall be differentiated according to use and area, and for the purpose hereafter used and developed.

FFO - Floodway Fringe Over-Zone
OZ - Open Zone

Section 202 - Official Zoning Map

202.1 -- The above districts shall be located, bounded, and described as shown by the Zoning Map of the Town of Varick which has been designated the Official Zoning Map of the Town, now on file in the office of the Town Clerk, and, together with the boundaries and designations therein, is made part of this Zoning Ordinance.

Section 203 - Interpretation of District Boundaries

203.1 -- Where boundaries are indicated as approximately following the centerline of streets or highways, such centerlines shall be construed to be such boundaries. Boundaries indicated as following shorelines of streams, lakes, reservoirs or ponds shall be construed to follow such shorelines.

203.2 -- Where boundaries are so indicated that they approximately follow lot lines of parcels of land, such lot lines shall be construed to be such boundaries.

203.3 -- Where boundaries do not appear to follow lot lines but do appear to be approximately parallel to street lines or highways, such boundaries shall be construed as being parallel thereto at such distance therefrom as indicated on the zoning map.

204.4 -- Area boundaries for the Special Flood Hazard Area or for the Floodway Fringe Over-Zone shall be interpreted from the Special Flood Hazard Map provided by Federal Insurance Administrator of the United States Department of Housing and Urban Development, and said Special Flood Hazard Map shall become a part of this ordinance. Until such time as elevation levels of the 100-year flood are provided by the United States Department of Housing and Urban Development, the Special Flood Hazard Areas along the shorelines of Cayuga and Seneca Lakes shall be construed to be that area of land below 451 feet (Barge Canal datum*) on Seneca Lake and 388 feet (Barge Canal datum**) on Cayuga Lake. Dimensions of other Special Flood Hazard Areas will be scaled from the Special Flood Hazard Map and compared with ground distances between definite natural and man-made points.

* Barge Canal Datum minus 1.49 feet equals U.S.C.&G.S. datum at Watkins Glen,N.Y.

** Barge Canal datum minus 1.30 feet equals U.S.C.&G.S. datum at Mud Lock near Cayuga.
Barge Canal datum minus 1.48 feet equal U.S.C.&G.S. datum at the Ithaca Terminal.

NOTE: N.Y.S. Department of Transportation daily lake level recordings are on Barge Canal Datum, as is also the City of Geneva Pumping Station. Topographical maps are based on U.S.C.&G.S. Datum.

203.5 -- In the case of uncertainity as to the true location of flood plain boundary lines or an interpretation of flood plain regulations, the decision of the Board of Appeals is final.

ARTICLE III - ZONING DISTRICTS

Section 301 - Special Flood Hazard Areas

301.1 -- Intent. The intent of the Special Flood Hazard Area regulations is to protect the health, safety, and welfare of the inhabitants of the Town of Varick from hazards due to periodic but infrequent flooding. This shall include the protection of persons and property, the preservation of water quality and the minimizing of expenditures for relief, insurance, and flood control projects. This does not imply that areas outside the Special Flood Hazard Area or uses permitted within the Special Flood Hazard Area will be free from flooding or flood damages.

301.2 -- Floodway Fringe Over-Zone Area (FFO). The purpose of the Floodway Fringe Over-Zone Area is to protect inhabitants from hazards due to a flood of the intensity that would occur as a maximum once in a hundred years (100 year flood). The Floodway Fringe Over-Zone provides additional or overlay regulations to areas zoned in another manner but which are subject to inundation by the 100 year flood. The provisions of this zone shall take precedence over any other zoning article, ordinance and code to the extent that the provisions of this Ordinance covering the Floodway Fringe Over-Zone are inconsistent with such other provisions. The following regulations shall apply to the Floodway Fringe Over-Zone for new construction or substantial improvement:

(A) Buildings must be designed (or modified) and anchored to prevent flotation, collapse, or lateral movement of the structure.

(B) Use construction materials and utility equipment that are resistant to flood damage and locate such equipment so as to minimize or eliminate flood damage.

(C) Use construction methods and practices that will minimize flood damage and provide adequate drainage to reduce exposure to flood hazards.

(D) New or replacement water supply systems and or sanitary sewage systems shall be so designed as to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

(E) On-site sewage disposal systems shall be located so as to avoid impairment o contamination from the systems during flooding.

(F) Residential structures shall have the lowest habitable floor elevated to at least one foot above the 100-year flood level.

(G) Any structure built on piling shall be constructed with the lowest floor elevated to at least one foot above the 100-year flood level.

(H) Any structure built on solid fill shall be constructed at an elevation of the 100-year flood level with the lowest floor elevated to at least one foot above the 100-year flood level.

Section 302 - Open District

302.1 Intent. The intent of the Open District Regulations is to protect the health, safety and welfare of local residents and to insure that those areas which have soils of poor permeability for on-site sewage disposal shall generally not be developed to a density exceeding the capacity of the soil to handle it. It is intended that the Open District be an interim district until more detailed study of the town is done to divide this district into appropriate sub-districts.

302.2 - Permitted Uses

(A) Any use, purposes or activity of a building, dwelling unit, structure, lot, land or part thereof pertaining to any residential uses (eg. single family dwellings, multiple family dwellings, mobile homes);

(B) Any business or commercial or industrial uses which comply with regulation the New York State Department of Health and the New York State Department of Environmental Conservation;

(C) Any agricultural, recreational, or open space uses;

(D) Any other use, except Mobile Home Park

302.3 - Special Uses

(A) Mobile Home Park

302.4 - Dimensional Requirements

(A) The minimum front yard setback for all structures shall be 75 measured feet back from the center of the roadway.

(B) All structures shall be located a minimum of 10 feet from the sideyard lot line.

(C) Where public sewerage is not available and sewage disposal is needed, no lot shall be built upon which has insufficient space for a private sanitary waste disposal system, as determined by the New York State Department of Health and the New York State Department of Environmental Conservation or their agents.

Section 303 - Special Uses

303.1 Mobile Home Park -

Mobile Home Parks may be permitted where applicable in this Ordinance provided that the following standards and procedures are adhered to:

(A) -- Tract Requirements.

1. A front yard setback of seventy-five (75) feet shall be observed from the center of any roadway bordering the site of any mobile home in the park.
2. A setback of forty (40) feet shall be observed from any adjacent property line.
3. A landscape plan shall be prepared and carried out which will assure the Board of Appeals and Zoning Officer that an appropriate planting of trees and shrubs will be included in the park layout, including screening where necessary.

4. The tract shall be located and laid out so that no mobile home shall be closer than one hundred (100) feet to any existing single family detached or two-family dwelling.
5. All interior roads shall be properly surfaced to minimize dust and mud and be a width of at least twenty-two (22) feet.
6. Entrances and exits shall be so located to provide a minimum sight distance on the adjacent public road in both directions from the interior road at the point of intersection of not less than three hundred (300) feet.
7. Each mobile home park shall have a reserve water supply adequate for fire protection as specified and approved by the County Health Department.
8. Each mobile home park shall set aside ten (10) percent of the total acreage of the site as open space and recreation area. Part or all of such open space shall be in the form of developed recreation areas located in such a way, and of adequate size and shape, as to be usable for active recreation purposes.
9. All open spaces shall be stabilized by grass or other forms of ground cover which will prevent dust and muddy areas.
10. The total number of mobile homes shall not exceed four (4) per gross acre.

(B) -- Lot Requirements.

1. Each mobile home lot or site shall have an area of at least six thousand (6,000) sq. ft. with a minimum width of sixty (60) feet and a minimum depth of one hundred (100) feet.
2. No mobile home shall be closer than thirty (30) feet to another mobile home or other structure in the park.
3. No more than one (1) mobile home may be placed on any lot or site.
4. Each lot or site shall be provided with an approved system and/or connection for water and sewage in accordance with the regulations of the Seneca County Health Department and the New York State Departments of Health and Environmental Conservation. Each lot shall be provided with connections for electricity and telephone. All Utilities shall be underground.
5. A suitable parking pad shall be provided on each lot or site for one (1) mobile home and one (1) automobile.
6. Each lot or site shall front on an approved interior street, and there shall not be a direct access driveway to a public street or highway.
7. Temporary storage of trash and refuse should be in a manner approved by the Seneca County Health Department and in such a manner as to be shielded from public view.
8. No front or side yard shall be used for storage.
9. No mobile home shall be located less than 25 feet from the pavement edge of a interior mobile home park roadway.
10. The mobile home foundation or pad shall be provided with anchors or tie-downs capable of securing the stability of the mobile home.
11. The mobile home shall be provided with skirting to screen the space between the mobile home and the ground. Such skirting shall be installed within 90 days of occupancy and shall be of a material which shall provide a finished exterior appearance.

ARTICLE IV - ENFORCEMENT

SECTION 401 - Enforcement

401.1 -- All provisions of this Ordinance shall be enforced by the Town Board of Varick or by such official as may be hereafter appointed by said Board for the purpose of such enforcement. It shall be the duty of such enforcement official, if appointed, and in the absence of such appointment, it shall be the duty of the Town Clerk, to keep a record of all applications for permits and record of all permits issued with notation of all special conditions relating thereto. The Town Board of Varick shall issue no permit for the use of any property, not in conformity with the requirements of this Ordinance and all other ordinances of the Town of Varick.

SECTION 402 - Duties of the Building Inspector

402.1 -- It shall be the duty of the Building Inspector or his duly authorized assistants, to cause any plans, buildings, or premises to be examined or inspected to determine that they are not in violation of the provisions of this Ordinance.

402.2 -- Where the Building Inspector, in the course of his duties, determines that any plans, buildings, or premises are in violation of the provisions of this Ordinance, he shall order the responsible party in writing to remedy such conditions. Said written order shall specify the nature of the violation found to exist, the remedy ordered and the time permitted for such action, the penalties and remedies which may be invoked by the Town, and the violator's rights of appeal; all as provided for by this Ordinance.

402.3 -- On the serving of notice by the Building Inspector to the owner of any violation of any of the provisions of this Ordinance, the Certificate of Occupancy for such building or use shall be held null and void. A new Certificate of Occupancy shall be required for any further use of such building or premises.

402.4 -- The Building Inspector shall maintain a permanent record of all matters considered and all action taken by him. Such records shall form a part of the records of his office and shall be available for the use of the Town Board and other officials of the Town and available for inspection by the public.

402.5 -- The Building Inspector shall transmit (1) copy of all approved or denied applications for a Building Permit or Special Use Permit to the Town Clerk, one (1) to the Town Tax Assessor, one(1) copy to the Secretary of the Planning Board, and, where applicable, one (1) copy to the County Planning Board.

SECTION 403 - Certificates and Permits

403.1 -- The certificates and permits enumerated herein are hereby established for the equitable enforcement and administration of the provisions of this Ordinance. A Building Permit or Special Use Permit shall be a prerequisite to the erection, substantial improvement, or change of use of a structure.

403.1(A)-Building Permit: The Building Inspector is hereby empowered to issue a Building Permit for any plans regarding the construction or substantial improvement of any building or part of any building, or the change in the use of any land or building or part thereof, where he shall determine that such plans are not in violation of the provisions of this Ordinance.

403.1(B)-Special Use Permit: Upon written direction of the Board of Appeals, the Building Inspector is hereby empowered to issue any Special Use Permit provided for by this Ordinance.

403.1(c)-Certificate of Occupancy: The Building Inspector is hereby empowered to issue a Certificate of Occupancy which shall certify that all provisions of this Ordinance have been complied with in respect to the location and use of the building, structure, or premises in question. The Building Inspector is also empowered to issue a Certificate of Occupancy for non-conforming uses provided that the non-conforming use is defined and the sections of non-conformance with this Zoning Ordinance are listed.

SECTION 404 - Application Procedure

404.1 -- Procedures for a Building Permit: All applications for a Building Permit shall be made to the Building Inspector in the detail specified in Section 405 of this Article. Where the proposed use is a farm-related or a single or two-family residential use, the Building Inspector shall carefully consider the application for compliance with this Ordinance and either issue or deny the Building Permit applied for. When the application is for any other permitted use in any zone, the Building Inspector shall submit one (1) copy of such plans, drawings, and statements to the Planning Board for its review.

The Planning Board shall, within thirty (30) days after the receipt of said material, make its report to the Building Inspector. After careful consideration of the application for compliance with this Ordinance, the Building Inspector shall either issue or deny the Building Permit applied for.

404.2 -- Procedures for Special Use Permit: All applications for Special Use Permits shall be made to the Building Inspector. The Building Inspector, after determining that an application is in proper form, shall transmit one (1) copy of the application and all supporting documents to the secretary of the Board of Appeals for referral to the Board for action thereon. Where applicable under Sections 239(l) and 239(m) of the General Municipal Law, he shall also transmit one (1) copy of the application to the County Planning Baord.

404.3 -- Procedures for a Certificate of Occupancy: Following the completion of the construction, re-construction, or substantial improvement of any building or where a change in the use of a structure is proposed, the applicant shall transmit by registered mail or deliver in person to the Building Inspector a letter stating that such construction has been completed or that a new use has been proposed. Within seven (7) days of the receipt of this letter, the Building Inspector shall make all necessary inspections of the completed structure and proposed use to determine the conformance with this Ordinance. A Certificate of Occupancy shall be issued only if the Building Inspector finds that the construction and proposed use comply with all the requirements and provisions of this Ordinance.

404.4 -- Procedures for Appeal: Should an applicant choose to appeal a decision by the Building Inspector to deny issuance of a building permit, an application for an appeal is filled out and the Building Inspector shall submit one (1) copy of the application and supporting documents to the secretary of the Board of Appeals for referral to the Board for action. Where applicable under Sections 239(l) and 239(m) of the General Municipal Law, he shall also transmit one (1) copy of the application to the County Planning Board.

SECTION 405 - Application Details

405.1 -- Each application for a Building Permit or Special Use Permit shall be made in triplicate and with accompanying site plan. The materials to be submitted with each application shall clearly show the conditions on the site at the time of the application, the features of the site which are to be incorporated into the proposed use or building, and the appearance and function of the proposed use or building. As a minimum, the application shall include the following information and plans for both "before" and "after" conditions:

405.1(A)-All Uses

1. The location of the property, including its relationship to adjacent roads and property.
2. The location, use, design, and dimensions and height of each structure or building.
3. A description, including the location, of all public and private utilities and facilities to be used, including sewer, gas, water and electricity.
4. The manner in which adequate drainage is to be provided.

405.1(B)- All uses in the Special Flood Hazard Area must submit the following additional information and a statement as to their resistance to flood damage.

1. The type of materials and utility equipment that are intended to be used.
2. The design by which provision is made to anchor the structure to prevent flotation, collapse or lateral movement of the structure;
3. Other structures and measures designed to prevent flood damage.

405.1(C)- All Mobile Home Parks shall submit the following additional information:

1. Location of internal roadways and layout of individual mobile home lots.

2. Location of entrances and exits.
3. Landscape plan
4. Location of recreational area.
5. Location and design of trash and refuse area.
6. Any other information requested by the Building Inspector or the Board of Appeals.

SECTION 406 - Application Fees

406.1 -- Each application for a permit provided for by this Article shall be accompani by a fee,as determined by the Town Board, payable in cash, or in other form of security approved by the Town Attorney.

ARTICLE V - NONCONFORMING USES AND BUILDINGS

501.1 -- Except as otherwise provided in this Ordinance, the lawful use of land or buildings existing at the date of the adoption of this Ordinance may be continued although such use or building does not conform to the regulations specified by this Ordinance.

501.2 -- If a nonconforming building or use, existing at the time this Ordinance becomes effective, is subsequently changed to a conforming use; or is destroyed by fire, explosion, flood, or other causes, to the extent of more than fifty percent (50%) of its true value; such building or use shall not again be altered or rebuilt except in conformity with the rules and regulations of the area in which such building is located.

ARTICLE VI - AMENDMENTS

607.1 -- The regulations, restrictions, uses and boundaries provided in this Ordinance and the Official Zoning Map may be amended,supplemented, change modified, or repealed in accordance with the provisions of Sections 264 and 265 of Article 16 of Town Law and all other laws of the State of New York applicable thereto, and in accordance with the following procedures:

607.1 (A) -- Whenever any person, firm, or corporation desires that any amendments or changes be made in this Ordinance, including the text and/or map, as to any property in the Town, there shall be presented to the Board a petition requesting such change or amendment. The petition shall clearly describe the property and its boundaries and shall indicate the existing zoning district and the requested zoning district. The petition shall also show existing highways, municipal boundary lines, and state parks, if such exist, within five-hundred (500) feet of the proposed zoning change. The petition shall also list the names and addresses of all property owners bordering the area of proposed change, extending a minimum of 100 feet from all boundaries of the area of proposed change.

607.1 (B) -- The Town Board shall take action on the petition as is described in Sections 264 and 265 of the Town Law and Section 239(m)of General Municipal Law. When the public hearing is held by the Town Board, said Board shall notify, in writing, all property owners directly adjacent to the proposed change. Notice to the adjacent property owner shall be given at least ten (10) days prior to the date of the public hearing.

SECTION 701 - Creation, Appointment and Organization

701.1 -- A Board of Appeals is hereby created. Said Board shall consist of five (5) members appointed by the Town Board, who shall also designate a Chairman. No person who is a member of the Town Board shall also be eligible for membership on such Board of Appeals. Of the members of the Board first appointed, one shall hold office for the term of one year, one for the term of two years, one for the term of three years, one for the term of four years, and one for the term of five years from and after his appointment. Their successors shall be appointed for the term of five years from and after the expiration date of the terms of their predecessors in office. If a vacancy shall occur otherwise than by expiration of a term, it shall be filled by the Town Board by appointment for the unexpired term.

SECTION 702 - Powers and Duties

702.1 -- The Board of Appeals shall have all the powers and duties prescribed by Chapter 62, Section 267 of the Town Law of the State of New York and by this Ordinance which are more particularly specified as follows:

702.1(A)--Interpretation. Upon appeal from a decision by an administrative officia to decide any question involving the interpretation of any provision of this Ordinance, including determination of the exact location of any district boundary if there is uncertainty with respect thereto.

702.1(B)--Special Permits. To hear and decide upon application for such permits as specified in this Ordinance.

702.1(C)--Variances. To vary or adopt the strict application of any of the requirements of this Ordinance in the case of exceptionally irregular, narrow, shallow, or steep lots or other exceptional physical conditions, whereby such strict application would result in practical difficulty or unnecessary hardship that would deprive the owner of the reasonable use of the land or building involved. No variance in the strict application of this Ordinance shall be granted by the Board of Appeals unless it finds:

i. That there are special circumstances or conditions fully described in the findings of the Board applying to such land or buildings and not applying generally to land or buildings in the neighborhood, and that said circumstances or conditions are such that strict application of the provisions of this Ordinance would deprive the applicant of the reasonable use of such land or buildings.

ii. That, for reasons fully set forth in the findings of the Board, the granting of the variance is necessary for the reasonable use of the land or building and that the variance granted by the Board is the minimum variance that will accomplish this purpose.

iii. That the granting of the variance will be in harmony with the general purpose and intent of this Ordinance and will not be injurious to the neighborhood or otherwise detrimental to the public welfare.

In granting any variance, the Board of Appeals shall prescribe any conditions that it deems to be necessary or desirable.

SECTION 703 - Procedure

703.1 -- The Board of Appeals shall act in strict accordance with the procedure specified by law and by this Ordinance. All appeals and applications made to the Board shall be in writing, on forms prescribed by the Board, and available from the Zoning Officer. Every appeal or application shall refer to the specific provision of the Ordinance involved and shall exactly set forth the interpretation that is claimed, the use for which the special permit is sought, or the details of the variance that is applied for and the grounds on which it is claimed that the variance should be granted,as the case may be.

703.2 -- The Board of Appeals shall conduct a public hearing on applications referred to it by the Building Inspector in accordance with the procedures and requirements established elsewhere in this Ordinance. Within sixty (60) days from the date of such public hearing, and following a report back by the County Planning Board when applicable, the Board of Appeals shall by resolution either approve or disapprove the application so heard. In approving the application, the Board may impose only those modifications or conditions sepcified in this Ordinance to protect the health, safety or general welfare of the public.

703.2(A)--If an application is approved by the Board of Appeals, the Building Inspector shall be furnished with a copy of the approving resolution of the Board and he shall issue the permit applied for in accordance with the conditions imposed by the Board of Appeals.

703.2(B)--If any application is disapproved by the Board of Appeals, the reasons for such denial shall be set forth in the Board's resolution and a copy of such resolution shall be transmitted to the Building Inspector. The Building Inspector shall deny the application accordingly by providing the applicant with a copy of the Board's reasons for disapproval.

SECTION 704 - Board of Appeals Office

704.1 -- The office of the Town Clerk shall be the office of the Board of Appeals and every rule, regulation, amendment, or repeal thereof and every order, requirement, decision, or determination of the Board shall immediately be filed in said office as required by Section 267 of the Town Law of the State of New York.

SECTION 705 - Notice of Board Hearings

705.1 -- The Board shall fix a reasonable time for the hearing of appeals and give public notice thereof by the publication in the official paper of a notice of such hearing, at least five (5) days prior to the date of the hearing. Notice shall be served upon the applicant and to the regional State Park Commission having jurisdiction over any state park or parkway within five hundred (500) feet of the property affected by such appeal, at least five (5) days prior to the date of the hearing. The Board shall also notify, in writing, all property owners directly adjacent to the property to be affected by said appeal.

ARTICLE VIII - VIOLATIONS

SECTION 801 - Enforcement

801.1 -- It shall be the duty of the Town Board, or such officials authorized by it, to enforce the provisions of this Ordinance, or of any determination of the Board of Appeals.

SECTION 802 - Penalties

802.1 -- The violation of any of the provisions of this Ordinance is a misdemeanor and shall subject the person violating the same to a fine not exceeding fifty (50) dollars, or to imprisonment not exceeding six (6) months, or both.

SECTION 803 - Continued Violation

803.1 -- Each week's continued violation shall be considered a separate and distinct offense.

Town of Varick Local Law No._____

A law to amend the Town of Varick Zoning Ordinance by incorporating the following changes:

Section 107 - Definitions (Add the following definitions)

Bar: A place or building or portion thereof where beverages, whether or not alcoholic, are sold.

Business: All commercial activities including not for profit activities, designed for and primarily characterized by the sale of goods and/or services. Such activities include, but are not limited to wholesale and retail sales, financial services and institutions, business and professional offices and services, general business, computer programming, data processing and similar technology, restaurants, vehicle and machinery repair, storage and distribution facilities, farming, agribusiness, medical centers, and home occupations.

Business, Retail: A commercial activity designed for and primarily characterized by the direct on-premise sale of goods and services to the ultimate consumer, generally involving stock in trade such as are normally associated with department stores, food markets and similar establishments, but also including financial institutions, business and professional offices and services, including on-premise manufacturing, processing, servicing, preparation and wholesale business transactions customarily associated therewith, but clearly incidental thereto. This term shall not include restaurants or home occupations.

Business, Large: Any business that employs the equivalent of ten or more full-time employees and/or has a capital investment in excess of $1.5 million.

Common Access Site: Any jointly owned land or right-of-way used or intended to be used for recreational purposes.

Home Occupation: An accessory business use conducted entirely within a dwelling by the residents thereof and not occupying more than 30 percent of the gross floor area including garages, basements, cellars, attics, storage sheds and similar areas, and which is clearly secondary to the use of the dwelling for living purposes and does not change the character thereof or have any exterior evidence of such use other than an identification sign of up to two square feet in area, and in connection therewith, there is not involved the keeping of a stock in trade nor on-premises sales except as clearly incidental to the home occupation and nominal in scope, nor more than one student

in the performing arts within any common period of time. Barbering, hairdressing, cosmetology, restaurants, real estate offices, mortuary establishments, and stores shall not be deemed home occupations.

Lot: A parcel of land occupied or capable of being occupied by one building and the accessory buildings or uses customarily incident to it, including such open spaces as are required by this law.

Lot Width: The width of the lot between side lot lines at the narrowest point.

Parking Space: A space measuring 10 feet by 20 feet for the parking of one vehicle.

Restaurant: A place or building or portion thereof where food and beverages, whether or not alcoholic, are sold to the public for consumption on the premises.

Section 201.1: (Add the following)

II - Industrial Zone

Section 302.2: (Add the following)

(E) All mobile home pads or foundations shall be provided with anchors or tie-downs capable of securing the stability of the mobile home.

(F) All mobile homes shall be provided with skirting to screen the space between the mobile home and the ground. Such skirting shall be installed within 90 days of occupancy and shall be of a material which shall provide a finished exterior appearance.

Section 302.4: (Move current 302.4 (C) to 302.4 (E) and add the following)

(C) All structures shall be located a minimum of ten feet from the back lot line.

(D) A lot must be no less than .7 acre and the lot width must be no less than 100 feet. (Note: lots in existence prior to the enactment of this ordinance are exempted from this requirement.)

(F) Retail businesses must provide off-street parking for at least five vehicles.

(G) Bars and restaurants must establish a minimum of 150 feet of green space, not including parking lots, from adjoining properties.

(H) Bars and restaurants must provide off-street parking for every two persons of maximum occupancy.

(I) Common access sites must meet the following frontage requirements:

Number of Families Using Site	Minimum Frontage Required (FEET)
1-3	100
4-10	150
More than 10	150+15 per family over 10

(J) Common access sites are limited to a maximum of one structure, storage shed, garage, etc., per 100 feet of frontage. Exception is made on lakeshore areas where one dock per 100 feet of frontage may be erected in addition to the one structure.

Section 303 - Industrial Zone (This is a new Section. Current Section 303 becomes 304.)

303.1 Large businesses must be located within the Industrial Zone and must meet all requirements specified by the Town Board.

Section 404.1 (Revise as follows)

404.1 Procedures for a Building Permit: All applications for a Building Permit shall be made to the Building Inspector in the detail specified in Section 405 of this Article.

(A) Where the proposed use is a farm-related or a single or two-family residential use, the Building Inspector shall carefully consider the application for compliance with this Ordinance and either issue or deny the Building Permit applied for.

(B) When the application is for any other permitted use, except large business, in any Zone, the Building Inspector shall submit one (1) copy of such plans, drawings, and statements to the Planning Board for its review.

The Planning Board shall, within thirty (30) days after the receipt of said material, make its report to the Building Inspector. After careful consideration of the application for compliance with this Ordinance, the Building Inspector shall either issue or deny the Building Permit applied for.

(C) When the proposed use is a large business, the Building Inspector shall submit one (1) copy of such plans, drawings, and statements to the Town Board for its review.

The Town Board shall, within 30 (thirty) days, conduct a public hearing on applications for large

businesses referred to it by the Building Inspector. Within sixty (60) days from the date of such public hearing, and following a report back by the County Planning Board when applicable, the Town Board shall by resolution either approve or disapprove the application so heard. In approving the application, the Board may impose any modifications or conditions it deems prudent to protect the health, safety or general welfare of the public.

(1) If an application is approved by the Town Board, the Building Inspector shall be furnished with a copy of the approving resolution of the Town Board and he shall issue the permit applied for in accordance with the conditions imposed by the Town Board.

(2) If any application is disapproved by the Town Board, the reasons for such denial shall be transmitted to the Building Inspector. The Building Inspector shall deny the application accordingly by providing the applicant with a copy of the Town Board's reasons for disapproval.

Section 405.1(A): (Add the following)

5. Evidence that the County Health Department has reviewed and approved water and sewage plans.

Section 501.2: (Add to end of current section as follows)

Exception is made when the lot is nonconforming and a similar size building cannot be built and conform with the dimensional requirements of this ordinance. In such cases, the building may be rebuilt to similar size with similar setbacks.

FINAL

INSTITUTIONAL ANALYSIS REPORT

SENECA ARMY DEPOT
ROMULUS, SENECA COUNTY, NEW YORK

Prepared For:

SENECA ARMY DEPOT ACTIVITY
and
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
and
HUNTSVILLE CENTER

Contract No. DACA87-95-D-0018
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1.0 Purpose of Study

1.1 Introduction

This Institutional Analysis Report was prepared Parsons Engineering Science, Inc. for the Department of the Army, Huntsville Division, Corps of Engineers, under contract number DACA87-95-D-0018. The report is prepared to support the institutional control alternative plans for action that are included in the Seneca Army Depot Engineering Evaluation/Cost Analysis (EE/CA). Local and state authorities that will support and exert long-term jurisdiction of the institutional control measures proposed for Seneca Army Depot are presented. Each institutional control alternative is described, and the level or degree of support required for each is described.

1.2 Institutional Controls/UXO Education

Institutional controls rely on the existing powers and authorities of other government agencies to protect the public at large from OE risks. Instead of direct removal of the OE from the site, these plans rely on behavior modification and access control strategies to reduce or eliminate OE risk. This analysis documents which government agencies have jurisdiction over Seneca Army Depot and assesses their capability and willingness to assert control which would protect the public at large from explosives hazards. This report also documents the obligation of the government, corporate or private landholders of OE contaminated lands to protect citizens from safety hazards under the law.

1.3 Study Approach

Parsons has prepared this detailed analysis of institutional control and UXO education alternatives in accordance with guidance developed by the Huntsville Division, Army Corps of Engineers. This analysis supports the development of institutional control and UXO education alternative plans of action. If these strategies are to be successful, the cooperation of local and state authorities and private interests is required. Representatives of local, state and federal government agencies with jurisdiction over Seneca Army Depot have been interviewed as to their concern and capability to exercise institutional controls over the future use of Seneca Army Depot. Other stakeholders have also been identified and interviewed to determine their commitment to future use of Seneca Army Depot and interest and involvement in institutional controls and UXO education. This study includes outlines of these interviews, discussion of potential control strategies, and recommendations for specific control strategies.

1.4 Study Overview

This study outlines which agencies have jurisdiction over Seneca Army Depot and assesses their capabilities and willingness to support and enforce short and long-term institutional control measures. Section 2.0 summarizes the site background, the institutional control and UXO education methodology,

and interviews with agencies that have site jurisdiction and/or react with current and future land users. Section 3.0 describes the proposed institutional control and UXO education alternatives. The effectiveness, implementability, and cost of each alternative is discussed, and management execution, and support roles are defined. Section 4.0 presents institutional control and UXO education recommendations to reduce the risk of exposure to ordnance.

2.0 Institutional Controls

2.1 Site Background

2.1.1 Site Description.

SEDA consists mostly of former farmland that has been overgrown by dense underbrush between buildings and within the igloo area. Woodlands predominate in most of the areas that are not immediately associated with a former facility or building complex, there is slight change in topographic relief trending towards Seneca Lake to the west.

The 10,587-acre Seneca Army Depot Activity (SEDA) facility was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army (DOA) since that date. From its inception in 1941 until 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the SEDA under its Base Realignment and Closure (BRAC) process. This recommendation was approved by Congress on September 28, 1995 and the Depot is scheduled for closure by July 2001.

2.1.2 Site History

Construction of the Seneca Ordnance Depot began in June 1941, and two years later, in 1943, the Depot began its mission of receipt, storage, maintenance, and supply of military items, including munitions and equipment. As the amount of ammunition on base increased following World War II, the mission of the base shifted from the supply of ordnance to the storage and disposal of it.

In July of 1998, the U.S. Army Corps of Engineers (USACE) conducted a site visit and historical data collection effort. The findings are documented in the Archives Search Report (ASR). Based on the findings, portions of the property within the former facility boundary were recommended for an ordnance and explosives (OE) investigation (USACE, 1998). Based on the ASR recommendations, an Engineering Evaluation/Cost Analysis (EE/CA) was conducted at the site. The EE/CA focused on characterizing OE contamination, analyzing risk management alternatives, and recommending feasible OE exposure reduction alternatives for eleven areas of interest (AOIs)

Ordnance stored at SEDA included all classes of ammunition and explosives except chemical ammunition other than smoke. The potential OE in the AOIs included small arms, 40mm rifle-fired grenades, practice grenades, fuzes, flares, various sizes of HE projectiles, 3.5-inch rockets, detonation cord, blasting caps, and demolition materials.

2.2 Methodology

2.2.1 Response Strategies.

There are three general categories of response strategies to ordnance remaining on sites formerly used for defense.

- Removal,
- Access Control, and
- Behavior Modification.

The last two strategies are called institutional control and UXO education response strategies. These strategies require local cooperation, responsible land-use control, and/or police powers for enforcement. These strategies are inherently non-federal and require a high level of community involvement. Institutions, defined as local and state governmental agencies and other organizations that can assist, are the vital element needed to implement any of the recommended institutional controls and UXO education. These strategies, like all response plans, start with data collection, including obtaining responses to the following questions:

- What institutions hold control over the site?
- What authority do they have?
- Do they have specific responsibility in land-use control and/or public safety?
- What capabilities do they have?
- What resources do they have?
- Are they willing to play a role?

2.2.2 Analysis Methodology.

The methodology used to analyze potential institutional control and UXO education strategies/alternatives for reducing the risk associated was the basis for the development of institutional controls:

- Based on knowledge of the area, discussions with USACE, and preliminary telephone calls to the various institutions, current and future users of the land will be determined.
- A preliminary telephone interview will be conducted with personnel including representatives from Huntsville USACE, the LRA, BRAC, the New York Department of Environmental Conservation NYSDEC, Cayuga County, representatives from the towns of Romulus Varick, and Parsons Engineering Science.
- From the interviews, institutions that have been determined to possess jurisdiction will be identified. The intent of the interviews will be to determine the degree of jurisdiction and the to assess their capability and willingness to assert control over the ordnance contaminated land.

- Basic data will be collected on questionnaire forms.
- An Institutional Summary will be produced for each institution selected for review.
- This Institutional Analysis Report will be produced from the data collected.

2.3 Scope of Work/Selection Criteria

2.3.1 Interview Selection.

The following criteria was utilized in the selection of agencies to be interviewed:

- Have contact with current users of the property.
- Have contact with future users of the property.
- Have technical capability for access control and/or behavior modification strategies.
- Can provide a variety of sources (i.e., print, and visual) that would provide complete coverage/contact with users.
- Can repeat the same or different strategy at a later date.
- Have authority to assist in implementation of institutional controls.
- Have responsibility for land-use control and/or public safety.
- Expressed an ability and willingness to assist.

2.3.2 Interview Categories.

The "yet to be named parties" are considering the use of Seneca Army Depot as a conservation/ recreation area. If the property is deeded to the "To be named parties" in the future, said parties will exercise primary responsibility for the land. The County IDA Coordinator and a representative of the County Planning Department will be interviewed; as well as representatives from The Army; the Corps of Engineers; and the IDA Committee.

2.4 Interview Summary

2.4.1 Interview Topics.

Seventeen topic areas concerning the interviewee and the organization represented. The primary topics are listed below:

- Name and Title of Respondent Interviewed.
- Name and Address of Organization.
- Type of Organization.
- Overall Purpose of the Organization.
- Basis for Creation of Organization.
- Jurisdictional Level of Organization.
- Is there any sunset provision set upon your Organization?
- Power and/or Authority of Organization.
- Geographic Area Served by Organization.
- Organization Concern for Public safety and Related Land Management.
- Organization Work Categories.
- Organization Work Subjects.
- Organization Contacts.
- Organization Public Safety /Management Rules and Regulations.
- Does Organization Have Jurisdiction over Other Organizations. If so, who?
- Does your organization have the power to limit land use?
- Does your organization have the power to limit land use?
- Miscellaneous Interview Information.

2.4.2 Interview Results.

The topic areas identified above were reviewed with the interviewees and are summarized in this section in the chronological order of the interviews. The completed institutional survey data forms are included in Appendix F

3.0 Institutional Control and UXO Education Alternatives

Risks related to ordnance contamination may be managed through conventional removals, access control, public awareness programs, or a combination of strategies. It is important to understand that the risk associated with ordnance contamination is associated with three causative factors that if completely avoided would prevent an ordnance-related accident. These three factors are:

- Presence,
- Access, and
- Behavior.

If there is no presence of ordnance on the site (none located on site), then there is no possibility of an ordnance-related accident. If ordnance exists onsite, but people do not have access, then there will be no accident. Even if ordnance exists onsite and people have access to the ordnance, if their behavior is appropriate, then there will be no accident. An accident requires all three events or circumstances to be present. No accident will happen if any one causative factor is missing. Each factor provides the basis for a separate implementation strategy. Access control and behavior modification through public awareness are institutional controls.

3.0.1 Public Awareness

Discussions of alternatives and the recommendations presented in this Institutional Analysis Report are based on the assumption that informing and educating the public to the potential risks associated with the ordnance remaining on Seneca Army Depot will reduce the possibility of injury. However, it is also understood that public awareness may incite a reverse reaction to a small segment of the population that may view the dangerous handling of ordnance as an adventure. This possibility must be accepted with the understanding that there will always be some portion of he populace who refuse to heed warnings or follow directions.

3.1 Physical Removal

A strategy that engages the presence of ordnance is a removal action. Although physical removal is a means of reducing risk, it is not an institutional control alternative and will, therefore, not be discussed further in this report. Physical removal, including its effectiveness, implementability and cost are discussed in the Engineering Evaluation/Cost Analysis (EE/CA).

3.1.1 Removal and Human Behavior

There are many instances where removal of surface or subsurface ordnance is the appropriate and recommended alternative for reduction of the risk associated with ordnance contamination. Removal produces a condition where there is less ordnance onsite. If human behavior is the same before and after

the removal, then the risk is substantially reduced. However, if the removal results in a behavior that is less cautious or less informed than the behavior prior to removal, then a situation exists where some risk may be intensified. Therefore, it is recommended that any removal action at Seneca Army Depot Activity be augmented with behavior modification strategy/alternatives, which includes education and information programs.

3.1.2 Removal Responsibility

Contracted removal actions to reduce the risk of exposure to ordnance are typically coordinated through the Army Corps of Engineers (USACE), Huntsville District. That agency is responsible for preparation and negotiation of scopes of services, fees, and schedules, and for retaining organizations skilled in the removal of ordnance to provide the removal services. Also, the USACE, Huntsville District is responsible for coordinating public information concerning the removal activities being performed to local government and the public at large. Day-to-day operations are executed and managed by the contractor in accordance with a Work Plan and Health and Safety Plans, which are approved by the USACE, Huntsville District prior to the start of work.

3.2 Access Control

Access controls limit the use of the contaminated property. Control can be accomplished by implementing various restrictions or dedicating the property to compatible use. The target strategy is to remove the human element from the chain of events that could lead to an accident. Access control can be facilitated in the form of signage, fencing, land-use restrictions, and/or regulatory control.

3.2.1 Signage

Sign posting is typically completed to inform people that entry is prohibited or that activities within the property are restricted in some manner. Defiance of these restrictions may be subject to disciplinary legal action. Signage is typically one element of a plan that uses the concept of respect for property rights. Trespass laws are the key element of enforcement and cooperation between landholders, law enforcement, and the general public. These laws are encouraged by other elements of the plan. The link between not trespassing and explosive safety must be made. Signs informing the public of potential dangers could be created and posted around the area to prevent or discourage entry or discourage physical contact with ordnance. Signage is only effective if the signs are well placed and maintained.

3.2.2 Fencing

As with signage, fencing is typically one element of a plan that is dependent upon the concept of respect for property rights. Trespass laws are the key element of enforcement and cooperation between landholders, law enforcement, and the general public. These laws are encouraged by other elements of the plan. The link between not trespassing and explosive safety must be made. Fences provide a physical barrier to inadvertent entry. Therefore, it may be easier to enforce trespass strictures. Fencing is only effective with the cooperation of local officials and the community with funding and technical

support from the federal government. The federal government owns all of the property at Seneca Army Depot Activity. The perimeter of Seneca Army Depot Activity is currently fenced with the original three strand barbed wire fence.

3.2.3 Land Use Restrictions and Regulatory Control

Land Use Restriction and Regulatory Controls provide an effective institutional control that can be exercised over areas where ordnance is present. Through these controls, local government can dictate the type of development that will occur on a site, and the methods in which that development occurs. The Land Reuse Authority (LRA) has written and adopted a Reuse Plan and Implementation Strategy that defines the kinds of uses that may occur on the Seneca Army Depot Activity property. The reuse plan is a very general guidance to allow for specific uses that conform to the land uses dictated by the Plan.

3.2.4 Effectiveness

Although they are not considered as the most effective institutional controls, signs and fencing do provide some information and restraint based upon the concept of respect for property rights. Fencing, if implementable, can be somewhat effective in reducing the risk of exposure to ordnance contamination. The existing three-strand barbed wire perimeter fencing does little to prevent access. It does serve as a demarcation of the property boundaries and communicates a warning that access is not permitted. The fence does not prevent access for those wanting to enter the property. Fencing the entire perimeter with a type of fencing more difficult to access would be extremely expensive although not much more effective. Fencing does not keep out those who are determined to enter the property from cutting through or going under or over the fence.

The posting of signs along the perimeter and within the interior of the property provides "on the spot" warnings of the potential presence of ordnance. The signs can be prepared to provide a warning of the potential presence of ordnance and the hazards of physical contact. The signs can also include instructions as to how a sighting should be reported. These signs can be posted along the perimeter of the property and within the interior to serve as reminders of potential hazard. Signs become convenient targets for vandalism and must be maintained to be effective.

Regulatory powers can be used to control the type, location, design, construction materials and techniques of all development that occurs on site. These controls provide Seneca County and the towns or Romulus and Varick the ability to inform potential developers about the danger of ordnance, require additional ordnance surveys in areas where excavation will occur, and deny clearing and construction where significant ordnance is found and not removed. However Seneca County currently has no system of land use restrictions, and permitting established. These methods of land use have the possibility to be very effective tools as institutional controls only if the enforcement laws are in place to support them.

3.2.5 Implementation

When Seneca Army Depot Activity is redeveloped, additional fencing may be installed but not as a deterrent to shield users from potential ordnance. It is recommended that a system of clear, concise signs be prepared and erected throughout the property along vehicular and pedestrian access ways. The signs should warn about the potential existence of ordnance, warn about the hazards of physical contact, and provide information on how to report any sightings. The presence of this sign system is an institutional control intended to modify behavior.

Land use and permitting restrictions do not currently exist in Seneca County to provide direction and control in the location, type and approach to construction. However inadequate the current land use restrictions are, they should still be applied as an institutional control measure combined with other measures to reinforce their effectiveness. The current land use and permitting restrictions could be modified through the adoption of zoning to include concerns for the existence of ordnance.

It could be recommended that the towns of Romulus and Varick establish a zoning committee as a planned development-zoning district specifically for the design, construction and control of the newly adopted property. The requirements of this special committee can be written to provide the towns and County even more control in the clearing and construction that occurs. Specific depths of ordnance surveys could be required for various types of construction with those requiring greater excavation also requiring deeper ordnance removal. Clearing and construction can be required to occur only in areas subjected to ordnance surveys where no ordnance has been found or ordnance has been removed.

3.2.6 Cost

The cost of signage for the property can be estimated assuming that 50 signs will be prepared. The signs will be painted metal approximately four (4) square feet each, mounted on a eight (8) foot 4x4 pressure treated wood post sunk two (2) feet in the ground and secured with concrete. The cost to cut and paint each sign is $75.00, plus the cost of wood at $8.00 each, and installation of $10.00 each equals a total cost of $93.00 per sign for a total of $4,650.00 for 50 signs installed. The signs will have to be maintained and replaced from time to time as they fade or are vandalized. Assume an average cost of $20.00 per sign per year maintenance, or $1,000.00 per year.

3.2.7 Management, Execution, and Support Roles

Installation of the sign system would be a part of the property reuse process. The future shareholder will be required to have a plan showing the vehicular roadways, parking areas, and pedestrian pathways planned throughout the facility. Locations for signs that will maximize their effectiveness can be designated and the signs installed upon completion of the property transfer.

3.3 Public Awareness Program

3.3.1 Behavior Modification

Behavior modification relies on the personal responsibility of the site user. Even if the ordnance exists and there is open access to it, there is no risk if the behavior is appropriate. For behavior to be appropriate, one must understand the situation and voluntarily react in a responsible manner. The power of the federal government is limited in any situation where local enforcement is available. Therefore, the local authorities must be convinced that the risks are sufficient to warrant their participation. The concept of behavior modification through public awareness extends to agencies that have jurisdiction over the site. Some behaviors that must be modified may belong to the local government such as the local town authorities to be made aware of the hazards that exist on the former depot properties. Raising public awareness for the hazards that exist within Seneca Army Depot Activity can be facilitated in a variety of ways. These will be discussed in the following paragraphs. Modification of behavior through public awareness is essentially an education/information process. The various techniques to be discussed include the following:

- Notice - Deed notifications/restrictions, notifications during property transfers, and notification during permitting;
- Education classes - Including ordnance identification, safety presentations to various audiences, preparation of packages for administrative and public officials;
- Printed media - Including brochures and news articles;
- Visual media - Including videotapes and local television programs;
- Exhibits/displays; and
- Ad hoc committee.

3.3.2 Land Use Controls

Behavior modification can be facilitated through land use controls. The towns of Romulus and Varick currently have no zoning in place to use as a land use control mechanism. Language is currently being added to the town charter to help provide zoning and help enforce land use control. Until zoning is adopted, No enforcement of deed restrictions is in place other than the property owner responsibility to uphold the law. This process however is currently being updated and revised to include the recent inception of federally held lands into the town's jurisdiction. Until zoning is established in the towns of Romulus and Varick a deed restriction would have little effect without being enforced. Even at the building inspector level there is no current requirement other than enforcing a setback distance from neighboring properties established to control land use. The use of zoning would be the most direct and effective tool for behavior modification because zoning would require a level of planning and review in order for certain development actions to occur. This level of zoning detail can include specific requirements for the development of ordnance contaminated property.

Ideally a commission similar to the current RAB or LRA would be authorized at the town and county level that has the authority to restrict uses of property in the public interest on the basis of health, safety and welfare. Within this committee would be representatives from the federal level, the state level

the county and the local towns to enforce land use restrictions on the once federally held property. This committee could also be used to remove or offer variances to imposed land use restrictions as site conditions change or land use requirements change.

3.3.3 Notice

Appropriate notice can exert a strong influence on one's behavior. When notice of ordnance contamination is given, it can affect the expectations of potential users. Appropriate uses can be sought, and the land may still be used for economic gain. However, the contamination must be considered in the design and use of any site improvements or activities. Notices can be placed on a property in at least three ways: deed notification/restriction, notification during any property transfers, and notification during any permitting process. As the new owner and developer of the land, it can be assumed that the future stakeholder will understand the hazards of the potential ordinance on-site and will adhere to any and all restrictions placed on the property during the transfer of property from the federal government.

3.3.3.1 Deed Notifications/Restrictions

Notifications of ordnance contamination and restrictions of use could be placed on the deeds of any properties that are made available for use through the BRAC closure process. Seneca County will be advised as to the presence of ordnance on-site.

3.3.3.2 Notification During Property Transfers

In general, property owners have a responsibility to protect the public from dangers associated with their property. In the case of the excessing of ordnance contaminated property, a liability exists that should be disclosed to prospective buyers or lessors. In this case, the new owner is yet to be established , whomever the new owner is they will need to be fully advised as to the presence of ordnance on the site.

3.3.3.3 Notification During Permitting

Typically controls are in place to protect property owners and their neighbors through approvals or permits required to develop properties in certain ways. Permit approvals generally ensure that proper notice is given, reasonable plans have been prepared that consider the presence of endangered species, wetlands, or other concerns, and that the land is being developed for an appropriate use. Permits combine all of the benefits of approvals and get a legally binding commitment for certain behavior. The assumption that permits can be revoked for cause provides enforcement under local authority.

3.3.3.4 Effectiveness

The most effective institutional controls that can be exercised over the ordnance contaminated land are the land use controls that will need to be established through permitting, deed restriction, zoning and public notice. Although no current zoning exists and permitting does not specifically relate to ordnance contamination, they can be amended to provide direction and control in the location and approach to construction that includes concerns for the existence of ordnance. It is recommended that

the local towns establish a federal properties committee as a planned development zoning committee specifically for the design, construction and control of the transferred property. The requirements of this special committee can be written to provide the towns and County control in the clearing and construction that occurs as it relates to ordnance. Requirements can be instituted for specific depths of ordnance surveys for various types of construction with those requiring greater excavation to require deeper ordnance removal. Clearing and construction can be required to occur only in areas subjected to ordnance surveys where no ordnance has been found or ordnance has been removed. Permits for clearing and construction would be approved by this committee, than issued only after the subject plans meet the committee requirements. The resulting institutional control is one of the most effective institutional portion of an institutional control package.

3.3.3.5 Implementation

Seneca County in conjunction with the BRAC office and the local communities can implement the preparation and approval of a team of agencies to track changes in land use, permit and deed restriction compliance. Additional permitting requirements will be required as a part of their daily business utilizing Community Development and Legal Staff expertise. The USACE, Huntsville District will make available recommendations for ordnance survey requirements that can be included in the new County laws.

3.3.3.6 Cost

It is assumed that nominal costs would be incurred by Seneca County through the use of existing staff expertise.

3.3.3.7 Management, Execution, and Support Roles

As stated, Seneca County in conjunction with the towns of Romulus and Varick can implement the recommendations through its normal staff procedures with oversight approval by the BRAC office.

3.3.4 Printed Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with ordnance contamination. One of the major avenues available to facilitate this awareness and understanding is through printed media. This media may be in the form of brochures, fact sheets, newspaper articles, and other information packages. The opportunity to disseminate information through the printed media is readily available and can be easily facilitated. Through the use of printed media, residents within the region and from outside the region can be informed about the existence of ordnance contamination within Seneca Army Depot Activity.

3.3.4.1 Brochures/Fact Sheets

Brochures and/or fact sheets can be produced that describe the history of Seneca Army Depot Activity, and include information on the presence of ordnance. Text and graphics can be used to describe how to identify ordnance, warnings to avoid physical contact in any way, instructions for dealing with ordnance if encountered, including how to report ordnance sightings. These brochures or fact sheets could be produced by USACE, but should also include local sponsorship and ownership. These brochures could be distributed as follows:

- Provided to conservation area visitors at gate when entrance fee is paid.
- Direct mail to all residents in Seneca County including the municipalities.
- Enclosed in tax or power bills.
- Enclosed as flyer in local press.
- Provided through educational systems to all students in the region.
- Provided to all recreational groups/clubs.
- Provided to all professional groups/clubs.
- Provided to all civic groups/clubs.
- Provided to all military personnel.

3.3.4.2 Newspaper Articles/Interviews

Newspaper articles and interviews with local residents, the USACE, and other institutions can be printed to further educate the public concerning the ordnance contamination at Seneca Army Depot Activity. These articles can be very informative, and can be presented in a positive manner. This kind of participation by local press can effectively reduce the risk of improper handling of ordnance. Continued coverage annually should result in better information and understanding as to the actual prevalence of and hazards of ordnance. Interviews with people who lived in the area when Seneca Army Depot Activity was active or who actually were stationed or worked at the Depot would add interest to these articles.

3.3.4.3 Information Packages for Public Officials

The officials of Seneca County and the local municipalities should be aware of the ordnance contamination at Seneca Army Depot Activity. As local officials, they should be provided with more detailed, current information on the concept of Institutional Controls and on the extent of ordnance contamination at Seneca Army Depot Activity. An information package produced by USACE, possibly using maps from the Engineering Evaluation and Cost Analysis (EE/CA) Report defining primary areas of concern, would be valuable for the public officials. Recommended maps would include the boundary, the proposed plan of the county park, and an abstract of studies completed to date. This abstract should include a brief history of Seneca Army Depot Activity, areas of greatest concern, types and potential danger of the ordnance discovered, USACE contacts, and other contacts to discuss safety concerns

3.3.4.4 Effectiveness

Providing information via printed media would be a very effective method of modifying behavior by educating the public at large and public officials about the presence of ordnance within Seneca Army Depot Activity and its potential impact. Production and dissemination of brochures/fact sheets, newspaper articles and interviews, and the production and distribution of information packages for public officials would all be very effective institutional controls. Distribution of the brochures or fact sheets on a one-time basis would effectively educate the public. However, to be fully effective over an extended period of time, the message must be reinforced. Redistribution of originally produced printed media that has been updated if necessary is recommended at regularly scheduled intervals. Ongoing exposure to information about ordnance contamination should result in a more enlightened public. When the public uses the conservation area, they will have been previously exposed to the potential presence of ordinance and aware not to have physical contact with the ordnance. Also, ongoing distribution will provide information to new residents, visitors, or others not currently aware of the ordnance contamination. The addition, reinforcement, and augmentation of current knowledge is desirable in order to keep the realization of ordnance contamination and the potential hazards in the minds of people at all times.

3.3.4.5 Implementation

Information concerning the ordnance contamination at Seneca Army Depot Activity, and the cleanup presently being coordinated by the USACE, has been dipublished in newspaper articles. This program of information sharing has been the responsibility of the US Army Public Affairs Office (PAO) at SEADA. . The PAO also provides news releases whenever they are needed. The PAO has scheduled continuing this dissemination of information until the property is excessed to Seneca County. Seneca County can easily continue this provision of information via printed media with assistance from the SENECA after the land is excessed to the Town. The USACE will provide the funding and production for brochures, fact sheets, and information packages. Local institutions should readily agree to assist in distribution of the information.

3.3.4.6 Cost

Brochures/Fact Sheets The estimated cost to produce an original professional quality, two-color brochure/fact sheet designed as a folded 81/2 x 11 format suitable as a mailer or handout is approximately $10,000.00. This brochure could be prepared to include primarily graphics with minimal text in bullet form to provide information about the presence, identification, handling and reporting of ordnance. The cost to print and distribute the brochure will depend on the number of copies to be distributed. Assume that 100,000 brochures are to be printed and mailed at a cost of $0.50 each, and 10,000 brochures are to be printed and distributed by local institutions at $0.25 each. The total cost for design and preparation of the brochure, printing of 20,000 copies and mailing of 10,000 copies will be $62,500.00. The estimated annual cost to reinforce the message (assuming two (2) mailings per year,

providing an additional 1,000 brochures per year, and the labor associated with periodic editing and updating of the brochures/fact sheets) is $5,000.

Newspaper Articles/Interviews There would be no cost for this type of public education.

Information Packages for Public Officials The brochure discussed in 3.3.4.6.1 above could be utilized together with abstracts of additional information on ordnance cleanup, mapping, and proposed plans can be provided to local officials for $1,000.00. This cost assumes that 50 information packages are prepared at a cost of $20 each.

3.3.4.7 Management, Execution, and Support Roles

To provide information via printed media, USACE must first produce the brochure/fact sheet. This can be executed directly by USACE or through a contractor with experience in the production of communications vehicles for public education programs. Distribution can be facilitated by mailing the printed materials directly to all residents of the Seneca County, and the other municipalities within the County. Support from local institutions and volunteer groups will be needed to disseminate the information to all of the effected parties.

3.3.5 Classroom Education

Public awareness can be facilitated through the classroom. The public needs to understand that ordnance exists within Seneca Army Depot Activity and to be able properly identify and avoid ordnance if encountered. A properly educated public is more likely to make correct decisions related to the safe and proper precautions of found ordnance. Classroom education can be offered in two major categories:

- Ordnance identification, and
- Safety.

3.3.5.1 Ordnance Identification

Although everybody that enters Seneca Army Depot Activity needs to be aware of the potential risk associated with ordnance; it may not be necessary for everybody to be trained in ordnance identification. The basic message should be not to touch anything that looks like ordnance, shrapnel, or any other unidentified material. However, it may be prudent to properly educate public officials and institutions that have a role that they must provide within Seneca Army Depot Activity. Ordnance identification classes would be valuable for the following institutions: Seneca County, and other municipalities, and the school districts within the County. Ordnance identification classes are conducted at various times and locations around the nation. It may be possible to schedule classes and transport public officials to these classes. Or, the USACE may wish to consider bringing experts in the detection and identification of ordnance to the area to provide the education. An ideal opportunity to provide ordnance identification classes would be in conjunction with scheduled removal actions in the cleanup of

Seneca Army Depot Activity. Ordnance experts could make videos, that could then be made available to public officials to view at their leisure.

3.3.5.2 Ordnance Safety

The affected public should be educated about the potential dangers associated with ordnance and should understand the safety procedures to follow should they encounter any suspected ordnance item. Safety presentations should be made to all public and private primary and secondary schools in the region.

3.3.5.3 Effectiveness

Providing education through the classroom would be a very effective method of modifying behavior by informing the public and public officials concerning the presence of ordnance at Seneca Army Depot Activity and how to safely deal with the ordnance. Ordnance identification and ordnance safety classes/education would be very effective institutional controls. However, to be fully effective over a period of time, the message must be reinforced. Ordnance identification classes should be conducted on a regularly scheduled basis (possibly every 2 to 3 years) and ordnance safety should be incorporated as a regular part of the current classes.

3.3.5.4 Implementation

Providing classroom education should be easily implementable. With USACE providing the funding and the educational information package, local institutions should agree to participate and support the program. The most difficult part of the process will be coordinating efforts with an ordnance expert who will be retained to educate public officials in ordnance identification and scheduling the maximum number of public officials per class. Implementation will be most easily facilitated during a time when an ordnance expert is scheduled to be onsite for a removal action.

3.3.5.5 Cost

The estimated cost to retain the services of an ordnance expert (including preparation, classroom training time, travel, and per diem) to provide ordnance identification education is approximately $5,000. The estimated cost to provide the necessary information and to assist the institutions that are willing to include ordnance safety into their current education process is approximately $5,000. The total estimated cost to implement classroom education alternative would be $10,000. The estimated annual cost to reinforce the classroom education process (assuming ordnance identification classes once every 3 years and periodic update and supplementing of the information concerning ordnance safety) is approximately $3,000 per year.

3.3.5.6 Management, Execution, and Support Roles

To facilitate the classroom education alternative, USACE must first contact all institutions that are willing to assist in the ordnance safety education process and make information available to them. As a minimum, local institutions and groups should be contacted and efforts should be coordinated with them. USACE must also retain the services of ordnance experts, who have been trained in the proper identification and handling of ordnance. There are many firms that specialize in this area with individuals who have prepared and presented ordnance identification classes in the past. Ideally, the contractor that is awarded a site cleanup contract would be able to assist in this ordnance identification process. As an alternative to coordination of all classroom education through the USACE, this work can be executed via a contract professional with experience in the production and facilitation of education and information programs.

3.3.5 Visual Media

Ordnance awareness, respect for the risk involved, and reinforcement of the message are key ingredients in minimizing the risk associated with ordnance contamination. One of the major avenues available to facilitate this awareness and understanding is through visual media, in the form of videotape programs for use during presentations and for broadcast on local television stations. The opportunity to disseminate information through the visual media is readily available and can be easily facilitated.

3.3.6.1 Videotapes

Professional quality videos can be produced that describe the history of Seneca Army Depot Activity, how to identify ordnance, safety procedures associated with avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered. The videos can be produced by USACE, but should include interviews with local citizens, local sponsorship, and local ownership. Videotapes can be produced for use in classrooms throughout the region. Copies should also be provided to local libraries, colleges and universities, Seneca County, and other municipalities. These institutions could make the videotapes a part of permanent exhibits/displays. Once the conservation area is functional, a permanent video presentation could be shown there.

3.3.6.2 Television

Local television stations would provide excellent local access of programs about the presence of ordnance at Seneca Army Depot Activity. Various public service programs could be presented on how to identify ordnance, safety procedures associated with avoidance of ordnance items, instructions for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered. All television stations are anxious to provide local information reporting and programming. It is suggested that the television programs include interviews with USACE personnel, local residents, and others who have knowledge of the history and understanding of the

ordnance at Seneca Army Depot Activity. A short 10-minute video could be produced to educate the public through the institutions and groups discussed in the preceding paragraph.

3.3.6.3 Effectiveness

Providing information using visual media would be an effective method of modifying behavior by educating the public concerning the presence of ordnance at Seneca Army Depot Activity. Production and dissemination of videotapes and presentation of the message over local television would be effective institutional controls. The visual media is becoming one of the most popular formats for educating the public. Taking advantage of the available avenues for presenting the visual media would be effective. However, the message must be reinforced. Frequent and regularly scheduled re-broadcast of the original television presentation is recommended. Periodic updating of the videotapes is recommended to ensure the accuracy and timeliness of the information presented. Additional footage and editing of the original videotapes may be required every 2 to 3 years.

3.3.6.4 Implementation

Providing information via the visual media should be easily implementable. With USACE providing the funding and producing the videotapes, local television stations should readily agree to assist in distribution of the information. Local public television stations in Seneca County could provide assistance to the PAO in its public awareness campaign in the cleanup efforts at Seneca Army Depot Activity. Management at this excellent public resource could be contacted to access interest and commitment to ongoing assistance in this public awareness program.

3.3.6.5 Cost

The estimated cost to produce a professional quality 10-minute videotape for television broadcast and distribution to the local institutions is approximately $50,000. The estimated cost to copy and distribute videotapes to various institutions and to television stations would depend on the number of copies needed. However, assuming 50 copies at $20 each (including the cost of the videotape, dubbing, and postage) the cost would be approximately $1,000. Therefore, the total estimated cost to implement the information via visual media would be $51,000. The estimated annual cost to reinforce the message (assuming updating of the videotape once every 3 years at a cost of $5,000 per update and distribution) would be $2,000 per year.

3.3.6.6 Management, Execution, and Support Roles

To provide information via visual media, USACE must first produce the videotape. This can be executed directly by USACE or through a contract professional with experience in the production of public information and education programs. Support from the local television stations and other organizations and institutions will be needed for broadcast of the videotapes and to make them readily available to the public.

3.3.7 Exhibits/Displays

Placing exhibits/displays in museums or other areas where the public will be exposed to educational information can be an effective method of raising and preserving general awareness and educating the public on the possible risk associated with the ordnance at Seneca Army Depot Activity. The most logical location for this display is the visitors center of the conservation area once it is completed. Other locations exist within the cities and county where a display would receive exposure and would aid in informing and educating the public about the possible risk associated with ordnance. Some of these locations include the County Administration Building, City Hall, and the lobbies of banks and other institutions. Also, a mobile display could be prepared to be moved from one location to another to obtain exposure to the maximum number of potentially affected people. This mobile display could be exhibited at many locations throughout the region including those listed above.

3.3.7.1 Effectiveness

The presentation of information through exhibits/displays is an effective method of modifying behavior by educating the public concerning the presence of ordnance at Seneca Army Depot Activity. Producing displays and presenting them in museums and other areas of high public exposure would be an effective institutional control. The more people that visit a museum or area where the information is displayed, the more effective is the alternative. At the present time, providing information about ordnance would be most effective through the use of a mobile display at various locations. A permanent display at the new Conservation area will be very effective once the area is transferred. An exhibit or display becomes outdated either through changes in the information or wear and tear and must be updated or replaced every four to five years. This updating is recommended periodically to ensure the condition, accuracy and timeliness of the information presented.

3.3.7.2 Implementation

Providing information via exhibits and mobile displays should be implementable. With USACE providing the funding and producing the displays, the local institutions will probably be pleased to host the display for a limited time. The primary concern will be the transport and relocation of the mobile display to the various locations. This task may be accepted by the County or by a specific group such as a civic club or private institution. This effort will require additional coordination and effort.

3.3.7.3 Cost

The estimated cost to purchase a mobile exhibit and properly design and prepare it for display is $6,000. The estimated cost to prepare a permanent display for the conservation area is approximately $4,000. Therefore, the cost to prepare one permanent and one mobile display is $10,000. The estimated annual cost to update and reinforce the message on the displays is $1,000 per year.

3.3.7.4 Management, Execution, and Support Roles

To provide information via mobile and permanent displays, the USACE must first produce the displays. This can be executed directly by USACE or through a contract professional with experience in the production of public information and education programs. Cooperation from Seneca City and from other institutions will be needed to provide the space for the mobile display. Support will be needed by one of the local institutions, possibly Seneca County, to assist in displaying and relocating the mobile display.

3.3.8 Internet Web Site

The creation of a Web Page on the Internet could be a very effective method of raising and preserving general awareness and educating the public about Seneca Army Depot Activity. The Web Page could be designed to include the history of Seneca Army Depot Activity, the region, and sites of historical and ecological significance, flora and fauna. The fact that ordnance exists on the site would also be explained together with how it is identified, procedures for dealing with ordnance if encountered, and telephone numbers to contact if ordnance is encountered or if questions need to be answered.

3.3.8.1 Effectiveness

The Internet Web page would be less effective than some of the other alternatives in facilitating public awareness. However, it would be the very effective in presenting in-depth information about Seneca Army Depot Activity and the presence of ordnance and safety precautions to avoid an ordnance mishap. This website could become a site for the new regional park when it is completed.

3.3.8.2 Implementation

Creation of a Web Site should be implementable. USACE could provide the funding and oversee the design of a Web Site that would provide the information that should be included in such a site. When Seneca Army Depot Activity is ultimately deeded to the future owner and developed as conservation/ recreation area, the Web Site could be about the area as a whole with the ordnance information included and areas where ordnance may be located identified.

3.3.8.3 Cost

The cost to design a Web Site varies from $50.00 to $100 per hour. Assume that the design would require 50 hours at $75.00 per hour including review, revisions, and placing the site on the web. The total cost would be $3,750.00.

3.3.8.4 Management, Execution, and Support Roles

To create a Web Site USACE should coordinate with Seneca County agencies. There are advertising professionals in the Rochester and Syracuse region who could be contracted to prepare the Web Page and establish it on the Internet.

3.3.9 Ad Hoc Committee

Creation of an Ad hoc committee, composed of influential members of the community and a representative from the USACE would serve as a mechanism for facilitating implementation of the original recommendations and for ensuring reinforcement of these recommendations. Additionally, the overall effectiveness of each of the in-place alternatives can be analyzed regularly, and other methods of modifying behavior through public awareness can be evaluated (see paragraph 3.3.7).

3.3.9.1 Effectiveness

The Ad hoc committee would be very effective in providing information and understanding to citizen volunteers who then would be active in facilitating broader public awareness. This ad hoc committee would be overseen by the Seneca County IDA and would included representatives from the various user groups at Seneca Army Depot Activity. These groups should include, but not be limited to: Seneca County, Native Americans, the Advantge group, The New York Department of Corrections, and neighborhood representatives. The existing restoration advisor board (RAB) committee has been successful in providing and maintaining open communication between the USACE ordnance cleanup process and the public at large. This type of committee can be the most effective mechanism for ensuring the implementation of the other recommended alternatives.

3.3.9.2 Implementation

Creation of an Ad hoc committee should be easily implementable. The existing RAB committee has been very successful. That committee could continue to function after the cleanup is completed and Seneca Army Depot Activity is excessed to Seneca County. There will be significant public interest in the future of and potential public use of Seneca Army Depot Activity.

3.3.9.3 Cost

The members of the Ad hoc committee would not be paid for their time. Therefore, the estimated cost to implement this alternative would be approximately $2,000 for the first year and $1,000 for each subsequent year. The costs would include retaining services of a stenographer to record meeting minutes, plus cost associated with purchase of stationary, copying, telephone calls, and other miscellaneous expenses.

3.3.9.4 Management, Execution, and Support Roles

To create an Ad hoc committee, USACE must contact influential members of the community and form the committee. Meeting rooms and a stenographer must be secured. It is suggested that a minimum of 2 meetings be conducted the first year and at least one per year thereafter.

3.3.10 Other Methods of Behavior Modification Through Public Awareness.

Although this report includes the most common, appropriate, and effective institutional control alternatives available at this time, other methods of educating, informing, and modifying the behavior of the public currently exist and will continue to be improved upon. Other technological advances are anticipated that will result in the creation of new opportunities to improve the information/education process. Other public awareness programs not addressed in the previous sections of this report have not been fully developed and may warrant further consideration at a later date. It is imperative that the USACE and the local institutions stay attuned to new and innovative methods to keep the public informed. It is likely that the recommendations presented in this report may become obsolete at some time in the future.

4.0 Recommendations

This section of the Seneca Army Depot Activity Institutional Analysis (IA) includes a list of recommended institutional control and UXO education alternatives that could be implemented at Seneca Army Depot Activity. The selection of the recommended alternatives was based upon the description and evaluation of the alternatives presented in Section 3.0; discussions with CENCH, Seneca County officials and staff; professional experience with IA's; and an overall knowledge of the site and conditions. The recommendations presented are intended for implementation in all areas of Seneca Army Depot Activity. They are considered to be appropriate methods for reducing the risk of ordnance hazard to the public. The recommended institutional control and UXO education alternatives are considered to be an effective complement to other removal activities at Seneca Army Depot Activity, as discussed in the Engineering Evaluation/Cost Analysis.

4.1 Recommended Alternatives

All of the institutional control and UXO education alternatives presented and discussed in Section 3 are effective and could be implemented. Those recommended below have been selected as providing the approach to control through the education vehicle that appears to have the greatest potential of reaching the largest number of people. The rationale for selection of the recommended implementation alternatives is included with the recommendations. The recommendations are summarized in Table 4-1.

- Establish an AD HOC committee - The formation of a committee to oversee the future reuse of the former depot property would be the most effective control to monitor the property and protect both the public and the property owner. This future commission could be prepared and executed by County, Local, and Army staff. The committee would include the town planning board and the County Commission to oversee its direction and longevity. This newly established committee could be funded by the federal government to review any proposed future land use on the property. The Army should include specific development requirements for ordnance survey for construction or grading and evaluation in its permitting requirements for the property into the future.

- Land Use Restrictions and Regulatory Control – The use of deed restrictions and land use control has the potential to be a very effective form of institutional control. This option could be instituted as the control of land use and permitting by the town is modified to include zoning and land use control. Although this alternative has the potential to be a very effective control there is currently no operating agency State, County, or Local that has the authority to enforce land use restrictions on the former federal property. Even though this control is not fully developed within the towns the option to apply deed restriction and notice should be applied to protect the former and future landowners

- Signage - Although signage is generally not considered as a stand alone institutional control, it provides a very effective reminder of the existence and hazards of ordnance if placed on site. A total of 50 signs can be prepared and placed on site for an estimated $4,650.00. Maintenance of the signs will cost an average of $1,000.00 annually.

- Printed Media/Brochure - A brochure prepared and distributed by direct mail to all residents of Seneca County and distributed at the conservation area entrance when the transferred property is open to the public will provide a very effective means of educating the public, especially property users about ordnance contamination. The fact sheet can be easily implemented using PAO and CENCH information and distribution lists. The fact sheets could also be included as a flyer either in tax bills or in power bills. The estimated cost to prepare and distribute the fact sheet is $115,000 plus $20,000 annually for updating and additional mailings.

- Newspaper Articles/Interviews - Positive newspaper articles that discuss the existence of ordnance, the potential danger, and how that danger can be minimized through education will serve as a very effective tool for educating the public at no cost to the CENCH or Seneca County.

- Visual Media – One visual media program including a 10-minute videotape for local television, classroom and other use, would very effective tools in educating the public about ordnance safety. Through television and classrooms, these programs could reach a majority of the people in the region. The estimated cost of preparation of the 10-minute videotape is $51,000. The estimated annual cost to maintain the videos and update them every 3 years averages $2,000.00 per year.

- Classroom Education – The presentation of programs at local schools, Seneca College, and Washington State University would be a very effective tool in educating the public about ordnance contamination. When the new County Regional Park is opened, classes on ordnance contamination would be a viable adjunct to the other educational activities proposed for the park facilities. The cost to set up a program on ordnance safety classroom presentations including the input of ordnance experts is estimated to include an initial cost of $ 10,000,00, with an ongoing annual cost of $3,000 for reinforcement.

- Ad hoc committee - The existing RAB Committee has been successful it providing public input to the CENCH cleanup program. This committee should be maintained to continue its role in coordinating information about ordnance contamination at Seneca Army Depot Activity with the public at large. This committee should provide an effective means of ensuring implementation of the other recommended alternatives. The cost to reorganize the committee from a CENCH advisory capacity to a Seneca County advisory capacity is estimated at $2,000 for the first year with an ongoing annual cost of $1,000.

4.1.1 Phasing of Alternatives

These alternatives are presented in the recommended order of importance. The most important institutional control is the County's ability to control development. This control is a given and will require no additional funding to implement. Newspaper coverage of ordnance and ordnance safety also results in no additional funding requirements. The funding for signage could be a part of the overall development cost of the property, thereby excluding the need for additional funds to be committed. If funding is available for only one of the remaining recommended approaches to education, the preparation and distribution of the printed brochure is recommended. The preparation of the two visual media presentations is almost as equally effective as the brochure, but if a choice has to be made, the brochure is recommended because of its availability to be presented to all that enter the site when the property is opened.

4.1.2 Alternatives Not Recommended

Those alternative institutional controls not recommended are viable educational tools, but are felt to be either inappropriate for this venue or will not reach as much of the population. The rationale for these controls not being included is as follows:

- Fencing – As stated, fencing is not considered as an institutional control. However, since it was included as a possible deterrent to access, further explanation is necessary. Access control via fencing is not recommended because fencing the entire area with a fence that might actually limit access would be economically and physically prohibitive. Even if a high quality fence is installed, it can be breached as easily as any fencing.

- Information Packages to Public Officials - The provision of information to public officials in the region would be politically expedient and should be done. However, this is not considered as one of the most effective tools for public education of ordnance safety, and, therefore, was not recommended.

- Exhibit/Display - The preparation of an Exhibit/Display would be educational, but it will require a high degree of maintenance and relocation and will not reach as many individuals as the recommended brochures and media presentations.

- Internet Web Site - The establishment of a web site on the Internet provides information only to those who access that web page. While the creation of a web site may be desirable at some time, it would not reach a broad enough cross section of the region to be considered effective.

4.1.3 Cost

The estimated total cost to implement the seven (7) recommended institutional control alternatives is $196,400. An additional cost of approximately $28,000.00 per year is estimated to reinforce the programs recommended. Neither of these costs include the labor and cost for personnel from various institutions, such as Seneca County, for their time spend coordinating and managing the institutional controls.

4.2 Management, Execution and Support Roles

To implement any of the recommended institutional control and UXO education alternatives, the CENCH must first provide the funding and produce the necessary media (i.e., brochures, videos, and classroom information). Support from many of the local institutions will be needed to disseminate the information to the public at large. Institutions that could play a major role in execution of the recommended alternatives include:

- Seneca County;
- School Districts;
- Chambers of Commerce;
- Tourist Commission
- Local Service Organizations;
- Local Civic Organizations
- Local. Professional Organizations,
- Local Television Stations;
- Local Radio Stations; and
- Local Newspapers.

Table 4-1. Institutional Control and UXO Education Alternatives

Alternative	Effectiveness	Implementation	Initial Cost	Annual Cost
Access Control - Fencing - Signage - Land Use Restrictions and Regulatory Control	- Effective in defining limits of ownership. - Effectively reinforces warnings on site / must be maintained - Effective in restricting development & process.	- Implementable - Implementable - Existing, can be modified	- Not Determined - $4,650.00 - Minimal, Local staff.	- Not Determined - $1,000.00 - Minimal, Local staff.
Notice - Deed Notification - At Property Transfer - At Permitting	Effective	Implementable, but entire property will be in public ownership	Minimal	Minimal
Zoning -Restrict areas for separate uses (Industrial, residential, Conservation, Planned Commercial)	Effective if the zoning laws are in place to support the restrictions	Zoning does not currently exist in either town	Minimal	Minimal
Printed Media - Brochures/Fact Sheets - Newspaper Articles - Information Packages	Effective	Implementable	$115,000	$20,000
Classroom Education - Ordnance Identification - Ordnance Safety	Effective	Implementable	$10,000	$3,000
Visual Media - Videotapes - Television	Effective	Implementable	$51,000	$2,000

Alternative	Effectiveness	Implementation	Initial Cost	Annual Cost
Exhibits/Displays	Somewhat effective but high maintenance and mobility	Implementable, but cost & high maintenance not justified	$10,000	$1,000
Internet Web Site	Somewhat effective.	Implementable	$3,750	Not Determined
Ad hoc Committee	Effective means of ensuring implementation of other alternatives	Implementable	$2,000	$1,000

APPENDIX A

INSTITUTIONAL DATA SURVEY FORMS

Seneca Army Depot Institutional Analysis

Date: _____
Time: _____
Place: _____

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: _____

   Title: _____

2. Name and address of organization: _____

   _____

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
☐ State Government	☐ Civic or Service Org.	☐ Recreation
☐ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   _____

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
☐ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

   _____

6. What is the jurisdictional level of the organization?

☐ National	☐ County
☐ State of New York	☐ Other _____

7. Are there any sunset provisions associated with your organization?

   ☐ Yes ☐ No

8. What powers and/or authorities does your organization exercise?

- ☐ Make Laws
- ☐ Make Rules
- ☐ Make Policy
- ☐ Taxing Power
- ☐ Purchase Property
- ☐ Condemn Land
- ☐ Make Contracts
- ☐ Sell Bonds
- ☐ Receive Gifts
- ☐ Land Use Control
- ☐ Enforce laws
- ☐ Other (specify below)

_____

9. What geographic area(s) is (are) served by the organization?

_____

10. Does your organization have a concern or responsibility for public safety and related land management?

☐ Yes ☐ No

If yes please describe,

_____

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

- ☐ Regulation
- ☐ Finance
- ☐ Operation of existing facilities
- ☐ Maintenance of existing facilities
- ☐ Planning new facilities
- ☐ Engineering and/or construction
- ☐ Advisory
- ☐ Enforcement
- ☐ Basic research
- ☐ Legislative involvement
- ☐ Public education
- ☐ Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

- ☐ Public safety
- ☐ Recreational use of water/land resources
- ☐ Conservation of wildlife
- ☐ Management of resources related to water
- ☐ Control of land use
- ☐ Environmental preservation
- ☐ other _____

13. What organizations do you regularly come in contact with during the course of work?

_____

14. What specific regulations/rules dealing with public safety /management does your organization use?

- ☐ Federal laws/regulations
- ☐ Other sources
- ☐ Agency rules/policies
- ☐ State laws/regulations

15. Does your organization have jurisdiction over other organizations?

☐ Yes ☐ No

If yes, please list these organizations.

a. _____

b. _____

c. _____

16. Does your organization have the power to limit land use?

☐ Yes ☐ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ☐ No

18. Other Information: (summary)

_____

_____

APPENDIX B

QUESTIONNAIRE FROM NYSDEC

Seneca Army Depot Institutional Analysis

Date: 02/08/00
Time: 14:00
Place: Telephone Interview

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: Robert K. Scott

   Title: Deputy Permit Administrator, supervisor of Air Quality Team

2. Name and address of organization: New York State Dept. of Environmental Conservation 6274 East Avon Lima rd. Avon, NY. 14414-9519

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
■ State Government	☐ Civic or Service Org.	☐ Recreation
☐ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   Protect and Manage the natural resources of New York State

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
■ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

   Article three of state charter

6. What is the jurisdictional level of the organization?

☐ National	☐ County
■ State of New York	☐ Other

7. Are there any sunset provisions associated with your organization?

   ☐ Yes ■ No

8. What powers and/or authorities does your organization exercise?

☐ Make Laws	☐ Purchase Property	■ Receive Gifts
■ Make Rules	☐ Condemn Land	☐ Land Use Control
■ Make Policy	■ Make Contracts	■ Enforce laws
☐ Taxing Power	☐ Sell Bonds	☐ Other (specify below)

Land use control over fresh water wetlands and costal waterways

9. What geographic area(s) is (are) served by the organization?
New York State

10. Does your organization have a concern or responsibility for public safety and related land management?

■ Yes ☐ No

If yes please describe,

Air, land, and water protection and management of natural resources

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

■ Regulation	■ Advisory
☐ Finance	■ Enforcement
■ Operation of existing facilities	☐ Basic research
■ Maintenance of existing facilities	■ Legislative involvement
■ Planning new facilities	■ Public education
■ Engineering and/or construction	■ Resource use and management

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

4 Public safety	6 Control of land use
3 Recreational use of water/land resources	5 Environmental preservation
2 Conservation of wildlife	☐ other _____
1 Management of resources related to water	

13. What organizations do you regularly come in contact with during the course of work?

State, County, Local, Federal

14. What specific regulations/rules dealing with public safety /management does your organization use?

☐ Federal laws/regulations	☐ Agency rules/policies
☐ Other sources	■ State laws/regulations (permits)

15. Does your organization have jurisdiction over other organizations?

■ Yes ☐ No

If yes, please list these organizations.

a. County

b. Town

c. _____

16. Does your organization have the power to limit land use?

■ Yes ☐ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ■ No

18. Other Information: (summary)

NYSDEC can only limit land use in freshwater wetlands and areas of coastal erosion

In the case of Seneca Army Depot property NYSDEC has a lead role in the cleanup of hazardous and non hazardous wastes at Seneca Army Depot Activity. The Federal Facility Agreement gives them a regulatory role in the "Cleanup" of all Solid Waste Management Units at the Depot. Once the cleanup is completed NYSDEC will not be obligated to the FFA and will hold no jurisdiction over the property other than the freshwater wetlands.

APPENDIX C

QUESTIONNAIRE FROM ROMULUS TOWN COUNCIL

Seneca Army Depot Institutional Analysis

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1 Name of Respondent. KENNETH C. RISNER.

Title Town of Romulus Councilman.

2. Name and address of organization Town of Romulus.
Willard N.Y. 14588.

3 Type of organization (check one)

- ☐ Private Business
- ☐ Federal Government
- ☐ State Government
- ☒ Local Government
- ☐ Special District
- ☐ Civic or Service Org.
- ☐ Professional Society

Special Interest Group
- ☐ Environmental
- ☐ Recreation
- ☐ Other

4. What is the overall purpose of this organization?

Govern The Town of Romulus.

5. What is the basis for the creation of your organization?

- ☐ Federal Law
- ☒ State Law
- ☐ Local Law
- ☐ Other (specify)
- ☐ Public Charter
- ☐ Special Act
- ☐ Private Charter

6 What is the jurisdictional level of the organization?

- ☐ National
- ☐ State of New York
- ☐ County
- ☐ Other Township.

7. Are there any sunset provisions associated with your organization?

- ☐ Yes
- ☐ No

8 What powers and/or authorities does your organization exercise?

- [x] Make Laws
- [ ] Make Rules
- [x] Make Policy
- [x] Taxing Power
- [x] Purchase Property
- [x] Condemn Land
- [x] Make Contracts
- [x] Sell Bonds
- [ ] Receive Gifts
- [x] Land Use Control
- [x] Enforce laws
- [ ] Other (specify below)

9 What geographic area(s) is (are) served by the organization? Township of Romulus.

10. Does your organization have a concern or responsibility for public safety and related land management?

- [x] Yes
- [ ] No

If yes please describe,

11 Which of the following categories of work best described your organization's activities (more than one may be checked)?

- [x] Regulation
- [x] Finance
- [x] Operation of existing facilities
- [ ] Maintenance of existing facilities
- [ ] Planning new facilities
- [ ] Engineering and/or construction
- [x] Advisory
- [x] Enforcement
- [x] Basic research
- [ ] Legislative involvement
- [x] Public education
- [ ] Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

- [ ] Public safety
- [ ] Recreational use of water/land resources
- [ ] Conservation of wildlife
- [ ] Management of resources related to water
- [ ] Control of land use
- [x] Environmental preservation
- [ ] other All of The Above.

13 What organizations do you regularly come in contact with during the course of work?

RE: SEAD - FED, STATE & County officials. - U.S. Army.

14 What specific regulations/rules dealing with public safety /management does your organization use?

- [ ] Federal laws/regulations
- [x] Other sources – Town Land use ordinance.
- [ ] Agency rules/policies
- [x] State laws/regulations

15 Does your organization have jurisdiction over other organizations?

- [x] Yes
- [ ] No

APPENDIX D

QUESTIONNAIRE FROM SENECA COUNTY IDA

▸▸▸ FAX COVER SHEET ◂◂◂

SENECA COUNTY
INDUSTRIAL DEVELOPMENT AGENCY

From the office of Patricia Jones, Project Coordinator

One DiPronio Drive
Waterloo, New York 13165-1681
Phone: 315-539-1727
Fax: 315-539-2036

TO: Ben McAllister FAX #: 781-401-2043

FROM: Pat Jones DATE: 2/19/01

RE: Questionnaire # PAGES: 5
(Including Cover Page)

We are transmitting from a Hewlett Packard OfficeJet Series 500 fax machine.
Please call 315-539-1727 *if you do not receive all pages.*

Ben:

I had my boss, Glenn Cooke, complete this form.

Pat Jones

Seneca Army Depot Institutional Analysis

Date
Time
Place

The purpose of this inquiry is to determine the organizations that will have jurisdiction, authority or other impact on the proposed reuse of the former Seneca Army Depot. This information will be utilized in the preparation of recommendations for the proposed reuse. All of the questions may not apply to you and your organization.

Your participation in this interview is greatly appreciated.

1. Name of Respondent: Glenn R. Cooke

   Title: Executive Director

2. Name and address of organization: Seneca County Industrial Development Agency

   One DiPronio Drive, Waterloo, NY 13165

3. Type of organization (check one)

☐ Private Business		Special Interest Group
☐ Federal Government	☐ Special District	☐ Environmental
☐ State Government	☐ Civic or Service Org.	☐ Recreation
☒ Local Government	☐ Professional Society	☐ Other

4. What is the overall purpose of this organization?

   Facilitate Economic Development in Seneca County

5. What is the basis for the creation of your organization?

☐ Federal Law	☐ Public Charter
☒ State Law	☐ Special Act
☐ Local Law	☐ Private Charter
☐ Other (specify)	

6. What is the jurisdictional level of the organization?

☐ National	☒ County
☐ State of New York	☐ Other

7. Are there any sunset provisions associated with your organization?

   ☐ Yes ☒ No

8. What powers and/or authorities does your organization exercise?

- [ ] Make Laws
- [ ] Make Rules
- [XX] Make Policy
- [ ] Taxing Power
- [XX] Purchase Property
- [XX] Condemn Land
- [XX] Make Contracts
- [XX] Sell Bonds
- [XX] Receive Gifts
- [ ] Land Use Control
- [ ] Enforce laws
- [ ] Other (specify below)

Tax Abatement/Business Finance

9. What geographic area(s) is (are) served by the organization?

Seneca County, New York

10. Does your organization have a concern or responsibility for public safety and related land management?

[XX] Yes [ ] No

If yes please describe,

Concern that projects are safe and conform to land use controls.

11. Which of the following categories of work best described your organization's activities (more Than one may be checked)?

- [ ] Regulation
- [XX] Finance
- [ ] Operation of existing facilities
- [ ] Maintenance of existing facilities
- [XX] Planning new facilities
- [XX] Engineering and/or construction
- [ ] Advisory
- [ ] Enforcement
- [XX] Basic research
- [XX] Legislative involvement
- [ ] Public education
- [ ] Resource use

12. If you were to list subjects that are important to the work of your organization, which of the following would rank high?

- [ ] Public safety
- [ ] Recreational use of water/land resources
- [ ] Conservation of wildlife
- [ ] Management of resources related to water
- [ ] Control of land use
- [ ] Environmental preservation
- [XX] other Job creation and retention

13. What organizations do you regularly come in contact with during the course of work?

Empire State Development; US Commerce; NYS Transportation; NYS Dept of Environmental Conservation

14. What specific regulations/rules dealing with public safety /management does your organization use?

- [XX] Federal laws/regulations
- [ ] Other sources
- [ ] Agency rules/policies
- [XX] State laws/regulations

15. Does your organization have jurisdiction over other organizations?

NO

☐ Yes ☒ No

Institutional Analysis for OE Response 3.

If yes, please list these organizations.

a. _____

b. _____

c. _____

16. Does your organization have the power to limit land use?

☐ Yes ☒ No

17. If so does your organization have the power to enforce land use restrictions?

☐ Yes ☒ No

18. Other Information: (summary)

_____

_____

APPENDIX E

ARTICLE V, SECTION I OF DRAFT ZONING ORDINANCES, TOWN OF ROMULUS

ZONING CODE, TOWN OF VARICK

ARTICLE V. GENERAL STANDARDS FOR ALLOWED USE AREAS/ZONES RELATED TO ENVIRONMENTAL CONCERNS

Section 1. General

All property previously a part of SEAD (Seneca Army Depot) may have deed restrictions imposed for environmental concerns. All development activities shall conform with these restrictions. Permit applicants shall provide a copy of the deed with the application.

APPENDIX G

COST BREAKDOWNS

Table G-1
SEADs-16 and -17 (Deactivation Furnaces)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearnce to 6" of 8 acres SEAD-17and 5 acres in SEAD-16

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$3,400	15	$51,000	$0	$51,000
Scrap Removal		$10,000		$10,000	$0	$10,000
A-E Field Oversight		15% of UXO Clearance/IC		$9,150	$0	$9,150
A-E Project Management		8% of UXO Clearance/IC		$4,880	$0	$4,880
Light Brush Cutting[2]	acre	$120	9	$1,080	$0	$1,080
			Subtotal:	$76,110	$0	$76,110
CEHNC Oversite		15% of subtotal		$11,417	$0	$11,417
					Total Cost Estimate:	**$87,527**
					Contingency (25%):	**$21,882**
						$109,408
					Cost per. Acre =	***$10,941***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-2
SEADs-16 and -17 (Deactivation Furnaces)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding SEADs -16 and -17

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	4,800	$9,600	$0	$9,600
Fencing Installed[2]	linear feet	$10	4,800	$48,000	$144,000	$192,000
Signs Installed	1 sign (per 500' of fence)	$93	10	$893	$5,760	$6,653
A-E Field Oversight		15% of UXO Clearance/IC		$8,774	$0	$8,774
A-E Project Management		8% of UXO Clearance/IC		$4,679	$0	$4,679
Heavy Brush Cutting[3]	acre	$603	2	$905	$0	$905
			Subtotal:	$72,851	$149,760	$222,611
CEHNC Oversite		15% of subtotal		$10,928	$0	$10,928
					Total Cost Estimate:	**$233,538**
					Contingency (25%):	**$58,385**
						$291,923
					Cost per. Acre =	***$36,490***

Assumptions
[1]Estimate includes surface sweep of area to be performed prior to having fence installed
[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-3
EOD Area #2 (Rumored EOD Area)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 2.5 acres in EOD Area #2

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$3,400	2.5	$8,500	$0	$8,500
A-E Field Oversight		15% of UXO Clearance/IC		$1,275	$0	$1,275
A-E Project Management		8% of UXO Clearance/IC		$680	$0	$680
Moderate Brush Cutting[2]	acre	$426	2.5	$1,065	$0	$1,065
			Subtotal:	$11,520	$0	$11,520
CEHNC Oversite		15% of subtotal		$1,728	$0	$1,728
					Total Cost Estimate:	**$13,248**
					Contingency (25%):	**$3,312**
						$16,560
					Cost per. Acre =	***$6,624***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-4
EOD Area #2 (Rumored EOD Area)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding EOD Area #2

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	1,800	$3,600	$0	$3,600
Fencing Installed[2]	linear feet	$10	1,800	$18,000	$54,000	$72,000
Signs Installed	1 sign (per 500' of fence)	$93	4	$335	$2,160	$2,495
A-E Field Oversight		15% of UXO Clearance/IC		$3,290	$0	$3,290
A-E Project Management		8% of UXO Clearance/IC		$1,755	$0	$1,755
Moderate Brush Cutting[3]	acre	$426	1	$426	$0	$426
			Subtotal:	$27,406	$56,160	$83,566
CEHNC Oversite		15% of subtotal		$4,111	$0	$4,111
					Total Cost Estimate:	**$87,677**
					Contingency (25%):	**$21,919**
						$109,596
					Cost per. Acre =	***$43,838***

Assumptions
[1]Estimate includes surface sweep of area to be performed prior to having fence installed
[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-5
EOD Area #3 (Rumored EOD Area)
Cost Estimate for Alternative 4:
Clearance to Depth

This estimate assumes:
Clearance to depth of detection of 2 acres in EOD Area #3

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$11,000	2	$22,000	$0	$22,000
A-E Field Oversight		15% of UXO Clearance/IC		$3,300	$0	$3,300
A-E Project Management		8% of UXO Clearance/IC		$1,760	$0	$1,760
Heavy Brush Cutting[2]	acre	$603	2	$1,206	$0	$1,206
			Subtotal:	$28,266	$0	$28,266
CEHNC Oversite		15% of subtotal		$4,240	$0	$4,240
					Total Cost Estimate:	$32,506
					Contingency (25%):	$8,126
						$40,632
					Cost per. Acre =	***$20,316***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-6
EOD Area #3 (Rumored EOD Area)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 2 acres in EOD Area #3

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$3,400	2	$6,800	$0	$6,800
A-E Field Oversight		15% of UXO Clearance/IC		$1,020	$0	$1,020
A-E Project Management		8% of UXO Clearance/IC		$544	$0	$544
Heavy Brush Cutting[2]	acre	$603	2	$1,206	$0	$1,206
			Subtotal:	$9,570	$0	$9,570
CEHNC Oversite		15% of subtotal		$1,436	$0	$1,436
					Total Cost Estimate:	$11,006
					Contingency (25%):	$2,751
						$13,757
					Cost per. Acre =	***$6,878***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-7
EOD Area #3 (Rumored EOD Area)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding EOD Area #3

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	1,800	$3,600	$0	$3,600
Fencing Installed[2]	linear feet	$10	1,800	$18,000	$54,000	$72,000
Signs Installed	1 sign (per 500' of fence)	$93	4	$335	$2,160	$2,495
A-E Field Oversight		15% of UXO Clearance/IC		$3,290	$0	$3,290
A-E Project Management		8% of UXO Clearance/IC		$1,755	$0	$1,755
Moderate Brush Cutting[3]	acre	$426	1	$426	$0	$426
			Subtotal:	$27,406	$56,160	$83,566
CEHNC Oversite		15% of subtotal		$4,111	$0	$4,111

Total Cost Estimate:	**$87,677**
Contingency (25%):	**$21,919**
	$109,596
Cost per. Acre =	***$43,838***

Assumptions

[1]Estimate includes surface sweep of area to be performed prior to having fence installed

[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire

[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-8
SEAD-44A (QA Function Test Area)
Cost Estimate for Alternative 4:
Finish Soil Sifting - Confirm with Clearance to Depth

This estimate assumes:
The sifting of 35,000 cubic feet of soil already stockpiled at SEAD-44A
Clearance to depth of detection of 11 acres not surveyed during the EE/CA

Item	Unit	Unit Cost	Amount	Total Cost	Life Cycle Cost (30 yrs)	Total Cost
Soil Ecavated and Sifted[1]	cubic yard	$30	35,000	$1,050,000	$0	$1,050,000
Replacement/Compaction of Soil[2]	cubic yard	$5	35,000	$175,000	$0	$175,000
Re-seeding Disturbed Soil[2]	acre	$438	25	$10,950	$0	$10,950
UXO Clearance[3]	acre	$11,000	23	$253,000	$0	$253,000
A-E Field Oversite		15% of UXO Clearance		$223,343	$0	$223,343
A-E Project Management		8% of UXO Clearance		$119,116	$0	$119,116
			Subtotal:	$1,831,409	$0	$1,831,409
CEHNC Oversite		15% of subtotal		$274,711	$0	$274,711

Total Cost Estimate	**$2,106,120**
Contingency (25%)	**$526,530**
	$2,632,650
Cost per acre =	***$105,306***

Assumptions

[1]Unit cost assumes $25/yd[3] for primary sift. $3/yd[3] for secondary sift, and $2/yd[3] for tertiary sift and hand sort

[2]Costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

[3]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey

Table G-9
SEAD-44A (QA Function Test Area)
Cost Estimate for Alternative 3:
Finish Soil Sifting - Confirm with Clearance to 6"

This estimate assumes:
The sifting of 35,000 cubic feet of soil already stockpiled at SEAD-44A
Clearance to 6" of 11 acres not surveyed during EE/CA

Item	Unit	Unit Cost	Amount	Total Cost	Life Cycle Cost (30 yrs)	Total Cost
Soil Ecavated and Sifted[1]	cubic yard	$30	35,000	$1,050,000	$0	$1,050,000
Replacement/Compaction of Soil[2]	cubic yard	$5	35,000	$175,000	$0	$175,000
Re-seeding Disturbed Soil[2]	acre	$438	25	$10,950	$0	$10,950
UXO Clearance[3]	acre	$5,400	23	$124,200	$0	$124,200
A-E Field Oversite		15% of UXO Clearance		$204,023	$0	$204,023
A-E Project Management		8% of UXO Clearance		$108,812	$0	$108,812
			Subtotal:	$1,672,985	$0	$1,672,985
CEHNC Oversite		15% of subtotal		$250,948	$0	$250,948
					Total Cost Estimate	**$1,923,932**
					Contingency (25%)	**$480,983**
						$2,404,915
					Cost per acre =	***$96,197***

Assumptions
[1]Unit cost assumes $25/yd^3 for primary sift, $3/yd^3 for secondary sift, and $2/yd^3 for tertiary sift and hand sort
[2]Costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History
[3]Cost for UXO clearance includes all ODC and mobilization costs, and equipment

Table G-10
SEAD-44A (QA Function Test Area)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
Upkeep of the fence already surrounding SEAD-44A

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
Fencing Installed	linear feet	$10	4,250	$0	$127,500	$127,500
Signs Installed	1 sign (per 500' of fence)	$93	4	$335	$2,160	$2,495
			Subtotal:	$335	$129,660	$129,995
CEHNC Oversite		15% of subtotal		$50	$0	$50
					Total Cost Estimate:	**$130,045**
					Contingency (25%):	**$32,511**
						$162,556
					Cost per. Acre =	***$6,502***

Table G-11
SEAD-46 (3.5" Rocket Range)
Cost Estimate for Alternative 4:
Clearance to Depth

This estimate assumes:
Clearance to depth of detection in 39 acres where brush can be cleared for geophysical surveys

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$11,000	39	$429,000	$0	$429,000
A-E Field Oversight		15% of UXO Clearance/IC		$64,350	$0	$64,350
A-E Project Management		8% of UXO Clearance/IC		$34,320	$0	$34,320
Light Brush Cutting[2]	acre	$120	21	$2,520	$0	$2,520
Heavy Brush Cutting[2]	acre	$603	30	$18,090	$0	$18,090
			Subtotal:	$548,280	$0	$548,280
CEHNC Oversite		15% of subtotal		$82,242	$0	$82,242
					Total Cost Estimate:	**$630,522**
					Contingency (25%):	**$157,631**
						$788,153
					Cost per. Acre =	***$20,209***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-12
SEAD-46 (3.5" Rocket Range)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 39 acres in SEAD-46

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$3,400	39	$132,600	$0	$132,600
A-E Field Oversight		15% of UXO Clearance/IC		$19,890	$0	$19,890
A-E Project Management		8% of UXO Clearance/IC		$10,608	$0	$10,608
Light Brush Cutting[2]	acre	$120	21	$2,520	$0	$2,520
Heavy Brush Cutting[2]	acre	$603	30	$18,090	$0	$18,090
			Subtotal:	$183,708	$0	$183,708
CEHNC Oversite		15% of subtotal		$27,556	$0	$27,556
					Total Cost Estimate:	**$211,264**
					Contingency (25%):	**$52,816**
						$264,080
					Cost per. Acre =	***$6,771***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-13
SEAD-46 (3.5" Rocket Range)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding SEAD-46

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	6,600	$13,200	$0	$13,200
Fencing Installed[2]	linear feet	$10	6,600	$66,000	$198,000	$264,000
Signs Installed	1 sign (per 500' of fence)	$93	13	$1,228	$7,920	$9,148
A-E Field Oversight		15% of UXO Clearance/IC		$12,064	$0	$12,064
A-E Project Management		8% of UXO Clearance/IC		$6,434	$0	$6,434
Heavy Brush Cutting[3]	acre	$603	2	$905	$0	$905
			Subtotal:	$99,830	$205,920	$305,750
CEHNC Oversite		15% of subtotal		$14,975	$0	$14,975
					Total Cost Estimate:	**$320,725**
					Contingency (25%):	**$80,181**
						$400,906
					Cost per. Acre =	***$7,710***

Assumptions

[1]Estimate includes surface sweep of area to be performed prior to having fence installed

[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire

[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-14
Grenade Range
Cost Estimate for Alternative 4:
Clearance to Depth

This estimate assumes:
Clearance to depth of detection of 25 acres in the Grenade Range
Clearance to 6" of 19 acres of woodland immediately surrounding the range

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance to depth[1]	acre	$11,000	25	$275,000	$0	$275,000
UXO Clearance to 6"[2]	acre	$3,400	19	$64,600	$0	$64,600
A-E Field Oversight		15% of UXO Clearance/IC		$41,250	$0	$41,250
A-E Project Management		8% of UXO Clearance/IC		$22,000	$0	$22,000
Light Brush Cutting[3]	acre	$120	25	$3,000	$0	$3,000
Moderate Brush Cutting[3]	acre	$426	19	$8,094	$0	$8,094
			Subtotal:	$413,944	$0	$413,944
CEHNC Oversite		15% of subtotal		$62,092	$0	$62,092
					Total Cost Estimate:	**$476,036**
					Contingency (25%):	**$119,009**
						$595,045
					Cost per. Acre =	***$13,524***

Assumptions

[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey

[2]Cost for UXO clearance includes all ODC and mobilization costs, and equipment

[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-15
Grenade Range
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 44 acres in and surrounding the Grenade Range

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance[1]	acre	$3,400	44	$149,600	$0	$149,600
A-E Field Oversight		15% of UXO Clearance/IC		$22,440	$0	$22,440
A-E Project Management		8% of UXO Clearance/IC		$11,968	$0	$11,968
Light Brush Cutting[2]	acre	$120	25	$3,000	$0	$3,000
Moderate Brush Cutting[2]	acre	$426	19	$8,094	$0	$8,094
			Subtotal:	$195,102	$0	$195,102
CEHNC Oversite		15% of subtotal		$29,265	$0	$29,265
					Total Cost Estimate:	**$224,367**
					Contingency (25%):	**$56,092**
						$280,459
					Cost per. Acre =	***$6,374***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-16
Grenade Range
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding the Grenade Range

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	60,000	$120,000	$0	$120,000
Fencing Installed[2]	linear feet	$10	60,000	$600,000	$1,800,000	$2,400,000
Signs Installed	1 sign (per 500' of fence)	$93	120	$11,160	$72,000	$83,160
A-E Field Oversight		15% of UXO Clearance/IC		$109,674	$0	$109,674
A-E Project Management		8% of UXO Clearance/IC		$58,493	$0	$58,493
Heavy Brush Cutting[3]	acre	$603	13	$7,839	$0	$7,839
			Subtotal:	$907,166	$1,872,000	$2,779,166
CEHNC Oversite		15% of subtotal		$136,075	$0	$136,075
					Total Cost Estimate:	**$2,915,241**
					Contingency (25%):	**$728,810**
						$3,644,051
					Cost per. Acre =	***$82,819***

Assumptions
[1]Estimate includes surface sweep of area to be performed prior to having fence installed
[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-17
SEAD-57 (Former EOD Range)
Cost Estimate for Alternative 5:
Soil Excavation and Sifting

This estimate assumes:
the excavation and sifting of 12,000 cubic yards of material from SEAD-57
Clearance to depth of detection of 41 acres where brush can be cleared for geophysical surveys
Clearance to 6" of 20 thickly wooded acres (this area includes a portion of the Demo Range)

Item	Unit	Unit Cost	Amount	Total Cost	Life Cycle Cost (30 yrs)	Total Cost
Soil Ecavated and Sifted[1]	cubic yard	$30	12,000	$360,000	$0	$360,000
Replacement/Compaction of Soil[2]	cubic yard	$5	12,000	$60,000	$0	$60,000
Re-seeding Disturbed Soil[2]	acre	$438	7	$3,241	$0	$3,241
UXO Clearance to depth[3]	acre	$11,000	41	$445,500	$0	$445,500
UXO Clearance to 6"[4]	acre	$5,400	20	$108,000	$0	$108,000
A-E Field Oversite		15% of UXO Clearance		$146,511	$0	$146,511
A-E Project Management		8% of UXO Clearance		$78,139	$0	$78,139
Light Brush Cutting[2]	acre	$120	46	$5,520	$0	$5,520
Moderate Brush Cutting[2]	acre	$426	20	$8,520	$0	$8,520
Heavy Brush Cutting[2]	acre	$603	9	$5,427	$0	$5,427
			Subtotal:	$1,220,859	$0	$1,220,859
CEHNC Oversite		15% of subtotal		$183,129	$0	$183,129
					Total Cost Estimate	**$1,403,987**
					Contingency (25%)	**$350,997**
						$1,754,984
					Cost per acre =	***$24,375***

Assumptions
[1]Unit cost assumes $25/yd^3 for primary sift, $3/yd^3 for secondary sift, and $2/yd^3 for tertiary sift and hand sort
[2]Costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History
[3]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey
[4]Cost for UXO clearance includes all ODC and mobilization costs, and equipment

Table G-18
SEAD-57 (Former EOD Range)
Cost Estimate for Alternative 4:
Clearance to Depth

This estimate assumes:
Clearance to depth of detection of 30 acres where brush can be cleared for geophysical surveys
Clearance to 6" of 20 thickly wooded acres (this area includes a portion of the Demo Range)
A 700' x 700' fence surrounding the demo berm in SEAD-57

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearence w/ EM-61[1]	acre	$11,000	30	$330,000	$0	$330,000
UXO Clearence w/ Schonstedt[2]	acre	$3,400	20	$68,000	$0	$68,000
UXO Sweep Contractor[3]	linear feet	$2	2,800	$5,600	$0	$5,600
Fencing Installed[4]	linear feet	$10	2,800	$28,000	$84,000	$112,000
Signs Installed	1 sign (per 500' of fence)	$93	6	$521	$3,600	$4,121
A-E Field Oversight		15% of UXO Clearance/IC		$64,818	$0	$64,818
A-E Project Management		8% of UXO Clearance/IC		$34,570	$0	$34,570
Light Brush Cutting[5]	acre	$120	46	$5,520	$0	$5,520
Moderate Brush Cutting[5]	acre	$426	20	$8,520	$0	$8,520
Heavy Brush Cutting[5]	acre	$603	9	$5,427	$0	$5,427
			Subtotal:	$545,549	$87,600	$633,149
CEHNC Oversite		15% of subtotal		$81,832	$0	$81,832
					Total Cost Estimate:	**$714,981**
					Contingency (25%):	**$178,745**
						$893,726
					Cost per. Acre =	***$12,413***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey
[2]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[3]Estimate includes surface sweep of area to be performed prior to having fence installed
[4]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[5]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-19
SEAD-57 (Former EOD Range)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 50 acres (this area includes a portion of the Demo Range)
A 700' x 700' fence surrounding the demo berm in SEAD-57

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearence w/ Schonstedt[1]	acre	$3,400	50	$170,000	$0	$170,000
UXO Sweep Contractor[2]	linear feet	$2	2,800	$5,600	$0	$5,600
Fencing Installed[3]	linear feet	$10	2,800	$28,000	$84,000	$112,000
Signs Installed	1 sign (per 500' of fence)	$93	6	$521	$3,600	$4,121
A-E Field Oversight		15% of UXO Clearance/IC		$30,618	$0	$30,618
A-E Project Management		8% of UXO Clearance/IC		$16,330	$0	$16,330
Light Brush Cutting[4]	acre	$120	46	$5,520	$0	$5,520
Moderate Brush Cutting[4]	acre	$426	20	$8,520	$0	$8,520
Heavy Brush Cutting[4]	acre	$603	9	$5,427	$0	$5,427
			Subtotal:	$265,109	$87,600	$352,709
CEHNC Oversite		15% of subtotal		$39,766	$0	$39,766
					Total Cost Estimate:	**$392,475**
					Contingency (25%):	**$98,119**
						$490,594
					Cost per. Acre =	***$6,814***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Estimate includes surface sweep of area to be performed prior to having fence installed
[3]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[4]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-20
SEAD-45 (Open Detonation Area) & SEAD-57 (Former EOD Range)
Cost Estimate for Alternative 2:
Institutional Controls

This estimate assumes:
A fence surrounding SEADs-45 and -57

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Sweep Contractor[1]	linear feet	$2	7,700	$15,400	$0	$15,400
Fencing Installed[2]	linear feet	$10	7,700	$77,000	$690,000	$767,000
Signs Installed	1 sign (per 500' of fence)	$93	46	$4,278	$27,600	$31,878
A-E Field Oversight		15% of UXO Clearance/IC		$14,502	$0	$14,502
A-E Project Management		8% of UXO Clearance/IC		$7,734	$0	$7,734
Heavy Brush Cutting[3]	acre	$603	3	$1,809	$0	$1,809
			Subtotal:	$120,723	$717,600	$838,323
CEHNC Oversite		15% of subtotal		$18,108	$0	$18,108
					Total Cost Estimate:	**$856,431**
					Contingency (25%):	**$214,108**
						$1,070,539
					Cost per. Acre =	***$14,869***

Assumptions
[1]Estimate includes surface sweep of area to be performed prior to having fence installed
[2]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
Also assumes installation of 7,700' of fence to be tied into existing fence
Total length of fence, used to calculate signage needs and life cycle cost, is 23,000'
[3]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-21
SEAD-45 (Open Detonation Area)
Cost Estimate for Alternative 5:
Soil Excavation and Sifting

This estimate assumes:
the excavation and sifting of 255,000 cubic yards of material from SEAD-45
Clearance to depth of detection of the area within a 2,000' radius of the detonation berm
Clearance to 6" of the area between 2,000' and 2,500' from the berm

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO soils excavated and sifted[1]	cubic yard	$30	255,000	$7,650,000	$0	$7,650,000
Replacement/Compaction of Soil[2]	cubic yard	$5	255,000	$1,275,000	$0	$1,275,000
Re-seeding Disturbed Soil[2]	acre	$438	80	$35,040	$0	$35,040
UXO Clearance to depth[3]	acre	$11,000	255	$2,805,000	$0	$2,805,000
UXO Clearence to 6"[4]	acre	$5,400	195	$1,053,000	$0	$1,053,000
A-E Field Oversite		15% of UXO Clearance		$1,922,706	$0	$1,922,706
A-E Project Management		8% of UXO Clearance		$1,025,443	$0	$1,025,443
Light Brush Cutting[2]	acre	$120	60	$7,200	$0	$7,200
Moderate Brush Cutting[2]	acre	$426	225	$95,850	$0	$95,850
Heavy Brush Cutting[2]	acre	$603	225	$135,675	$0	$135,675
			Subtotal:	$16,004,914	$0	$16,004,914
CEHNC Oversite		15% of subtotal		$2,400,737	$0	$2,400,737
					Total Cost Estimate	**$18,405,651**
					Contingency (25%)	**$4,601,413**
						$23,007,064
					Cost per acre =	***$51,127***

Assumptions

[1] Unit cost assumes $25/yd^3 for primary sift, $3/yd^3 for secondary sift, and $2/yd^3 for tertiary sift and hand sort

[2]Costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

[3]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey

[4]Cost for UXO clearance includes all ODC and mobilization costs, and equipment

Table G-22
SEAD-45 (Open Detonation Area)
Cost Estimate for Alternative 4:
Clearance to Depth

This estimate assumes:
Clearance to depth of detection of the area within a 2,000' radius of the detonation berm
Clearance to 6" of the area between 2,000' and 2,500' from the berm
A 5700' fence surrounding the demo berm in SEAD-45

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearance to depth[1]	acre	$11,000	175	$1,925,000	$0	$1,925,000
UXO Clearance to 6"[2]	acre	$3,400	195	$663,000	$0	$663,000
UXO Sweep Contractor[3]	linear feet	$2	5,700	$11,400	$0	$11,400
Fencing Installed[4]	linear feet	$10	5,700	$57,000	$171,000	$228,000
Signs Installed	1 sign (per 500' of fence)	$93	11	$1,060	$6,840	$7,900
A-E Field Oversight		15% of UXO Clearance/IC		$398,619	$0	$398,619
A-E Project Management		8% of UXO Clearance/IC		$212,597	$0	$212,597
Moderate Brush Cutting[5]	acre	$487	225	$109,575	$0	$109,575
Heavy Brush Cutting[5]	acre	$690	225	$155,250	$0	$155,250
			Subtotal:	$3,378,251	$177,840	$3,556,091
CEHNC Oversite		15% of subtotal		$506,738	$0	$506,738
					Total Cost Estimate:	**$4,062,829**
					Contingency (25%):	**$1,015,707**
						$5,078,536
					Cost per. Acre =	***$12,237***

Assumptions

[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
With EM-61, it also includes the collection, processing, and storage of data
as well as the reacquisition and removal of anomalies and a 10% QC survey

[2]Cost for UXO clearance includes all ODC and mobilization costs, and equipment

[3]Estimate includes surface sweep of area to be performed prior to having fence installed

[4]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire

[5]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-23
SEAD-4 (3.5" Rocket Range)
Cost Estimate for Alternative 3:
Clearance to 6"

This estimate assumes:
Clearance to 6" of 370 acres in SEAD-45
A 700' x 700' fence surrounding the demo berm in SEAD-57

Item	Unit	Unit Cost	Amount	Initial Cost	Life Cycle Cost (30 yrs)	Total Cost
UXO Clearence to 6"[1]	acre	$3,400	370	$1,258,000	$0	$1,258,000
UXO Sweep Contractor[2]	linear feet	$2	5,700	$11,400	$0	$11,400
Fencing Installed[3]	linear feet	$10	5,700	$57,000	$171,000	$228,000
Signs Installed	1 sign (per 500' of fence)	$93	11	$1,060	$6,840	$7,900
A-E Field Oversight		15% of UXO Clearance/IC		$199,119	$0	$199,119
A-E Project Management		8% of UXO Clearance/IC		$106,197	$0	$106,197
Moderate Brush Cutting[4]	acre	$426	185	$78,810	0	$78,810
Heavy Brush Cutting[4]	acre	$603	185	$111,555	0	$111,555
			Subtotal:	$1,711,586	$177,840	$1,889,426
CEHNC Oversite		15% of subtotal		$256,738	$0	$256,738
					Total Cost Estimate:	**$2,146,164**
					Contingency (25%):	**$536,541**
						$2,682,705
					Cost per. Acre =	***$6,464***

Assumptions
[1]Cost for UXO clearance includes all ODC and mobilization costs, and equipment
[2]Estimate includes surface sweep of area to be performed prior to having fence installed
[3]Cost to install fencing is $10 per linear foot of 8 foot chain link with three strands of barbed wire
[4]Brush cutting costs taken from ECHOS 1996 and adjusted for inflation using Engineering News Record Construction Cost Index History

Table G-24
Seneca Army Depot Activity
Costs for Recurring Reviews
30 Year Period

This estimate assumes:
Recurring review Depot wide every 2 years
2 man crew on site for 4 days
Report to be files upon completion of review

Item	Unit	Unit Cost	Amount	Per Review Cost	Total Cost	(30 yrs)[1]
Mob/Demob		$1,500	2	$3,000		$18,427
Per Diem	day	$124	8	$992		$6,093
Reviewers (2)	hour	$65	100	$6,500		$39,924
A-E Field Oversight		15% of UXO Clearance/IC		$1,574		$9,667
A-E Project Management		8% of UXO Clearance/IC		$839		$5,155
			Subtotal:	$12,905		$79,266
CEHNC Oversite		15% of subtotal		$1,936		$11,890
				Total Cost Estimate:		$91,156
				Contingency (25%):		$22,789
						$113,944

Assumptions
[1]30 Year costs assume present value costs with a discount factor of 7%

APPENDIX H

PRE-DRAFT COMMENTS

U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: CN 03-097-01, Seneca Army Depot, EE/CA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW: DRAFT EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE: 14 March 2000
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME: Michelle Crull, PhD, PE (256) 895-1653
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS		

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Executive Summary	The recommended alternative for each AOI should be stated in the executive summary if the Scope of Work requires a "Recommended Response Alternative". If not, then the executive summary should reference Tables 8.17 – 8.24 for the alternatives evaluations.	A: The recommended alternatives have been included in paragraph ES8.
2.	Section 2.4	2nd paragraph, last sentence – Chance "Oats" to "oats". This sentence says "...according to the 1998." Is this the 1998 census or what? Finish sentence.	A: "Oats" changed, census added.
3.	Section 2.4	3rd paragraph, 3rd sentence – Change "white" to "Caucasian".	A: Changed.
4.	Section 2.8	This sentence is not understandable. It seems to have too many verbs. Correct.	A: The sentence has been corrected.
5.	General	Check the north arrows on all maps. They are pointing in the wrong direction on figures 2.2 and 2.3. Correct the arrows on these figures and verify that all others are correct.	A: The north arrows are now pointed north
6.	Section 3.1	This contains a good discussion of the instrument checks and QA procedures.	
7.	Section 3.7.2	2nd sentence – Add a comma between "57" and "the Grenade Range".	A: Added
8.	Section 3.7.3.7.	Other paragraphs in Section 3.7.3 discuss the disposal of the UXO recovered. Include this information in this section.	A: A sentence describing the disposal of the CS Grenades has been added.

ACTION CODES
A - ACCEPTED/CONCUR
D - ACTION DEFERRED
W - WITHDRAWN
N - NON-CONCUR
VE - VE POTENTIAL/VEP ATTACHED

U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: CN 03-097-01, Seneca Army Depot, EE/CA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW: DRAFT EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE: 14 March 2000
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME:
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS		

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
9.	Section 3.9.9	2nd paragraph states "All but one of these live items were M73 35mm subcaliber rounds. The other was a 40mm rifle-fired grenade containing a spotting charge." And "The rest of the items were all either 35mm subcaliber rounds or 40mm rifle-fired grenades ..." This is confusing. While I understand that there are both inert and live versions of these rounds, the regulators and stakeholders might not understand this. Suggest just indicating that these rest of the items were inert and not specifying that they were 35mm subcaliber rounds or 40mm rifle-fired grenades.	A: The paragraph has been changed as recommended.
10.	Section 3.9.10	1st paragraph, 2nd sentence – Remove "to" in the statement "This data was collected to between ..."	A: The "to" has been removed.
11.	Figures 3.1 – 3.9	Put figure numbers and titles on these figures.	A: Numbers and titles have been added.
12.	Table 4.1	The injury associated with each of the categories is defined except for "OE Remnants". Define the injury associated with the OE Remnants to be consistent with the rest of the table.	A: The fact that these items are not hazardous has been added.
13.	Section 4.2.2.4	This section defines the two depth categories as surface and subsurface with the surface category including items recovered to a depth of 6 inches. We had an in-depth discussion at the meeting in Huntsville about surface being surface only and not to a depth of 6 inches. Recommend using the term "near surface" if you want to include items to a depth of 6 inches.	A: Items found to 6 inches will now be described as near surface.
14.	Table 4.6	Include SEAD-16 on this table.	A: SEAD-16 has been added.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: CN 03-097-01, Seneca Army Depot, EE/CA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW: DRAFT EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE: 14 March 2000
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME:
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS		

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Section 5.2	3rd sentence – States "... State local town, agencies knowledgeable ..." I think this should be "... State, and local agencies knowledgeable ..." Check this sentence and correct as necessary to convey intended information.	A: Changed
	Section 5.4.5	3rd paragraph – Remove the paragraph numbering (5.4.5.3) from this paragraph.	A: Removed
	Section 6	Correct the spelling of "Response" in the title of this section.	A: Corrected
	Section 7.2.2	3rd paragraph, last sentence – Change "It" to "it". Also this last phrase "it will at that time be necessary to destroy the OE item in place" is awkward. Consider re-wording.	A: The "It" has been changed and the sentence reworded.
	Section 7.3.2	4th sentence – Change "UXO" to "OE".	A: Changed
	Section 7.3.3	4th paragraph – This section is supposed to be discussing clearance to 6 inches. This 4th paragraph includes discussion of clearance to depths greater than 6 inches. This discussion is not appropriate in this section. Move this part of the discussion to Section 7.3.4.	A: This paragraph has been moved to Section 7.3.4.
	Table 7-1	In the short term, Alternatively 5 may have an adverse effect on the stability (increase erosion) of the site. However, in the long term this alternative may improve the stability (lessen erosion) of the site by leveling the berms and giving a more uniform land contour. Consider this possibility for this table.	A: This fact has been considered for each of the AOIs. The only two areas where erosion of berms and barren ground is a problem are SEADs-44A and –45. The positive effects to site stability of Alternative 5 have been added to Tables 7.4 and 7.8.

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DESIGN REVIEW COMMENTS

PROJECT CN 03-097-01, Seneca Army Depot, EE/CA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	DRAFT EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	14 March 2000
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
22.	Section 7.9	1st paragraph, last sentence – Take out "requiring the least amount of effort." This is an inflammatory statement. Suggest replacing with "most cost effective" or something similar.	A: Replaced.
23.	Section 8.1	In Chapter 7, alternative 3 is called "Clearance to Depth of 6 inches". Use this term here to distinguish this from alternative 4 – Clearance to Depth.	A: Alternative 3 is discussed as "Clearance to Depth of 6", and Alternative 4 as "Clearance to Depth of Instrument Detection".
24.	Section 8.1	The list of alternatives for SEAD-57 and SEAD-45 begins by stating "anomaly density does not allow for discrimination of individual anomalies". If for discrimination of individual anomalies". If this is the case then Alternatives 3 and 4 are not technically feasible (implementable). So why are these alternatives being considered and evaluated for these two AOIs. Further, in Tables 8.7 and 8.8, Alternative 4 and Alternative 5 both have an effectiveness rank of 1. Considering the difference in cost between the alternatives (see tables 8.23 and 8.24), one might decide that the best solution is Alternative 4. BUT ALTERNATIVE 4 IS NOT TECHNICALLY FEASIBLE. Suggest not including Alternatives 3 and 4 for these two AOIs.	D: As stated in the discussion of the alternatives considered at SEADs-45 and –57, Alternatives 3 and 4 both include a fence to be placed around those areas where individual anomalies can not be discerned.
25.	Section 8.2.2	5th paragraph – This paragraph states that "the only significantly effective alternative would be soil excavation followed by the mechanical sifting of the removed soil." This does not agree with Tables 8.7 and 8.8. See comment 24. Suggest removing Alternatives 3 and 4 from possible alternatives for SEAD-57 and SEAD-45.	D: It should be noted that the paragraph states clearance to depth of instrument detection would not have a significant impact on remaining OE. This alternative would be effective in that a fence would keep the public from encountering any OE remaining in the area.
26.	Table 8.18	In the Note at the bottom of this table, change "worst=4" to "worst=2"	A: Changed.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: CN 03-097-01, Seneca Army Depot, EE/CA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	DRAFT EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	14 March 2000
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
27.	General	Check Scope of Work to ascertain if a "Recommended Response Alternative" shold be included in this report.	A: Recommended response actions for each AOI are now included in Section 9.
28.	General	The authors have done a good job of making this EE/CA report understandable.	

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS — PROJECT: DRAFT OE EE/CA, Seneca, NY — CN 03-097-01

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Pre-Draft EE/CA Report
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	15 March 2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	Tommy Hunt/ED-CS-D/mp
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Executive Summary	What are the actual selected alternatives for each of the remaining 11 AOIs at SEDA? We state in Par. ES6 that results indicate removals, but we don't list our final findings for each AOI and recommendations as part of the ES.	A: The recommended alternatives have been included in paragraph ES8.
2.	Figure 2.2 & 2.3	According to Figure 2.1, the North Arrows on Figure 2.2 and 2.3 are not correct. I have not been to Seneca, but just comparing Figures, one or more of these is incorrect.	A: The north arrows are now pointed north.
3.	Figure 2.2	Shade the polygons that make up each of the AOI. It is difficult to tell the boundaries of areas such as SEAD-53, Ditches in Igloo Area (Row D) and SEADs 16 & 17. Similar to the shading in Figure 2.3.	A: The polygons have been shaded, and a polygon has been added for the D Row in the Igloo area.
4.	All Figures and Plates	If you are using an English graphical scale ,then use English scale units in the Title Block. Many of these Figures have 1:100 or 1:1000, which are 1"=8.33' or 1"=83.33'. These are non-standard scales and difficult to use.	A: The scales for all of the AOI maps have been changed to reflect this comment. Scales are now more user friendly (1" = 100', 1" = 150', 1" = 200', etc.)
5.	General	There were not any other comments generated by this office, other than those previously noted by other reviewers and submitted separately.	

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: OE – (Pre) DRAFT EE/CA, Seneca ADA

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Draft EE/CA - Review
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	15 March 2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	Herbert Plyler/ED-SY-S/256-895-1849
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		The Internal DRAFT Engineering Evaluation/Cost Analysis (EE/CA) Report, dated February 2001, for Seneca Army Depot, NY submitted by Parsons Engineering Science, Inc. The report has been reviewed by the Safety Office and we have NO COMMENTS. NOTE: Comments made by other reviewers and annotated in the document (Document provided through Service Section) were NOT repeated here.	

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS

PROJECT: C02NYSEAD01NAN, SENECA ARMY DEPOT, ROMULUS, NY

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	DRAFT EE/CA REPORT/03-097-01
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	8 MARCH 2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	MICHAEL SLOVAK/256-895-1595
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		After reviewing the Draft Engineering Evaluation Cost Analysis (EE/CA) report submitted by Parsons Engineering Science, Inc., I have the following comments:	
1.	Paragraph 2.2.	Please explain why the term "No DoD Action Indicated (NDA1) Areas" is not used as the heading for this paragraph instead of "No Further Action Areas".	The term "No Further Action Areas" was taken directly from the Archive Search Report. This was how the ASR classified areas that the authors of that document felt did not need further investigation.
2.	Table 2.1, Page 2-2	Same as Comment #1. Additionally, in the area with reported drums, the reason for classification of No Further Action was that only one drum was discovered during inspection. Was the drum empty? Need to provide a better explanation why you feel no further work should occur in this area.	As in previous response, all of the data contained in Table 2.1 was taken from the ASR. No further explanation was offered in that document as to why these areas were classified as NFA. Parsons was not involved in the decision.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS — PROJECT: DRAFT OE EE/CA, Seneca, NY — CN 03-097-01

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Pre-Draft EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	15-March-2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	Young-1859/ED=ES-C
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		CEHND-ED-ES, Cost Engineering Branch, has reviewed this submittal and has the following comments: The backup cost data presented in Appendix F appears reasonable for the cost alternatives with the exception of the brush clearing costs which are low ranging from $120/acre for light brush to $603/acre for heavy brush.	A: The difference in price is due to the fact that the low cost for brush removal is hand clearing of light brush. Compared to the mechanical removal and offsite disposal of dense forest. Both of these prices are taken from the Environmental Restoration unit cost book 1996 (ECHOS Environmental Cost Handling Options and Solutions) published R.S.Means Company Inc.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS — PROJECT: DRAFT OE EE/CA, Seneca, NY — CN 03-097-01

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Pre-Draft EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	10-JUNE-2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	KEVIN HEALEY
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Comment #1	The EE/CA Review Board had concerns about why 100% of the anomalies were not investigated	A; The text has been revised in Chapter Three to clarify that "Anomalies Identified" are those targets picked in the data for investigation, and Anomalies Investigated are those targets that were actually investigated. Other areas had such a high density of OE and UXO that once a grid was identified as having two UXO items the remaining Anomalies were not Investigated.
	Comment #2	HNC - is working toward a different representation of "DENSITY" such as qualifier replacing a purely numerical value.	A; The text and all associated tables have been adapted to use Low, Medium and High qualifiers to rather than a numerical Density.
	Comment #3	SEAD 45 Open Detonation slide, Explain why only 20 of the anomalies in each grid investigated. in each of these grids.	A; Due to the extremely high background noise only the twenty most likely anomalies were identified and investigated.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS — PROJECT: DRAFT OE EE/CA, Seneca, NY — CN 03-097-01

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Pre-Draft EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS			

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Comment # 4	The 2345 anomalies investigated number is different than what is presented on the Summary of Characterization Results Slide.	A; 2307 anomalies is the number of anomalies identified excluding those in the Mag and Flag grids that do not have X and Y coordinates. Without these coordinates the remaining 38 anomalies cannot be entered into the database without a X and Y coordinate when the data base is queried those anomalies without X and Y coordinates are not recognized.
	Comment #5	Further define the 800+ and 70+ numbers used on the SEAD-45 Recovered slide.	A; 812 is the number of OE items found during the SEAD 45 investigation, and 70 number of UXO items found at SEAD 45
	Comment #6	In the report the terms "CLEANUP" and "REMEDIATION" need to be replaced with the term "RESPONSE".	A; the change has been made to the report.
	Comment #7	Replace the expected density numbers with "low", "medium", and "high". As discussed during the initial presentation, Surface is surface (i.e. 0 inches in depth) in the OE world. Change anything that is greater than 0 inches below the surface to "Subsurface" (with a depth range in parentheses)	A; the change has been made throughout the text and tables to reflect the qualifiers Low, Medium and High.

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U. S. ARMY ENGINEER DIVISION HUNTSVILLE — CORPS OF ENGINEERS

DESIGN REVIEW COMMENTS — PROJECT: DRAFT OE EE/CA, Seneca, NY — CN 03-097-01

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW	Pre-Draft EE/CA
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE	
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME	
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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Comment # 8	Alternatives 4 is actually a combination of 3 and 4, and alternative 5 is actually a combination of 3,4,and 5. Consequently, the document compares the cost of "apples and oranges".	A; The costs for alternatives 4 and 5 have been changed to compare alternative 4 "clearance to depth of detection" and Alternative 5 Scrape a portion of the area and perform a confirmation sampling (clearance to depth of detection) over the entire site. The recommended alternative costs have been brought forward to section 9 along with maps of the proposed removal area to clarify the recommended alternative
	Comment #9	Proposed " Recurring Review" Make it known that this is an example for costing purposes and that the minimum is every five years	A; The frequency of the recurring review has been changed to every five years with the option to self-report on the interim years. The cost estimate has been changed in appendix G to reflect the change to every five years.
	Comment #10	EE/CA Executive Summary, in paragraph ES6, Change "will be necessary to modify behavior." to " Will be necessary to manage residual risk"	A; the change has been made to the text

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
	Comment # 11	Section 9 Paragraph 9.2.1, third line, change "Hazards of OE that" to "residual risk hazards of OE that"	A; the change has been made in the text.

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DESIGN REVIEW COMMENTS

PROJECT: OE BRAC Seneca ADA EE/CA (03-097-01;S:23 Mar)

☒ SITE DEV & GEO	☐ MECHANICAL	☐ SAFETY	☐ SYSTEMS ENG	REVIEW: Pre-Draft EE/CA Report
☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE: 24 April 2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME: Kevin Healy/ED-CS-G/5-1627
☐ STRUCTURAL	☐ INST & CONTROLS	☐ SPECIFICATIONS		

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Paragraph ES-4, Page ES-1	Recommend adding "Subsequently" before "One remaining area..." since the investigation and NDAI occurred well after the ASR.	A: The passage has been changed to read, "Subsequently, one of the areas recommended for further investigation, SEAD-43,..."
2.	Paragraph 1.1, Page 1-1	Please clarify the sentence "Sites within this EE/CA can be covered...and listed as a SWMU." since multiple thoughts seem to be combined.	A: The sentence has been clarified to read that all sites covered in the EE/CA were selected due to the ASR.
3.	Paragraph 1.1.4, Page 1-2, et al	As the base was formally closed in July 2000, recommend changing the reference to "July 2001" to "July 2000" throughout.	A: Base closure will be referenced as July 2000
4.	Paragraph 1.4, Page 1-3	Please clarify the void in "depicted in Figure ".	A: Figure number included
5.	Para 2.2.2.2.2, Page 2-3	In the last sentence, correct "was further cleared of OE" to "was geophysically mapped for verification".	A: Corrected
6.	Para 2.2.2.2.3, Page 2-3	The blast radius that is being referenced is a holdover from old SEDA drawings. It was not calculated by the Corps ASR team. Please change "calculated by USACE from" to "shown on old drawings included in".	A; Changed
7.	Para 2.2.2.2.7, Page 2-4	Please correct "spilt".	A; Corrected
8.	Section 2.3, Page 2-5	Please correct this paragraph. The recommendation for closure was in 95, closure was in 2000. Use of the facilities may have continued for a few years after the recommendation,	A: This paragraph as well and the rest of the report have been changed to relect the use of the base after the

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		but not after the closure itself, as written. o Also, this reviewer is unaware of NG training per se, other than the fact that some reservists/Guardsmen were there in the 98/99 timeframe to help load and move out ammunition. Please clarify. We do not wish to infer that training in the usual sense (firing, mortar, artillery, etc.) ever took place here.	recommendation for closure rather than closure. D: Tom Enroth confirmed that NG units have been on Depot for training an number of times. Training included, at the very least; firing with blanks.
9.	Paragraph 2.7.6, Page 2-8	o The St. Louis District ASR identified sites with a potential for OE more so than it outlined the nature and degree of contamination. Please correct. o Although the document may have used the term "confirmed", it has a different connotation in an ASR. Recommend toning down this paragraph by saying something to the effect that the ASR concluded that the potential for OE was highest in these nine areas. o Please clarify the reference to Building 328 since this reviewer is unaware that this is a site unto itself. o Recommend revising the second reference to "confirmed" as per the comment above.	A: Corrected A: The sentence now reads, "The ASR concluded that the potential for ordnance contamination was highest at nine sites:"... A: All reference has been removed to Building 328. Sead-43 (missing) has been added to what is still a list of nine sites. A; The sites are now referred to as "higher potential".
10.	Paragraph 2.7.7, Page 2-8	o Recommend changing "As no hazardous objects were found..." to "As no OE was found...". o Recommend adding that the NDAI documentation is in Appendix B as well as the actual geophysical investigation report. The investigation report is the backup while the NDAI itself is the vehicle.	A: Changed A: The NDAI memorandum is now referenced.

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
11.	Paragraph 2.8, Page 2-8	Please clarify the reference to EOD personnel responses. This reviewer was unaware that any had occurred.	A: The reference to EOD personnel responses has been removed.
12.	Section 3.7, Page 3-4	Recommend adding definitions to each of the bulletized categories. Considering the importance of UXO vs. OE in the risk assessment, a bit of detail would be useful. Also, the client has already noted that no definition of UXO and OE was in the document. This would be a good place to add such.	A: Definitions have been added to all categories
13.	Paragraph 3.7.2, Page 3-5	o This reviewer presumes that the items are defined as UXO based upon the "fuzed and fired" criterion.	A: All UXO has been classified as such based on the definition of UXO in the ER for OE Response.
		o Please place a comma between "57" and "the Grenade Range" as the two are different sites.	A: Comma placed
		o Please clarify. As written this paragraph seems to suggest that out of 9000+ digs, 200 items were UXO and 25 were OE.	A: A senetence has been added describing the number of non-HE-filled items recovered during the project
14.	Paragraph 3.7.3.7, Page 3-7	As tear gas grenades are likely to evoke an emotional response, recommend adding whether the grenades were full of CS and their overall condition.	A: The section now says that the CS grenades were empty. Overall condition is not known.
15.	Paragraph 3.8, Page 3-8	Here and throughout the remainder of the document, SEAD-53 in its entirety is mentioned as if it is another area of interest. Recommend adding definition here that the only part of 53 that was involved in the EE/CA effort was the D Row Drainage ditches because the ASR team found magnetic hits with a Schonstedt during their site walk. In this effort, we are	A: The sentence has been revised to state that only the ditches investigated in SEAD-53 contained no OE related material. The reason that only two ditches were investigated is now defined in Section 3.9.2.

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		aing to verify whether those hits were OE and not to draw some statistical conclusion over the entire acreage of this site.	
16.	Paragraph 3.9.1, Page 3-8	Please explain the reference to National Guard activities as per the previous comment.	D: As per previous comment
17.	Paragraph 3.9.2, Page 3-9	o This paragraph draws a comparison between the acreage surveyed and the total and makes a statistical reference as well. As suggested in Comment 15, above, we need to avoid such comparisons since the approach at this site was severely limited vis a vis the other legitimate areas of interest. Recommend deleting the total acreage and percentage figure.	A: The total acreage of SEAD-53 and the percentage of that area have been removed.
		o In addition to the reason stated, recommend adding the recommendation of the ASR team since this was the major reason for doing geophysics at the ditches.	A: The Schonstedt hits found during the ASR site visit have been given as the reason for surveyeing the ditches.
		o Recommend rewriting the second paragraph. We cannot say that additional sampling was contingent upon the results in the ditches. Only that the concerns raised during the ASR visit were being verified. As for the remainder of the paragraph, suffice it to say that no OE was found. Mention of the 7.62mm bullet and the final sentence "It was determined ... conducted in SEAD-53." should be removed.	A: The section has been revised accordingly.
18.	Paragraph 3.9.3, Page 3-9	In the third line, change "...to the southwest or SEAD-57" to "to the southwest of SEAD-57".	A: Changed

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19.	General	With regard to the QC effort of 10% of the false positives...was OE found in any of the re-digs that were performed?	A sentence has been added to Section 3.7 (Paragraph 3) stating that no OE was located at "false-positive" dig locations. Section 3.9.15 has also been added and details the results of the 10% resurvey with the EM-61.
20.	Paragraph 3.9.7, Page 3-11	Please explain the high false positive rate here in a little more detail. The fact that a remediated and stripped surface was the starting point for this verification effort makes it harder to understand the high false positive rate.	A: A description of the harrowing operation, which caused large dirt clumps and numerous small anomalies has been added to Section 3.9.
21.	Paragraph 3.9.11, Page 3-12	The discussion of the burning of 20mm rounds in the furnace sounds reminiscent of a RCRA operation and should probably not be included here.	A: The 20mm rounds have now been "detonated later with similar items".
22.	Table 3.1, Page 3-15	The percent of area figure for SEAD-53 should be replaced with an "NA" for "Not Applicable" and a footnote included explaining the approach at this particular site.	A: Percentage changed to N/A and footnote added.
23.	Figure 3.24, et al	Please identify the significance of the yellow dot with crosshairs in the middle in the legend. If, as appears to be the case, these are the OE items shown in Figure 3.25, recommend that the yellow dots be removed from Figure 3.24 as this drawing is supposed to show the UXO that was found.	A: These were the OE recovered in SEAD-46 and have been removed.
24.	Section 4.1, Page 4-1.	Suggest removing SEAD-53 from the Risk Assessment since the appraoch here was different from the other sites. Additionally, any number developed here would not be representative.	A: Rather than completely removing SEAD-53 from the discussion, all references have been revised to indicate that conclusions apply to the ditches surveyed, not the

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
			entire area.
25.	Section 4.3.4, Page 4-5	The reason that the density at SEAD-53 is N/A is because there is no potential there and the extent of our effort was to verify specific concerns in the D Row ditches raised by the ASR team.	A: SEAD-53 is no longer singled out. The ditches surveyed are now included as N/A areas along with Indian Creek and the Demo Range.
26.	Section 4.0	Understanding that a risk is not calculable when you can't geophysically map an area, question whether some discussion needs to be included in this section on the fact that SEAD-16 is still a site. Maybe the conclusions for SEAD-17 should be carried through throughout the remainder of the report for SEAD-16 as well.	A: All SEAD-17 discussion now applies to SEAD-16 as well.
27.	Section 5.4.3. Page 5-5	Change "favorable received" to "favorably received" in the last line.	A: Changed
28.	Section 5.4.4, Page 5-6	In line 10 of the first paragraph, change "Alternatively" to "Alternately".	A: Changed
29.	Section 5.5.2, Page 5-8	We discuss the recommended alternative and then proceed to list all alternatives in a sort of hierarchical list. Clarify whether all alternatives are still being considered or reduce the list by those that have been thrown out.	
30.	Section 6, Title	Correct the spelling of "Response".	A: Corrected

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
31.	Section 7	As per Comment 26, above, recommend noting that SEAD-16 is included in the discussion of SEAD-17.	A: SEAD-16 has been included with SEAD-17
32.	Section 7.3.1, Page 7-4	Add that another reason (and the most prominent one) for an NDAI is that no evidence of OE exists at the site. This was the basis behind the NDAI at SEAD-43. Also, point out that an NDAI does not preclude additional DoD response should a problem later surface.	A: Section has been revised as suggested.
33.	Section 7.3.3, Page 7-5	Recommending use of the Foerster infers that a mag and flag operation will be pursued. Currently, mag and flag must be justified before such an operation will be allowed. Additionally, the specific instrument to be used will be developed in a geophysical proveout. Consequently, recommend removing all references to specific instruments in this and all discussions of the alternatives.	A: All discussion of specific instruments has been removed.
34.	Section 7.3.4, Page 7-6	Recommend deleting "more sophisticated" and "than a hand-held metal detector (such as an EM-61)" in the beginning of the paragraph and the final sentence "This process, however,...magnetometer surveys." for the reasons discussed above.	A: These references have been removed.
35.	Section 7.9, Page 7-19	o Recommend removing the reference to "Foerster" as discussed above. o We state that Alternative 5 (Excavation and Sifting) has not been considered for SEAD-44A yet we are 75% complete on the remediation that used that exact alternative. It would	A: Removed, as were all EM-61 references A: Alternative 4 at SEAD-44A has now been described as contingent upon the completion of the sifting of the

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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
		appear that this sitre is being approached as a brand new site when the EE/CA is supposed to incorporate the removal findings and results to date. Following this, Parsons should be recommending alternatives to finish off the site using what conditions exist. Approach requires alteration.	stockpiled dirt. Further implementation of Alternative 5 at the site has not been considered, as anomaly density in the remaining areas is not high enough to warrant it.
36.	Section 8.1, Page 8-1	All references to specific instruments should be deleted as per previous discussions.	A: All specific instrument references have been removed.
37.	Table 8.1, Page 8-3	Recommend adding a reference/co-title for SEAD-16 here and in Table 8.17.	A: SEAD-16 has been added
38.	Tables 8.7/8.8	Understanding the higher score under Compliance with ARAR's for Alternative 5, please clarify why the Clearance to Depth w/ EM-61 alternative is rated so highly when we have already pointed out that individual anomalies are not discernable at SEAD's-57 and 45. The same would be true in Tables 8.15 and 8.16.	A: Section 8.1 has been amended to include the fact that Alternatives 3 and 4 include a fence surrounding those areas where individual anomalies cannot be discerned. Given the factors considered, this makes Alternative 4 as Effective as Alternative 5, however, given a lack of stakeholder acceptance for a fence, Alternative 5 is more implementable in both areas.
39.	Table 8.20, Page 8-17	Please clarify whether the costs presented in this table include the on-going removal action or not. Once the removal is complete, it would appear that the costs for SEAD-44A should be more in the range of the earlier sites (SEAD-17, EOD Area #2, etc.).	A: Section 8.1 also now discusses that the completion of sifting is included in both Alternatives 3 and 4. Costs are also included.

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40.	Table 8.24, Page 8-19	It was this reviewer's understanding that a combination of the Clearance to Depth w/ EM-61 and Clearance to Depth by Means of Mechanical Sorting Alternatives would be used at SEAD-45. Review of this table does not make that clear. Also, the assumptions in the Appendix suggest that EM-61 and hand-held magnetometer surveys will be done away from the berm but is not clear if this is verification following excavation or the clearance to depth subpart of this overall alternative. Please clarify.	A: All clarified in Section 8.1
41.	Section 9.0	Please clarify where the two years came from. It is this reviewer's understanding that the minimum is once every 5 years if the stakeholders agree.	A: The two year review has been changed to every five years with interm self reporting to keep communications between parties open.

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PROJECT: OE – (Pre) DRAFT EE/CA, Seneca ADA

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☐ ENVIR PROT& UTIL	☐ MFG TECHNOLOGY	☐ ADV TECH	☐ VALUE ENG	DATE: 15 March 2001
☐ ARCHITECTURAL	☐ ELECTRICAL	☐ ESTIMATING	☐ OTHER	NAME: Scott Bradley / ED-CS-P / 895-1637
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ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	All concerns are reflected in review comments from Kevin Healy.	

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APPENDIX I

GLOSSARY

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Action Memorandum

Approves time critical removal action and also concludes the engineering evaluation/ and cost analysis. Provides a concise, written record of the decision to select an appropriate removal action. As the primary decision document, it substantiates the need for a removal action, identifies the proposed action, and explains the rationale for the removal action selected.

Administrative Record

The body of documents that "forms the basis" for the selection of a particular response at a site. Documents that are included are relevant documents that are relied upon in selecting the response action as well as relevant documents that are considered but were ultimately rejected.

Anomaly

Any Item that is seen as a subsurface data irregularity after geophysical data collection and interpretation. This irregularity should deviate from the expected subsurface ferrous and non-ferrous material at the site (i.e. piping, buried electrical conduit, etc.)

Applicable or Relevant, and Appropriate Requirements (ARARs)

Applicable requirements are cleanup standards, standards of control, and other substantive requirements promulgated under federal or state environmental law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance found at a CERCLA site. Relevant and appropriate requirements are cleanup standards that while not "applicable" address situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site.

Approval Memorandum

Secures management approval and funding to conduct the engineering evaluation/cost analysis.

Archive Search Report

A detailed investigation to report on past Ordnance and Explosives activities conducted on an installation. The Principal purpose of the ASR is to assemble historical records and available field data, assess potential ordnance presence, and recommend follow up actions at a DERP-FUDS site. Four general steps are involved in conducting an archive Search Report: Records research, site safety and health plan, site survey for residual ordnance, archives search report including risk assessment.

Base Realignment and Closure (BRAC)

Program involving the scheduled closing of Department of Defense sites. (Base Closure and Realignment Act of 1998, Public Law 100-526, 102 Stat. 2623, and the defense Base Closure and realignment Act of 1990, Public Law 101-510, 104 Stat 1808)

Chemical Warfare Materiel (CWM)

Any item configured as a munition containing chemical substance that id intended to kill, seriously injure, or incapacitate a person through the physiological effects. Also includes V- and G- series nerve agents, H series blister agents, and lewisite in other- than- munition configurations. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include: riot control agents, chemical herbicides, smoke and flame producing items; or soil, water, debris, or other media contaminated with chemical agent. (HQDA Interim Guidance for Biological warfare Material and Non-Stockpile Chemical Warfare Materiel Response Activities)

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)

Also known as the "Superfund", this congressionally enacted legislation provides the methodology for the removal of former operations. Response actions must be performed in accordance with the national Oil and Hazardous Substances Pollution Contingency Plan.

Conventional Ordnance and Explosives

The term "Conventional OE" refers to ordnance and explosives (see definition) other than CWM, BWM and nuclear items. (ER1110-1-8153)

Defense Environmental Restoration Program (ERP)

Established in 1984, DERP promotes and coordinates the efforts for the evaluation and cleanup of contamination at Department of Defense installations. (10 U.S,C.2701)

Emergency Removal Response Actions

Emergency Removal Response Actions Address immediate, unacceptable hazards. These actions are normally accomplished by Explosive Ordnance Disposal(EOD) units and my or may not require USACE Support

Engineering Evaluation/ Cost Analysis (EE/CA)

An EE/CA is prepared for all non time critical removal actions as required by Section 300.415(b)(4)(i) of the NCP. The goals of the EE/CA are to identify the horizontal and vertical extent of a hazard, to identify the objectives of the removal action, and analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability.

Exclusion Zone

A safety zone established around an OE work area base on the MPM for that area. Only project personnel and authorized, escorted visitors are allowed within the exclusion zone. Examples of exclusion zones are safety zones around OE intrusive activities and safety zones where OE is intentionally detonated. (DDESB-KO, 27 January 1997)

Explosive Ordnance Disposal (EOD)

The detection, identification, field evaluation, rendering safe, recovery, and final disposal of unexploded ordnance or munitions.

Explosive Safety Submission (ESS)

The document, which serves as the specifications for conducting work activities at the project. The ESS details the scope of the project, the planned work activities, and project. The ESS details the scope of the project, the planned work activities, and potential hazards (including the maximum credible event) and the methods for their control.

Geophysical Techniques

Any technique utilized for the detection and measurement of subsurface anomalies (e.g., ferromagnetic indicators, ground penetrating radar and electromagnetic data collection) to investigate for the presence of ordnance.

Hazardous, Toxic, and Radioactive Waste (HTRW) Activities

HTRW activities include those activities undertaken for the Environmental Protection Agency's Superfund program, the Defense Environmental Restoration Program (DERP), including Formerly Used Defense Sites(FUDS), and Installation Restoration Program (IRP) sites at active DOD facilities, HTRW actions associated with Civil Works projects, and other mission and non-mission work performed for others at HTRW sites.

Information Repository

A repository, generally located at libraries or other publicly accessible locations, which contains documents reflecting the on going environmental restoration activities. This may include the EE/CA, CRP, RAB meeting minutes, public notes, public comments and responses to those comments.

Intrusive Activity

Any activity in which involves or results in the penetration of the ground surface at an area known or suspected to contain OE. Intrusive activities can be either of an investigative nature or removal.

Inventory Project Report (INRP)

The report resulting from the preliminary assessment of OE on a site. The INRP includes data as well as a recommendation for the further action and guides investigators through further site studies. Documents whether DOD is responsible for the contamination at the FUDS

Mandatory Center for Excellence (MCX)

An MCX is a USACE organization that has been approved by HQUSACE as having a unique or exceptional technical capability in a specialized subject area that is critical to other USACE commands. Specific mandatory services to be rendered by an MCX are identified on the MCX homepage. These services may be reimbursable or centrally funded. The USACESCH is the MCX for the USACE. (ER1110-1-8153)

Maximum Credible Event (MCE)

The worst single event that could occur at any time, resulting in the maximum release of a chemical agent from a munition, container, or process as a result of unintended, unplanned, or accidental occurrence. (HQDA Interim Guidance for Biological Warfare Material (BWM) and Non-Stockpile Chemical Warfare Material (CWM) Response Activities)

Military Munitions

All ammunition products and components produced or used by or for the U.S.DOD or the U.S. Armed Services for national defense and security, including military munitions under control of the DOD, the U.S. Coast Guard, the U.S. DOE, and National Guard personnel. The term military munitions includes: confined gaseous, liquids, and solid propellants, explosives, pyrotechnics, chemical, and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear devices, nuclear weapons, and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under DOE's nuclear weapons program after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed. (40 CFR 260.10)

National Oil and Hazardous Substance Pollution Contingency Plan (NCP)

Revised in 1990, the NCP provides the regulatory framework for responses under CERCLA. The NCP designates the Department of Defense as the removal response authority for ordnance and explosives hazards.

Non-Time Critical Removal Action (NTCRA)

NTCRA's are actions initiated in response to a release or threat of a release that poses a risk to human health; it's welfare, or the environment. Initiation of a removal cleanup action may be delayed for six months or more.

Ordnance and Explosives

OE consists of ammunition, ammunition components, chemical or biological warfare materiel or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record control of any DOD organization of activity.

OE Project Team

The OE Project team consists of the customer(s), the Project Manager, and multi-disciplined representatives from technical/functional elements of necessary to execute the project.

OE Safety Specialist

USACE Personnel, classified as a GS-018 Safety Specialist, and who is UXO qualified. OE Safety Specialists perform safety, quality assurance and UXO subject matter expert functions for the Government. The Safety Specialist may reside in and report to the construction field office or may reside in an engineering/construction office within the OE design center.

Removal Action

The cleanup or removal of OE from the environment to include the disposal of removed material. The term includes, in addition, without being limited to, security fencing or other measures to prevent, minimize, or mitigate damage to the public health or welfare or to the environment. (ER 1110-1-8153)

Response Action

Action taken instead of or in addition to a removal action to prevent or minimize the release of OE so that it does not cause substantial danger to present or future public health or welfare to the environment. (ER 1110-1-8153)

Restoration Advisory Board

A forum for the discussion and exchange of information between agencies and the affected communities. RABs provide an opportunity for stakeholders to have a voice and actively participate in the review off technical documents, to review restoration progress, and to provide individual advice to decision makers regarding restoration activities. (ER 1110-1-8153)

Senior UXO Supervisor

Supervises all contractor on-site UXO activities. This individual will be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, MD or the US Naval Explosive Ordnance Disposal School, Indian Head MD. This individual will have at a minimum 15 years combined active duty military EOD contractor UXO experience, to include at least 10 years supervisory positions. A minimum of six years of the required 15 years will have been active military duty in EOD units. This individual will have documented experience with or specialized training in the type of OE expected to be encountered on the site. (USAESCH OE MCX personnel and Work Standards for Ordnance Response, July 1996)

Site Inspection

Activities undertaken to determine whether there is a release or potential release and the nature of the associated threats. The purpose is to augment the data collected in the PA and to generate if necessary, sampling and other field data to determine the presence, type, distribution, density and location of OE. The results of the SI are reported in the Archives Search Report (ASR).

Stakeholder

Stakeholders include federal, state, and local officials, community organizations, property owners, and others having a personal interest or involvement, or having a monetary or commercial involvement in the real property which is to undergo an OE response.

Superfund Amendments and Reauthorization (SARA)

Enacted in 1986 this legislation establishes standards for cleanup activities, requires federal facility compliance with CERCLA, and clarifies public involvement requirements.

Time Critical Removal Action (TCRA)

TCRAs respond to the release or threat of release that poses such a risk to public health, or the environment, that clean up or stabilizations must be initiated within six months.

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 manor as to constitute a hazard to operations, installation, personnel, or material and remain unexploded either by malfunction, design, or any other cause.

UXO Personnel

Contractor personnel who have completed specialized military training in EOD methods and have satisfactorily performed the EOD function while serving in the military. Various grades and contract positions are established based on skills and experience. Check with the OE MCX for current regulations. (ER1110-1-8153)

UXO Safety Officer

Contractor personnel with the responsibility of enforcing the contractors SSHP. This individual must therefore be in the field whenever possible to observe operations. This individual will have the same minimum qualifications as the UXO Supervisor. In addition, this individual will have the specific training, knowledge, and experience necessary to implement the SSHP and verify compliance with the applicable safety and health requirements.

UXO Technician I

This individual will be a graduate of the EOD Assistant's course at Red stone Arsenal, AL or Elgin AFB, FL. A UXO Assistant may advance to a UXO Specialist Category after 5 years combined active military duty EOD and contractor UXO experience. Assistant will not perform UXO procedures without the direct supervision of a UXO Specialist, UXO Supervisor, or Senior UXO Supervisor.

UXO Technician II

This individual shall be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, MD or U.S. Naval EOD School, Indian Head MD. The UXO Specialist may be an UXO Assistant with at least 5 years combined military EOD and contractor experience.

UXO Technician III

Supervises UXO team. This individual will be a graduate of the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, MD. or U.S. Naval EOD School, Indian Head MD. This individual will have at least 10 years combined active duty military EOD and contractor UXO experience. This individual will have experience in OE clearance operations and supervising personnel.