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Depot Activity
Romulus NY

EXPLOSIVES SAFETY SUBMISSION
FOR MUNITIONS RESPONSE
SENECA ARMY DEPOT ACTIVITY

PARSONS

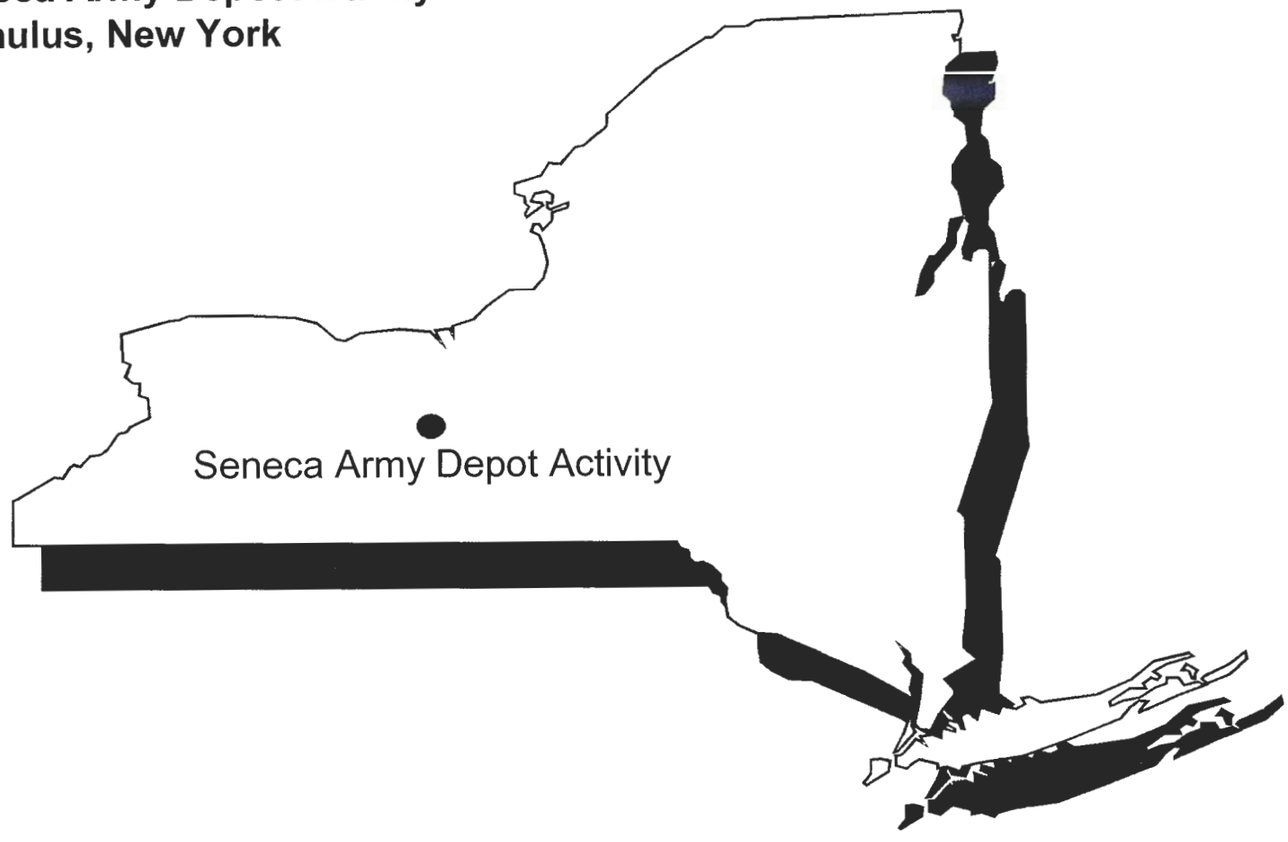
MAY 2006
REVISED

US Army Corps of Engineers

Air Force Center for Environmental Excellence

01106

Seneca Army Depot Activity
Romulus, New York



EXPLOSIVES SAFETY SUBMISSION
FOR MUNITIONS RESPONSE
SENECA ARMY DEPOT ACTIVITY

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EXPLOSIVES SAFETY SUBMISSION

MUNITIONS RESPONSE

SEAD 002-R-01, SEAD 57, SEAD 46 AND SEAD 007-R-01

SENECA ARMY DEPOT ACTIVITY,

ROMULUS, NEW YORK

Revised May 2006

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LIST OF ABBREVIATIONS

AFCEE	Air Force Center for Environmental Excellence
APHE	Armor Piercing High Explosive
ASR	Archive Search Report
BCT	Base Clean-up Team
BEC	Base Environmental Coordinator
BIP	Blown In Place
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CWM	Chemical Warfare Materials
DDESB	Department of Defense Explosives Safety Board
DGM	Digital Geophysical Mapping
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EM61-MK2	Electromagnetic Locator
EOD	Explosive Ordnance Disposal
ESS	Explosive Safety Submission
HE	High Explosive
IDA	Industrial Development Agency
IRFNA	Inhibited Red Fuming Nitric Acid
LAW	Light Anti-Tank Weapon
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MGFD	Munition with Greatest Fragment Distance
MPPEH	Material Potentially Presenting an Explosive Hazard
MSD	Minimum Separation Distance
NEW	Net Explosive Weight
OB/OD	Open Burning/Open Detonation
OD	Open Detonation
OE	Ordnance and Explosives
OSHA	Occupational Safety and Health Administration
PAED	Public Access Exclusion Distance
QA	Quality Assurance
QC	Quality Control
RAB	Restoration Advisory Board
RTK GPS	Real Time Kinematics Global Positioning System
SEDA	Seneca Army Depot Activity
SRA	Saturated Response Area
SSHP	Site Safety and Health Plan
SUXO	Senior UXO Supervisor
USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance

Consolidated Definitions
Anomaly Avoidance. Techniques employed on property known or suspected to contain UXO, other munitions that may have experienced abnormal environments (e.g., DMM), munitions constituents in high enough concentrations to pose an explosive hazard, or CA, regardless of configuration, to avoid contact with potential surface or subsurface explosive or CA hazards, to allow entry to the area for the performance of required operations.
Chain of Custody. The activities and procedures taken throughout the inspection, re-inspection and documentation process to maintain positive control of MPPEH to ensure the veracity of the process used to determine the status of material as to its explosive hazard. This includes all such activities from the time of collection through final disposition.
Chemical Agent (CA). A chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing and evaluation (RDTE) solutions; riot control agents, chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals.
Chemical Agent (CA) Hazard. A condition where danger exists because CA is present in a concentration high enough to present potential unacceptable effects (e.g., death, injury, damage) to people, operational capability, or the environment.
Chemical Agent (CA) Safety. A condition where operational capability and readiness, people, property, and the environment are protected from the unacceptable effects or risks of a mishap involving chemical warfare material (CWM) and CA in other than munitions configurations.
Chemical Warfare Material (CWM). Items generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. CWM includes V- and G-series nerve agents or H-series (mustard) and L-series (lewisite) blister agents in other-than-munition configurations; and certain industrial chemicals (e.g., hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG)) configured as a military munition. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include: riot control devices; chemical defoliants and herbicides; industrial chemicals (e.g., AC, CK, or CG) not configured as a munition; smoke and other obscuration producing items; flame and incendiary producing items; or soil, water, debris or other media contaminated with low concentrations of chemical agents where no CA hazards exist.
Chemical Warfare Material (CWM) Response. Munitions responses and other responses to address the chemical safety; explosives safety, when applicable; human health; or environmental risks presented by CA-filled munitions and CA in other than munitions configurations. (See munitions response.)
Construction Support. Assistance provided by DoD EOD or UXO qualified personnel and/or by personnel trained and qualified for operations involving CA, regardless of configuration, during intrusive construction activities on property known or suspected to contain UXO, other munitions that may have experienced abnormal environments (e.g., DMM), munitions constituents in high enough concentrations to pose an explosive hazard, or CA, regardless of configuration, to ensure the safety of personnel or resources from any potential explosive or CA hazards.
Cultural Debris. Debris found on operational ranges or munitions response sites, which may be removed to facilitate a range clearance or munitions response, that is not related to munitions or range operations. Such debris includes, but is not limited to: rebar, household items (refrigerators, washing machines, etc.), automobile parts and automobiles that were not associated with range targets, fence posts, and fence wire.
Defense Sites. Locations that are or were owned by, leased to, or otherwise possessed or used by the Department of Defense. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions. (10 U.S.C. 2710(e)(1))
Discarded Military Munitions (DMM). Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of, consistent with applicable environmental laws and regulations. (10 U.S.C. 2710(e)(2))
Disposal. End of life tasks or actions for residual materials resulting from demilitarization or disposition operations.
Disposition. The process of reusing, recycling, converting, redistributing, transferring, donating, selling, demilitarizing, treating, destroying, or fulfilling other life-cycle guidance, for DoD property.

Documentation of the Explosives Safety Status of Material. Documentation attesting that material: (1) does not present an explosive hazard and is consequently safe for unrestricted transfer within or release from DoD control, or (2) is MPPEH, with the known or suspected explosive hazards stated, that is only transferable or releasable to a qualified receiver. This documentation must be signed by a technically qualified individual with direct knowledge of: (1) the results of both the material's 100 percent inspection and 100 percent re-inspection or of the approved process used and the appropriate level of re-inspection, and (2) the veracity of the chain-of-custody for the material. This signature is followed by the signature of another technically qualified individual who inspects the material on a sampling basis (sampling procedures are determined by DoD entity that is inspecting the material).
Environmental Regulators and Safety Officials. Include, but may not be limited to environmental regulators, environmental coordinators or hazardous material coordinators, law enforcement officers, and safety personnel of the U.S. Environmental Protection Agency (USEPA), American Indians and Alaska Natives, other Federal Land Managers, and/or the States. When appropriate, public health officials of various agencies may also be involved.
Explosive Hazard. A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment.
Explosive Ordnance Disposal (EOD). The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded ordnance and of other munitions that have become an imposing danger, for example, by damage or deterioration.
Explosive Ordnance Disposal (EOD) Personnel. Military personnel who have graduated from the Naval School, Explosive Ordnance Disposal; are assigned to a military unit with a Service-defined EOD mission; and meet Service and assigned unit requirements to perform EOD duties. EOD personnel have received specialized training to address explosive and certain CA hazards during both peacetime and wartime. EOD personnel are trained and equipped to perform Render Safe Procedures (RSP) on nuclear, biological, chemical, and conventional munitions, and on improvised explosive devices.
Explosive Ordnance Disposal (EOD) Unit. A military organization constituted by proper authority; manned with EOD personnel; outfitted with equipment required to perform EOD functions; and assigned an EOD mission.
Explosives or Munitions Emergency Response. All immediate response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place render-safe procedures, treatment or destruction of the explosives or munitions, and/or transporting those items to another location to be rendered safe, treated, or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen, or uncontrollable circumstance will not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities. (Military Munitions Rule, 40 CFR 260.10)
Explosives Safety. A condition where operational capability and readiness, people, property, and the environment are protected from the unacceptable effects or risks of potential mishaps involving military munitions.
Interim Holding Facility (IHF). A temporary storage facility designed to hold recovered chemical warfare material (RCWM).
Land Use Controls (LUC). LUC are physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to real property, such as fences or signs.
Long-Term Management (LTMgt). The period of site management (including maintenance, monitoring, record keeping, 5-year reviews, etc.) initiated after response (removal or remedial) objectives have been met (i.e., after Response Complete).
Material Potentially Presenting an Explosive Hazard (MPPEH). Material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially containing a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within DoD's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

Military Munitions. Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, 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. The term does not include wholly inert items; improvised explosive devices; and nuclear weapons, nuclear devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C. 101(e)(4)(A) through (C))
Military Munitions Burial Site. A site, regardless of location, where military munitions or CA, regardless of configuration, were intentionally buried, with the intent to abandon or discard. This term includes burial sites used to dispose of military munitions or CA, regardless of configuration, in a manner consistent with applicable environmental laws and regulations or the national practice at the time of burial. It does not include sites where munitions were intentionally covered with earth during authorized destruction by detonation, or where in-situ capping is implemented as an engineered remedy under an authorized response action.
Minimum Separation Distance (MSD). MSD is the distance at which personnel in the open must be from an intentional or unintentional detonation.
Munition with the Greatest Fragmentation Distance (MGFD). The munition with the greatest fragment distance that is reasonably expected (based on research or characterization) to be encountered in any particular area.
Munitions and Explosives of Concern (MEC). This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means: (A) Unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5); (B) Discarded military munitions (DMM), as defined in 10 U.S.C. 2710(e)(2); or (C) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.
Munitions Constituents (MC). Any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710(e)(3)).
Munitions Debris. Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.
Munitions Response. Response actions, including investigation, removal actions and remedial actions to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required.
Munitions Response Area (MRA). Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area is comprised of one or more munitions response sites.
Munitions Response Site (MRS). A discrete location within an MRA that is known to require a munitions response.
Mutual Agreement. A meeting of the minds on a specific subject, and a manifestation of intent of the parties to do or refrain from doing some specific act or acts. Inherent in any mutual agreement or collaborative process are the acknowledgement of each member's role in the process and their differing views of their authorities. The mutual agreement process will provide a means of resolving differences without denying the parties an opportunity to exercise their respective authorities should mutual agreement fail to be achieved.
One Percent Lethality Distance. A distance calculated from a given CA Maximum Credible Event (MCE) and meteorological conditions (temperature, wind speed, Pasquill stability factor) and established as the distance at which dosage from that MCE agent release would be 150 mg-min/m^3 for H and HD agents, 75 mg-min/m^3 for HT agent, 150 mg-min/m^3 for Lewisite, 10 mg-min/m^3 for GB agent, 4.3 mg-min/m^3 for VX vapor, and 0.1 mg-min/m^3 for inhalation and deposition of liquid VX.

On-call Construction Support. Construction support provided, on an as needed basis, where the probability of encountering UXO, other munitions that may have experienced abnormal environments (e.g., DMM), munitions constituents in high enough concentrations to pose an explosive hazard, or CA, regardless of configuration, has been determined to be low. This support can respond from off-site when called, or be on-site and available to provide required construction support.
On-site Construction Support. Dedicated construction support, where the probability of encountering UXO, other munitions that may have experienced abnormal environments (e.g., DMM), munitions constituents in high enough concentrations to pose an explosive hazard, or CA, regardless of configuration, has been determined to be moderate to high.
On-the-Surface. A situation in which UXO, DMM or CA, regardless of configuration, are: (A) entirely or partially exposed above the ground surface (i.e., the top of the soil layer); or (B) entirely or partially exposed above the surface of a water body (e.g., because of tidal activity).
Open Burn (OB). An open-air combustion process by which excess, unserviceable, or obsolete munitions are destroyed to eliminate their inherent explosive hazards.
Open Detonation (OD). An open-air process used for the treatment of excess, unserviceable or obsolete munitions whereby an explosive donor charge initiates the munitions being treated.
Operational Range. A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 U.S.C. 101(e)(3)(A) and (B)). Also includes "military range," "active range," and "inactive range" as those terms are defined in 40 CFR §266.201.
Primary Explosives. Primary explosives are highly sensitive compounds that are typically used in detonators and primers. A reaction is easily triggered by heat, spark, impact or friction. Examples of primary explosives are lead azide and mercury fulminate.
Public Access Exclusion Distance (PAED). The PAED is defined as longest distance of the hazardous fragment distance, inhabited building distance (IBD) for overpressure, or the One Percent Lethality Distance. For siting purposes, the PAED is analogous to the IBD for explosives; therefore, personnel not directly associated with the chemical operations are not to be allowed within the PAED.
Qualified Receiver. Entities that have personnel who are, or individuals who are, trained and experienced in the identification and safe handling of used and unused military munitions, and any known or potential explosive hazards that may be associated with the MPPEH they receive; and are licensed and permitted or otherwise qualified to receive, manage, and process MPPEH.
Range. A designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (10 U.S.C. 101(e)(1)(A) and (B))
Range activities. Research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems. (10 U.S.C. 101(e)(2)(A) and (B))
Range Clearance. The destruction, or removal and proper disposition of used military munitions (e.g., unexploded ordnance (UXO) and munitions debris) and other range-related debris (e.g., target debris, military munitions packaging and crating material)) to maintain or enhance operational range safety or prevent the accumulation of such material from impairing or preventing operational range use. "Range clearance" does not include removal, treatment, or remediation of chemical residues or munitions constituents from environmental media, nor actions to address discarded military munitions (e.g., burial pits) on operational ranges.
Range-Related Debris. Debris, other than munitions debris, collected from operational ranges or from former ranges (e.g., target debris, military munitions packaging and crating material).
Recovered Chemical Warfare Material (RCWM). CWM used for its intended purpose or previously disposed of as waste, which has been discovered during a CWM response or by chance (e.g., accidental discovery by a member of the public), that DoD has either secured in place or placed under DoD control, normally in a DDESB-approved storage location or interim holding facility, pending final disposition.

Render Safe Procedures (RSP). The portion of EOD procedures that involves the application of special disposal methods or tools to interrupt the functioning or otherwise defeat the firing train of UXO from triggering an unacceptable detonation.
Secondary Explosives. Secondary explosives are generally less sensitive to initiation than primary explosives and are typically used in booster and main charge applications. A severe shock is usually required to trigger a reaction. Examples are TNT, cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX or cyclonite), HMX, and tetryl.
Small Arms Ammunition. Ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns.
Team Separation Distance (TSD). The distance that munitions response teams must be separated from each other during munitions response activities involving intrusive operations.
Technical Escort Unit (TEU). A DoD organization manned with specially trained personnel that provide verification, sampling, detection, mitigation, render safe, decontamination, packaging, escort and remediation of chemical, biological and industrial devices or hazardous material.
Technology-aided Surface Removal A removal of UXO, DMM or CWM on the surface (i.e., the top of the soil layer) only, in which the detection process is primarily performed visually, but is augmented by technology aids (e.g., hand-held magnetometers or metal detectors) because vegetation, the weathering of UXO, DMM or CWM, or other factors make visual detection difficult.
Time Critical Removal Action (TCRA). Removal actions where, based on the site evaluation, a determination is made that a removal is appropriate, and that less than 6 months exists before on-site removal activity must begin. (40 CFR 300.5)
Unexploded Ordnance (UXO). Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded whether by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5)(A) through (C))
UXO Technicians. Personnel who are qualified for and filling Department of Labor, Service Contract Act, Directory of Occupations, contractor positions of UXO Technician I, UXO Technician II, and UXO Technician III.
UXO-Qualified Personnel Personnel who have performed successfully in military EOD positions, or are qualified to perform in the following Department of Labor, Service Contract Act, Directory of Occupations, contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, or Senior UXO Supervisor.
Venting. Exposing any internal cavities of MPPEH, to include training or practice munitions (e.g., concrete bombs), using DDESB- or DoD Component-approved procedures, to confirm that an explosive hazard is not present.

INTRODUCTION

This revised Explosive Safety Submission (ESS) is for the Munitions Response at the Former EOD Range (SEAD 57), the Former 3.5 inch Rocket Range (SEAD 46), the Former Rifle Grenade Range (SEAD 007-R-01), and SEAD 002-R-01 (SEAD 002-R-01 includes the Former EOD Area 2 and the Former EOD Area 3) at Seneca Army Depot Activity (SEDA), New York. This ESS outlines the explosives control procedures that will be implemented for the planned removal of munitions and explosives of concern (MEC) and munitions debris (MD) on the properties listed above that are currently owned and controlled by the Department of Defense (DoD).

SEDA is a US Army facility located in New York State, within Seneca County in the town of Romulus. SEDA occupies approximately 10,600 acres (Figure 1, Appendix A). 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 and rural in nature.

SEDA was included on the Federal Facilities National Priorities List on July 13, 1989. Consequently, all work to be performed under this contract will be performed according to Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York."

In 1995 SEDA was added to the Base Realignment and Closure List and was officially closed in 1999. The Seneca County Industrial Development Agency (IDA) has prepared a reuse plan entitled "Seneca Army Depot Reuse Plan and Implementation Strategy". This plan outlines the reuse potential of the installation for housing developments, industrial development, institutional and conservation/recreation uses upon transfer. Sites covered under this ESS currently fall within the area designated for "Conservation/Recreation" by the IDA. The IDA has designated the intended uses, "Conservation/Recreation", which is defined in the reuse plan as wildlife habitation, wildlife viewing, hiking/walking and picnicking. Although there is currently no plan for establishing camping facilities, the IDA does not wish to restrict such a possibility in the future.

This ESS is based upon the a clearance depth (4 ft) chosen in accordance with the Public Access scenario (e.g. surface recreation) with future excavation below this depth controlled by deed restrictions. Upon completion of the removal actions, clearance to competent bedrock and unrestricted use may be achieved at some or all of the sites.

1.0 REASON FOR MPPEH

SEAD 46

SEAD 46 consists of approximately 45 acres on the North side of the Depot due East of the Ammunition Storage Area. Although the Archive Search Report (ASR) described SEAD 46 as a 3.5"

Rocket Range, it is apparent the area had multiple uses. It includes a reputed EOD disposal site as well as a known Reserve Component Training Area. Despite this fact, it is hard to ignore the manmade earthen "hill" at the North end of the site that appears to be a backstop or perhaps a protective barricade of some sort. While this area may have been used as a firing or function test range, it is likely that the use was as a rocket motor testing range. There is a least one picture of a 3.5" motor fixed to a tripod in front of the berm in the SEAD historical records.

As part of the Ordnance and Explosives Engineering Evaluation and Cost Analysis (OE EE/CA), geophysical surveys and intrusive investigations were conducted in 2000 at SEAD 46. A total of 43% of the 40 acres was surveyed and 1,155 anomalies were investigated. 478 contained munitions debris and 10 of these were MPPEH (material potentially presenting an explosive hazard).

The majority of MPPEH recovered (40mm rifle grenades, practice) were located at the South end, opposite the large hill. This probably reflects the site's use as a local training area in 1980's and 1990's.

Miscellaneous fuses, fuse igniters, slap fares, and MD were found in the vicinity of the "hill". This probably reflects the site use as a function test or disposal range. All items were found in the upper 12 inches of soil.

During the Geophysical Investigation conducted by Shaw (April 2005) of SEAD 46 and 57, approximately 27 acres of SEAD 46 were digitally mapped. There was one area where the digital geophysical mapping (DGM) survey detected anomaly densities greater than 600 anomalies per acre. Areas that are saturated with anomalies or have more than 600 per acre are considered saturated response areas (SRAs). There was one SRA identified to the west of the berm at SEAD 46. This area is approximately one acre in size. In addition to the identification of the SRA, a total of 98 anomalies were intrusively investigated by Shaw. No MPPEH items were found.

SEAD 57

SEAD 57, formerly known as EOD #1, consists of approximately 79 acres at the northwestern end of Depot immediately adjacent and South of the Open Burning/Open Detonation Grounds (435 acres) (Figure 3). An earthen berm is located in the center of the SEAD 57 area. The 143d Explosives Ordnance Detachment (EOD) was a Department of Army tenant organization located at Seneca Army Depot and performed ordnance and explosives (OE) disposal by detonation for more than 20 years, was assigned to this demolition area, known as SEAD 57, in the northwest portion of the installation.

The area was used by the 143rd from the 1970's until 1984 for disposal of munitions and homemade explosive devices that were collected from federal, state, and police agencies within the Northeastern United States. Training of EOD specialists assigned to the unit also took place at this location. After November 1984, transportation of munitions and homemade explosive devices to Seneca Army Depot was prohibited and disposal of these items was conducted at appropriate locations within the

jurisdiction of the requesting authorities. Records in the ASR indicated that a ten (10) pound Net Explosive Weight (NEW) limit was enforced at the site.

The earthen bermed area in SEAD 57 is 100 feet long and 85 feet wide with sidewalls to 4 feet high built in the center of the 79 acre area. During the site visit for the ASR in 1998, shot holes were observed on the western side of the access road to the demo berm. These shot holes appear on a 1963 aerial photograph of what was at the time known as EOD Range 1. According to the 1998 ASR conducted by the BRAC department, the blast radius for this area is 1800 feet from the center of the berm.

As part of the OE EE/CA (Parsons, February 2004), geophysical surveys and intrusive investigations were conducted at SEAD 57. A total of 23% of the 60 acres were mapped, 1,700 anomalies were investigated and 954 recovered items were classified as munitions debris. Three of these were determined to be MEC items. The three items were one MK2 grenade and two 20mm projectiles. During the surface sweep for the EE/CA, a 37mm APHE item was found at ground surface near the abandoned ammunition disassembly plant across the road from the site. During the intrusive portion of the EE/CA investigation, all MD and MEC items identified were encountered between the ground surface and six inches below the surface.

During the Geophysical Investigation of SEAD 57 conducted by Shaw (April 2005), approximately 22.5 acres of SEAD 57 were digitally mapped. The results indicated six SRAs at SEAD 57. The largest is an approximate 400-foot radius ejection spray pattern radiating out from the demo berm with the greatest concentration to the west of the SEAD 57 berm. A total of 13 acres of SRAs were found at SEAD 57. A total of 75 anomalies were intrusively investigated at SEAD 57. Four MPPEH items (a 75mm, a 75mm AP shot, a 105mm and an unknown bomb) were found and placed in storage for inspection. All other recovered metal was classified as munitions debris or scrap metal. Only one MD item was discovered below 6 inches in depth.

Additionally, approximately 40 acres of heavy vegetation within the 1800 foot radius of SEAD 57 were investigated by clearing and grubbing ten foot wide transects every fifty feet. 17,000 liner feet of these transects were cleared by the "mag and flag" technique. The anomaly counts were significantly lower than in the open areas, however this may be due in part to the amount of non-ferrous MD found.

SEAD 007-R-01 – Grenade Range

The Grenade Range (SEAD 007-R-01) consists of a 30-acre Security Force Practice Range immediately South of SEAD 57 which was constructed during the mid 1980's (Figure 4). The range still contains wooden and armored vehicle targets, distance, boundary markers, and the range control tower. The ASR states that 40mm M407A1 and 35mm M73 sub-caliber LAW were used at the site for security forces training. There is no record (or indication at the targets) that HE rounds were used. Small arms (blanks) casings are present (ASR 1998).

An OE EE/CA was completed in February 2004. A 15-acre area was digitally mapped using an EM-61. In addition to the 15 acres, the EM61 was used to sample 10% of the area between the firing line and the target area. Relocation and verification of DGM targets during the EE/CA investigated 865 DGM targets in the range area. This intrusive investigation resulted in 102 MPPEH items (101 35 mm sub-cal LAW M73, and 1 Rifle Grenade M407A1, Practice) and numerous munitions debris items. Relocation and verification of 10% sampled area from the firing line to the target area identified 95 DGM targets in the meandering path data. Intrusive investigation of these targets revealed additional MPPEH and munitions debris.

SEAD 002-R-01 – EOD Range 2 and 3

The EOD Range 2 and 3 (SEAD-007-R-01) is split into two areas both located to the north of SEAD 46. EOD #2 is collocated with the IRFNA site (SEAD 13) on the western shore of the Duck Pond to the west of SEAD 46 as shown on Figure 5. The 1998 ASR states that explosive devices were used in this area, and non-explosive projectiles were thrown in the water at the duck pond. EOD activities in this area were not related to the IRFNA site. The EOD #3 area is located 250 feet to the north of the earthen berm in SEAD 46 as shown on Figure 6. The 4.5 acre area is mostly flat with the exception of a 100 by 200 foot depression in the middle of the site. This site was reported in the 1999 ASR as an EOD disposal area.

2.0 MAPS

A general site map showing the locations of the areas, travel routes, storage magazines, and the detonation hill are provided on Figure 1. Figures 2 through 6 show each area of concern, area of remediation and the minimum separation distance (MSD) in Appendix A to this submission.

3.0 AMOUNT AND TYPE OF MPPEH

MPPEH presence and density at SEADs 46, 57, 002-R-01 and 007-R-01 has been characterized during previous investigations. The OE EE/CA performed during 2000 by Parsons at SEADs 46, 57, 002-R-01 and 007-R-01. The Geophysical Investigation during 2004 performed by the Shaw Group at 46 and 57 have established the presence and estimated density of MPPEH at these sites.

A summation of the Geophysical Investigation effort in 2004 follows:

At SEAD 46, 27 acres were mapped during the 2004 Geophysical Investigation with an EM61-MK2 in the towed array configuration. As a result of this investigation 98 anomalies were intrusively investigated and no MPPEH items were found. In addition to the 27 acres of open area, an additional 45 acres of heavy vegetation was cleared and grubbed in ten foot wide transects. 19,500 feet of these transects were cleared with the "mag and flag" technique and MPPEH was found. MD and scrap metal was found in both open and wooded areas.

At SEAD 57, 22.5 acres were mapped with an EM61-MK2 in the towed array configuration and 75 anomalies were intrusively investigated.

Four (4) potential MPPEH were found and placed in storage for future inspection. Forty (40) acres of heavy vegetation were cleared and grubbed in ten foot wide transects. 17,000 feet of these transects were cleared with the "mag and flag" technique. No MPPEH was found in the woods transects. MD and scrap metal was found in both the open and wooded areas.

Based upon the results of the EE/CA, the Geophysical Investigation, and all MPPEH removed during recent investigation projects at SEAD, the MGFD most likely to be encountered will remain the same as used on the adjacent Open Burning/Open Detonation Grounds (SEAD 45/115). This is the 37mm MKII projectile. The Net Explosive Weight (NEW) is 0.0533 lbs. of TNT. The Fragmentation Data Review Forms are in Appendix D. The PAED is 980 feet (DDESB TP-16, 1 Dec 2003).

For SEAD 007-R-01 the Grenade Range, 40mm practice grenades and practice LAW rockets were found during intrusive investigation portion of the EE/CA. Based upon the EE/CA intrusive investigation results, the most common MPPEH found was the M382 and M407A1, 40 mm practice grenade. Since the possibility exists that a M383HE round may have been demonstrated at the site, this item has been chosen as the MGFD. The NEW of the M383 is 54.5 g of Comp A5. The Fragmentation Data Review Forms are in Appendix D. The PAED is 345 feet. Therefore, the MGFD for the Grenade Range is the M383 HE grenade.

SEAD 002-R-01 has intrusive investigation performed during the OE EE/CA in 2000 no MPPEH was encounter during this investigation. For the purpose of this ESS the 40mm M383 grenade will be used as the MGFD for these two sites.

Summaries of the MGFD, NEW and PAED for each SEAD are provided in the following table.

SEAD Number	**Historical MPPEH**	**MGFD**	**Net Explosive Weight (NEW)**	**PAED**
SEAD 57	37mm MKII	37mm MKII	0.0533 lbs. of TNT	980 feet
SEAD 46	M382*	M383	54.5 g of Comp A5	345 feet
SEAD 007-R-01	M78/M382/M407A1	M383	54.5 g of Comp A5	345 feet
SEAD 002-R-01 (EOD #2)	M2 Fuse expended	M383	54.5 g of Comp A5	345 feet
SEAD 002-R-01 (EOD #3)	Rifle-grenade illumination - expended	M383	54.5 g of Comp A5	345 feet

*result of OE EE\CA performed during 2000

The shielding requirements for this project are based on the Fragmentation Data Review Forms in Appendix D. The earthwork contractor will use 2.0 inches of plexi-glass based on the thicker requirement for the 37 mm MKII. The observers will be protected against blast overpressure by maintaining a 20 foot set back distance within the blast shield shown in Appendix C.

If a larger, live or suspected live MPPEH item is encountered at any site, the withdrawal distances will be adjusted in accordance with TP 16 and an amendment to the ESS will be submitted. Until the appropriate distances are determined by TP-16, the default distances in DOD 6055.9-STD (Chapter 5, Paragraph E.4.a) will be used.

4.0 START DATE

The target start date for the intrusive investigation and mechanical sorting operation is July 2006.

5.0 FROST LINE DEPTH

The designated frost depth for this site is 40 inches.

6.0 CLEARANCE TECHNIQUES

This section presents information concerning the techniques to be used to clear each of the sites of MPPEH. In general, in areas of low density anomalies, individual targeted anomalies will be reacquired and intrusively investigated. In areas of high density anomalies, the soil will be excavated and MPPEH will be removed using a mechanical screening and visual inspection process. Details of these processes are provided below.

6.1 Low Density Anomalies

The Contractor's UXO qualified personnel will reacquire the targeted anomalies based on the previous Geophysical Investigation of Munitions Destruction Areas SEAD 46 & 57 (Shaw 2005). The anomalies will be targeted based on a review of the DGM data that shows a response level corresponding to MPPEH. These anomalies will be intrusively investigated and all identified MPPEH will be removed to a depth of four (4) feet. Any MPPEH encountered below this depth during the intrusive investigation will also be removed, however, none is expected.

In the wooded areas, the Contractor will excavate the Mag and Flag anomalies in the existing transects previously surveyed (Shaw April 2005). If no MPPEH is found, the wooded areas will be considered safe for public access. If MPPEH is found, the wooded areas will be cleared using technology-aided surface removal techniques.

The Contractor will resurvey the entire 25 acres to identify DGM targets above the established threshold. From the DGM data, target anomalies will be identified. The identified anomalies will be reacquired and intrusively investigated. Once all identified target anomalies have been removed, a

10% QC survey will be performed to confirm all target anomalies have been removed. Any MPPEH encountered during the intrusive investigation will be destroyed, or certified as munitions debris, on a weekly basis.

A final Munitions Response Report will be submitted. All of the data gathered from the mapping, anomaly investigation, and soil processing will be compiled to draw conclusions on the existence, or non-existence, of MEC that may remain at the sites.

6.2 High Density Anomaly Areas

The high density or saturated response areas (SRAs) will be excavated and screened to remove MPPEH. The SRAs are located at SEAD 46 and SEAD 57.

Soil Excavation

In addition to the Mag and Flag transects, DGM and intrusive investigation, the SRAs will be excavated to remove MPPEH. The perimeter of each SAR area will be staked with a 10' off set using established coordinates from the DGM. RTK GPS will be used to install grade stakes and perimeter markers. After the SAR area has been established, an initial surface sweep of the area will be conducted by UXO personnel. If MPPEH is identified during the surface sweep, it will be transported to the onsite storage at the designated site storage bunker for future disposal. If the MEC cannot be safely moved, the area will be cleared and the MEC will be detonated in place by UXO personnel.

When the SRA has been initially cleared, it will be mowed to a height of 6 inches using a bush-hog which has been shielded for 37mm using 2.0 inches of plexi-glass. The area will be visually inspected again by qualified UXO personnel for any surface MEC material.

The SRA area will than be cultivated to a depth of six (6) inches using a cultivator mounted behind a rubber tired tractor. The tractor operator will be shielded as previously discussed.

Once the area has been cultivated, the area will be excavated to a six (6) inch depth using a shielded grader which will stockpile the material in a windrow to remove moisture. The windrowed material will be loaded out with a shielded rubber tired loader and transported to the processing area. The operators of the excavator, grader, loader and trucks will operate behind 2.0 inches of plexi-glass shielding. Observers will stand at least 20 feet away and will be protected by the blast shield presented in Appendix C.

The entire mowing, cultivation, excavation and loading process will be observed by UXO personnel. Again if MEC is encountered, it will be transported to the site storage bunker for future disposal or detonated in place as required.

The identified SRA on the front face of the target berm at SEAD 46 to a depth of one foot will be removed and transported to the processing area located at SEAD 57. The areas on the rear of the berm are wooded and will be checked for anomalies using a Schonstedt GX 72 or Fischer All Metal Detector used in the Mag and Flag survey mode. Identified anomalies will be flagged and investigated as required on an individual basis.

If the sides and rear of the berm prove to be SRA, the trees and vegetation will be removed and the top one foot of soil will be excavated and transported to the processing area. The excavated area will be checked consistent with the procedure outlined for the frontal area.

Soils Processing

Stockpiled soil will be screened to remove MPPEH. The screening area will be located at SEAD 57 as shown on Figure 2. Prior to setting up the screening equipment, the screening area shown on Figure 2 will be cleared. The stockpiled material will be processed through a screening plant similar to a Trommel™ screen or shaker screen. The following equipment will be used:

- A grizzly sized at greater than 6"
- A de-lumper
- Vibrating 5/8" harp screen deck
- Cross belt magnet
- Magnetic head pulley
- Stack-out conveyors

The material will be taken from the stockpile area by a shielded loader and placed into the 6" grizzly screen where all material greater than 6" will be retained. The material passing through the grizzly will continue to a low speed de-lumper for further size reduction. Once the material has been homogenized by the de-lumper, the material will than pass to a vibrating 5/8" Harp screen. The 5/8" screen size was selected because the smallest munitions found at the site was a 20 mm which has a least dimension of 0.78" which is larger than the 5/8" harp screen. The material retained by the 5/8" Harp screen will pass onto a sorting conveyor with an active cross belt magnet and a magnetic head pulley. The cross belt magnet will remove all large ferrous items from the conveyor and drop them into a steel container. The out-feed material on the conveyor from the harp screen will be maintained at a maximum of five inches for efficient cross belt magnet operation. Any smaller ferrous material in the out-feed material not removed by the cross belt magnet will be retained by a magnetic head pulley. This unit has a strong electromagnet built into the final pulley on the conveyor. As the material leaves the out-feed conveyor, the ferrous material is attracted to the magnetic head pulley and dropped into a container below the head pulley. Both of the magnetic separators are self cleaning

magnets that will remove the ferrous material from the oversize (greater than 5/8") output. The remaining non-ferrous soil and remaining munitions debris that pass the magnetic separation system will be conveyed to a stockpile by a stack out conveyor. This material will be the secondary oversize material.

The entire mechanical sorting operation is automated and only requires the presence of one operator and one observer on the line. The operator will be located in a shielded loader and will feed soil into the initial screen. The processing line will be observed by one UXO Technician located in a Blast Shield Protective Device (see Appendix D). No other personnel will observe the processing equipment while running since hard sorting or inspections are not required. The UXO observer will have a remote kill switch to stop the out-feed conveyors if a MEC or smoking round is observed in the process. If a potential MEC item is observed in the process stream, the process equipment will be stopped with the kill switch and all personnel moved to a safe withdrawal distance. The MEC round will be removed and placed into a dedicated storage container. If the round is smoking it will be allowed to react unless it is deemed to be safe to remotely start up the conveyor and discharge the round into a bucket containing water to stop the reaction.

The screening process will generate four separate material streams that will be treated as follows:

- Material 6" and greater (gross oversize): This material will consist of large rocks, vegetation and metal scrap that do not pass through the "Grizzly" screen. This material will be sorted as needed by the UXO technicians for possible MEC. The remaining oversize rocks and vegetation will be separated from the munitions debris and used as onsite backfill. Once the MEC and munitions debris are removed, the remaining scrap metal will be stockpiled until it is disposed of at the scrap dealer upon completion of the project.

- Material >5/8" and <6": The secondary oversize stockpile will periodically be mechanically laid down in 6-inch to 12-inch lifts in a previously cleared area surrounded by silt fence. Once the material is laid out it will be swept for MEC by the UXO Technicians using a Fisher™ or similar all metal detector. All anomalies identified by the sweep team will be investigated by hand digging. Any MEC encountered that can be transported will be removed and placed into the onsite storage bunker for future disposal. Any item deemed unsafe to move will be BIP in the lay down area before the remainder of the area can be swept. All remaining MPPEH will be demilitarized and certified clean before being sent off-site for disposal at a smelter.

- Material <5/8": The material that passes through the harp screen will be used as site backfill. At this point, the material that has passed through the 5/8-inch screen will be considered free of MPPEH and available for backfill as determined by the analytical results of the soil sampling effort.

- Ferrous Removed by Magnet: This material will be laid down in a previously cleared area in a 6-inch lift where it will be visually inspected for MEC and munitions debris by UXO technicians. MEC material will be removed and placed into storage in the onsite storage bunker for further disposal. Munitions debris will be rendered unidentifiable as required and along with the scrap will be sent to an off-site smelter for disposal.

MPPEH will be destroyed, or certified as munitions debris, on a weekly basis.

6.3 Other Project-Specific Procedures

The Contractor will place simulated UXO objects, at known depth and orientation at a pre-determined frequency for QA purposes prior to the start of work. The contractor will be required to identify and recover all QA targets in each area prior to acceptance by the government. The Contractor's QC Manager, together with the SUXO, will inspect 10% of the target locations after removal efforts by the UXO teams. Failure to identify a QC target will require a root cause investigation and rework of the deficient portion of the work. Failure to identify a QA target will require the rework of all grids worked that day.

The contractor will provide explosives for destruction operations. It is anticipated that demolition materials, perforated charges and shaped charges, as appropriate, will be used. These are considered Class 1.1 and 1.4 explosives.

Explosives will be stored in the SEDA OB/OD area double igloo type, earthen-covered magazine. The storage igloo locations are shown on Figure 1. The existing magazine is constructed to DDESB and Army standards and is complete with the required lightning protection and current ground testing certification. The contractor will store detonating cord, perforators and time fuse in one half of one of the magazines. In the other half of the first magazine, the contractor will store initiators. A sandbag wall (minimum two feet wide and at least as high as materials stacked on either side) will separate the two halves of this magazine. In the second of the magazines, MEC (which was located and is awaiting the weekly demolition operation) will be stored. Each of the two magazines is designed for storage of a maximum NEW not to exceed 450 pounds. At no time will the contractor store more than 100 pounds NEW in either magazine. The MSD for the igloos is 500 feet.

Magazine A0705, which is approved for up to 250,000 lbs HC 1.1 explosives, will be used to store any recovered MEC that exceeds the 100 lb limit for the OB/OD service magazine.

For security, access into the fenced SEDA ammunition area is restricted. Additionally, SEDA has erected a new fence further restricting unauthorized access to Munitions Response Area. Access into a work site exclusion zone will be limited to contractor personnel specifically authorized to work on site, the Army Corps of Engineers Contracting officer representative's representative (CORR), the AFCEE Contracting Officer and Contracting Officer's Representative, and the installation manager. All other personnel will be restricted from entering the exclusion zone or be escorted by contractor or

Corps personnel.

Disposal/Venting/Demilitarization operations will be carried out weekly. Items which can be moved will be consolidated in accordance with "Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites", dated August 1998 and approved by DDESB on 27 October 1998. The consolidated shots will be carried out at the "Hill" on the OD Ground. The OD Hill is shown on Figure 1. The PAED for the OD Hill is 1,000 feet and the explosive limit will be 25 lbs. NEW. MEC will be stored in the second magazine while awaiting demo operations. Items that cannot be moved will be blown-in-place daily, on an individual basis.

All munitions debris will be certified as explosive free and demilitarized prior to removal from the Seneca Army Depot.

All applicable OSHA, USACE (EM385-1-1), DOD (6055.9-STD), Army (385-64) safety regulations will be followed at all times, without exception. Hazard analyses and daily safety briefings will be prepared and conducted as stated in the contractor's approved Site Safety and Health Plan (SSHP).

7.0 ALTERNATE TECHNIQUES

None Identified.

8.0 QUANTITY-DISTANCES

The appropriate Quantity-Distances are shown on the site maps.

MEC Areas: The PAED has been established at 980 feet for the 37mm projectile at SEAD 57 and a minimum of 345 feet at SEAD 46 and SEAD007-R-01 for the 40mm M383.

Explosive storage magazine separation distance: Minimum of 500 feet (Front) and 250 feet (Rear and Sides), IAW Table 9-1 of DoD 6055.9-STD. Note that these distances are for 100 lbs. HD 1.1 explosives; the contractor at any given time will store only 50 lbs of donor explosives therefore, they exceed the distance requirements for the 1.4 demolition materials to be stored in one of the magazines. MEC (Class 1.1) will be stored in the second magazine.

Another approved ammunition storage magazine, A0705 is available. The applicable PAED for this magazine is 3,150 ft.

Intentional Detonations: Minimum of 980 feet (via approved calculation).

During operations, appropriate protection will be used for site personnel and the public during situations where an intentional detonation is planned for MEC found on the removal operations. Most MEC will be moved to the OD "Hill" for detonation or Thermal Treatment/Certification as munitions debris.

9.0 OFF-SITE DISPOSAL

All munitions debris will be sent to a local specialty metals supplier, and smelted. Certificates of Destruction will be provided to the SEDA upon removal from the site.

10.0 TECHNICAL SUPPORT

No Chemical Warfare Materials (CWM) are suspected at this site. The contractor will positively identify all MPPEH uncovered before items are removed or destroyed. If a suspect CWM is encountered, the Site Safety Officer will stop all operations on site and notify the BEC. The BEC will notify the appropriate Explosive Ordnance Disposal (EOD) Detachment (725th Ordnance Company (EOD) Fort Drum) and/or Technical Escort Unit.

11.0 LAND USE RESTRICTIONS

The area will be restricted to public access (i.e. surface recreation), which will be controlled by deed covenants. Sites where clearance for unrestricted activity can be obtained, upon transfer from Army ownership, will include a deed notice advising property owners that the parcel was a former Military Munition Response Site and that all MEC has been removed and should an object be found, they are to contact the local law enforcement agency

12.0 PUBLIC INVOLVEMENT

This removal is being performed under the CERCLA umbrella since Seneca is a BRAC federal facility on the National Priorities List. Consequently, the required public involvement process is already in place (BCT, RAB, and general public involvement) with the SEDA BEC taking the lead.

13.0 AFTER ACTION REPORT

Following the completion of the MPPEH removal project for the four sites, a copy of the Final Report will be provided.

14.0 AMENDMENTS AND CORRECTIONS

An amendment or correction discussing any changes in the procedures to be used or the conditions encountered during this removal will be provided for review and approval as warranted.

15.0 REFERENCES

General

a. AR 385-64, Ammunition and Explosives Safety Program dated 2/1/2000

b. PAM 385-64, Ammunition and Explosive Safety Standards dated 12/15/1999

c. Department of Defense Explosives Safety Board, Interim Guidance on Land Clearance Planning and Removal Depth for Ammunition and Explosives. 1993.

d. Department of Defense Explosives Safety Board (DDESB), Guidance for Clearance Plans, 27 January 1998.

e. Interim Final, "Guidance for Conducting Remedial Investigations/Feasibility Studies Under CERCLA", U.S. EPA, Office of Solid Waste and Emergency Response, October 1988.

f. "U.S. Corps of Engineers Safety and Health Requirements Manual," U.S. Army Engineering Manual No. EM-385-1-1, 3 September 1996.

g. "Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations", U.S. Army Engineering and Support Center, Huntsville, Revised 16 February 1996.

h. "Interim Guidance Documents": http://www.hnd.usace.army.mil/oew/intguidocs.asp

i. "Regulations, Pamphlets, Manuals": http://www.hnd.usace.army.mil/oew/erepems.asp

j. TP 16 database access go to http://www.ddesb.pentagon.mil/ (password required)

k. Comprehensive Environmental Response Compensation and Liability Act (CERCLA), December 11, 1980

l. . Seneca Army Depot Reuse Plan and Implementation Strategy

m. Federal Facilities National Priorities list as amended July 13, 1989

n. 1995 Base Realignment and Closure List

Specific

a. "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York," Docket No. II-CERCLA-FFA-00202, USEPA, U.S. Department of the Army, and the New York State Department of Environmental Conservation, November 1990.

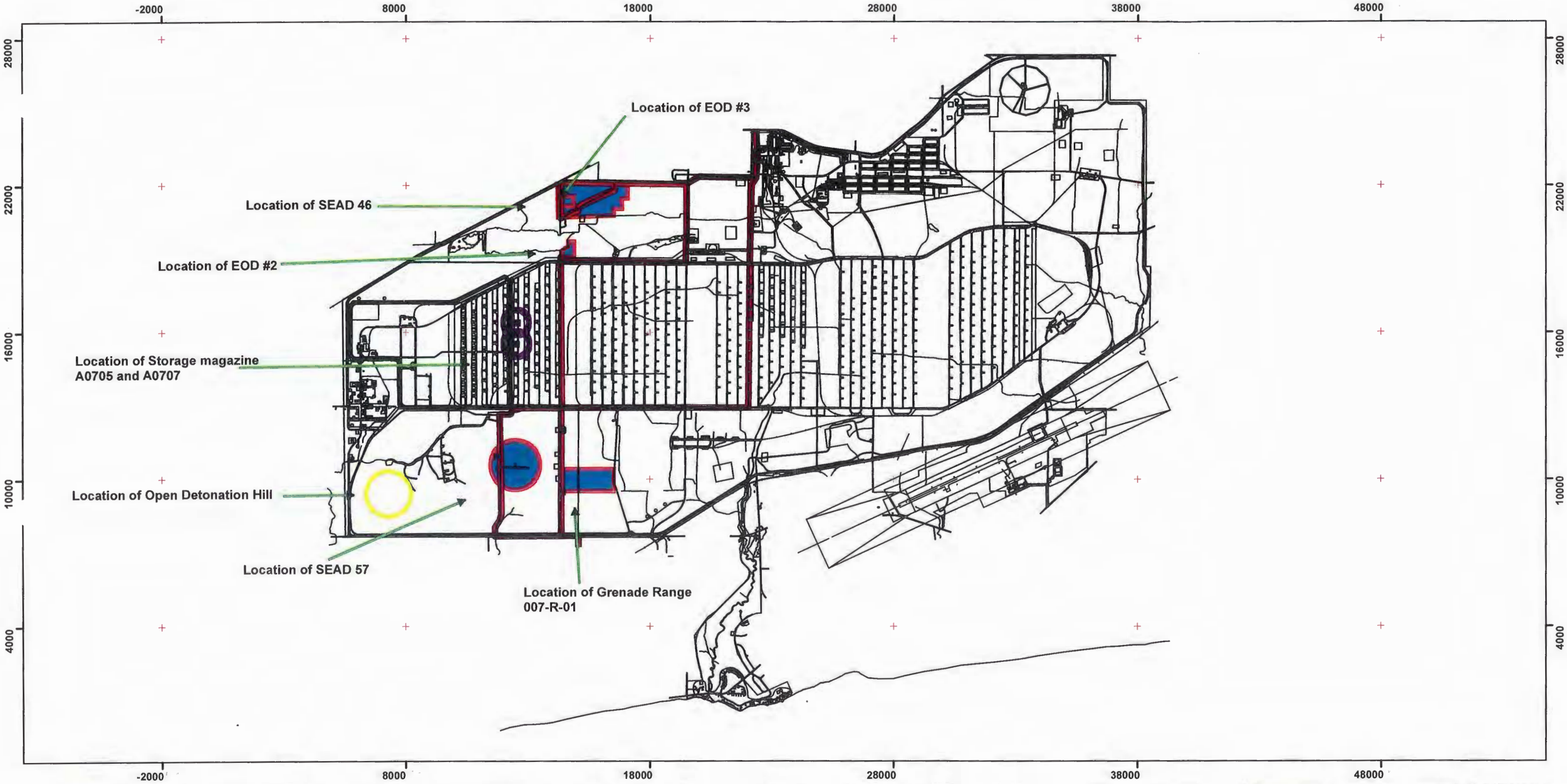
b. Final Ordnance and Explosives Engineering Evaluation/Cost Analysis (EE/CA), Seneca Army Depot, February 2004. Former EOD Area SEAD 45 and Former Grenade Range SEAD 007-R-01, Parsons Engineering.

c. Final Geophysical Investigation, Munitions Destruction Areas, SEAD 46 and 57, April 2005, Shaw Environmental.

d. DOD6055.9 STD "DOD Ammunition and Explosives Safety Standards" October 5, 2004, under Secretary of Defense for Acquisition, Technology & Logistics.

APPENDIX A

FIGURES



Munitions Response Area of Clearance

Storage Magaxine Location
NEW 100 lbs, Maximum Separation Distance 500 Feet

Open Detonation Hill PAED 1000 ft.

Routes of Travel for site access

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

748750

N
W E
S

0 1,875 3,750 7,500 11,250 15,000 Feet

PARSONS

DESIGNED BY: BJM	Seneca Army Depot LOCATION AND TRAFFIC PLAN
DRAWN BY: BJM	
CHECKED BY:	DATE PRINTED: May 22, 2006 / PROJECT NUMBER: 745054-01400
SUBMITTED BY: BJM	AIREAL PHOTOGRAPH: none / FIGURE NUMBER: Figure 1
	FILE: O:\Seneca\MR\Parsons\ESS / SCALE:

Former Open Burning Grounds

SEAD-57
Berm

MSD 200 ft.
from work area

Soil Precessing
Area

PAED 980 ft
from work area

PAED 980 ft
from work area

MSD 200 ft.
from work area

Proposed Area of Clearance

- Area of Excavation (14 acres)
- SEAD 57 Area 1000 feet from center of berm (limit of work area)
- SEAD 57 Public Access Exclusion Distance PAED (980 feet) from limit of work area
- SEAD 57 Minimum Seperation Distance MSD (200 feet) from limit of work area
- Woods Area

N
W E
S

300 150 0 300 600 Feet

PARSONS

DESIGNED BY: BJM	Proposed Area of Clearance SEAD-57	
DRAWN BY: BJM		
CHECKED BY:	Print Date: May 22, 2006	PROJECT NUMBER: 744538-03300
SUBMITTED BY: BJM	Aerial photograph: 1989 2-ft. Resolution	PAGE NUMBER: Figure 2
	FILE: O:Seneca/MR/Parsons/S57_ESS	SCALE: 1:1200

736750 737000 737250 737500 737750 738000

1009000 1008750 1008500 1008250 1008000 1007750 1007500 1007250

PAED Distance 345 feet from limit of work area

Grenade Range Limit of Work (25 Acres)

Minimum Seperation Distance 200ft
from limit of work area

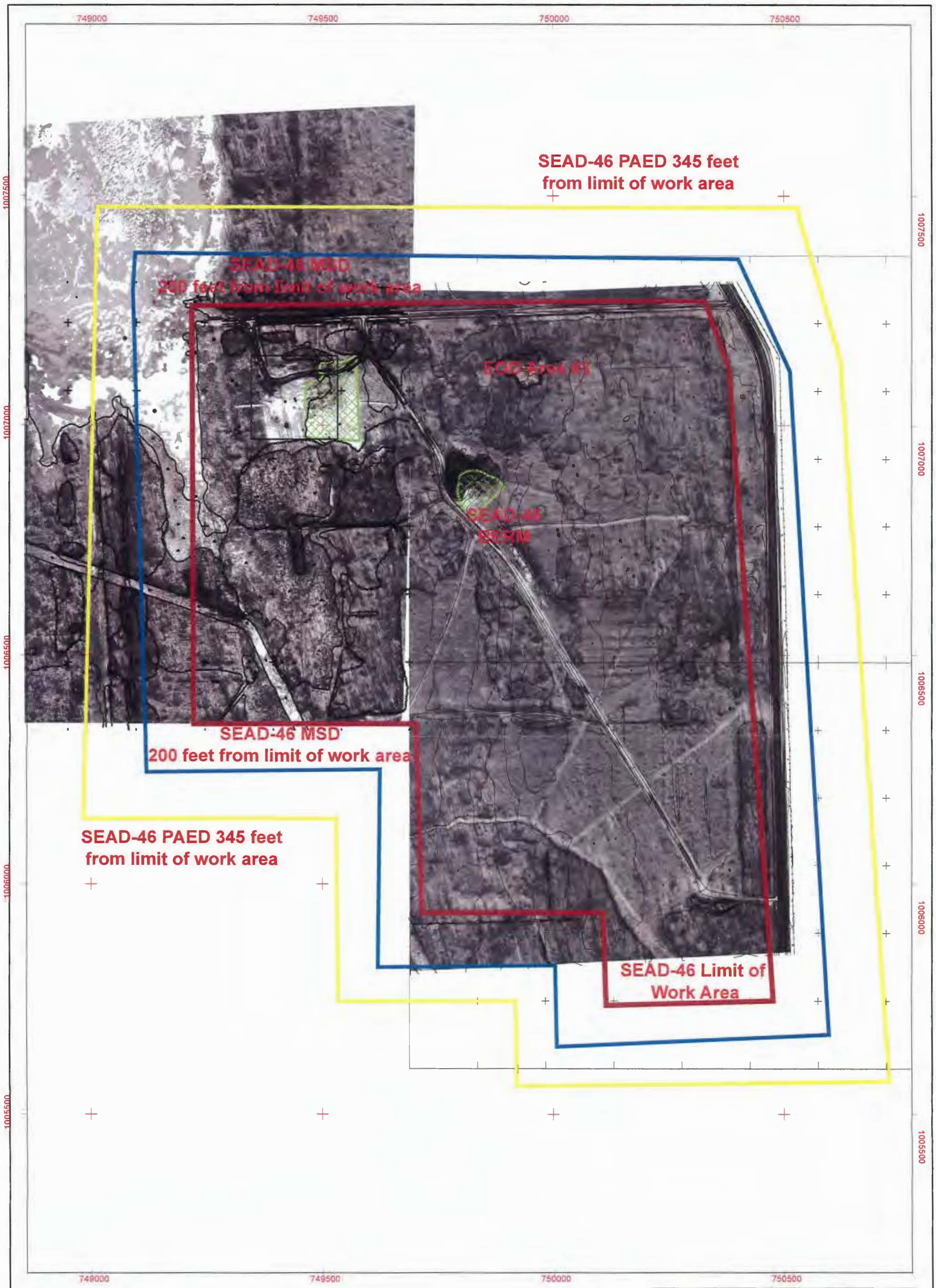
997750 748750 Grid Coordinates (New York State Plane, Central)

110 55 0 110 220 Feet

N W E S

PARSONS

DESIGNED BY: BJM	Public Access Exclusion Distance Grenade Range 007-R-01
DRAWN BY: BJM	
CHECKED BY:	DATE: May 22, 2006 / PROJECT NUMBER: 744538-01100
SUBMITTED BY: BJM	AREIAL PHOTOGRAPH: 1989 2ft. Resolution / FN: Figure 3
	FILE: GR_RNG.APR / SCALE: 1:2,400



SEAD46 Limit of Work Area

SRA Excavation Area

PAED 345 feet

SEAD46 Minimum Seperation Distence (MSD)

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

150 75 0 150 300 450 Feet

N W E S

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

PARSONS

DESIGNED BY: BJM	Public Access Exclusion Distance SEAD 46		
DRAWN BY: BJM			
CHECKED BY:	DATE: May 22, 2006	PROJECT NUMBER: 736703-01000	
	AERIAL PHOTOGRAPH: 1998 2 ft Resolution	FN: Figure 4	
SUBMITTED BY: BJM	FILE: SEAD_46.APR	SCALE: 1:4,063.277841	

747500 747750 748000 748250

1008000 1007750 1007500 1007250 1007000

East-West Baseline Road

EOD #2 PAED 345 ft. from limit of work

Duck Pond

OE EE/CA Area of Coverage

limit of work area

EOD #2 MSD 200 ft. from limit of work

Railroad Tracks

747500 747750 748000 748250

Area Requiring Resurvey - (5 Acres)

EOD2 Area Limit of Work

EOD2 PAED 345 feet from limit of work

EOD2 MSD 200 feet from limit of work

Area Mapped During EE/CA in EOD# 2 Area

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

N W E S

175 87.5 0 175 Feet

PARSONS

DESIGNED BY: BJM	MPPEH Removal/Survey Area EOD# 2 SEAD 002-R-01
DRAWN BY: BJM	
CHECKED BY:	DATE PRINTED: May 22, 2006 / PROJECT NUMBER: 736703-01000
SUBMITTED BY: BJM	AREIAL PHOTOGRAPH: 1989 2 ft Resolution / FN: Figure 5
	FILE: EOD2.APR / SCALE: 1:2,004

749250 749500 749750 750000 750250

1008000 1007750 1007500 1007250

EOD #3 PAED 345 ft.
from limit of work

East-West Baseline Road

Suspected Disposal Pit

EOD #3 Limit of Work

SEAD-46
(5.5
Rocket Range)

EOD #3 MSD 200 ft
from limit of work area

Unnamed Road

EOD 3 Area

OE Items Recovered During EE/CA

- M2-Fuze lighter
- Rifle grenade - illum. (Expended)
- Slap Flare -(Illumination)

Area Requiring Resurvey - (5 Acres)

Minimum Seperation Distance 200ft from Limit of Work Area

PAED 345ft
from limit of work area

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

N W E S

180 90 0 180 Feet

PARSONS

DESIGNED BY: BJM	MPPEH Removal Area / Survey Area EOD #3 SEAD 002-R-01	
DRAWN BY: BJM		
CHECKED BY:	DATE PRINTED: May 22, 2006	PROJECT NUMBER: 745054-03300
SUBMITTED BY: BJM	AERIAL PHOTOGRAPH: 1989 2 ft Resolution	FN: Figure 6
	FILE: EOD3.mdx	SCALE: 1:2,000

APPENDIX B

MEC AND OE RECOVERED AT SENECA ARMY DEPOT

Ordnance and Explosives Engineering Evaluation/Cost Analysis (OE EE/CA) by Parsons dated February 2004 and Geophysical Investigation by Shaw dated April 2005

Appendix B
Table 1-1
UXO Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 1-1
UXO Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation. 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRC2-49	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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRD4-10	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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRD4-71	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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRE2-130	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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRE2-72	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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

Appendix B
Table 2-1
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
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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

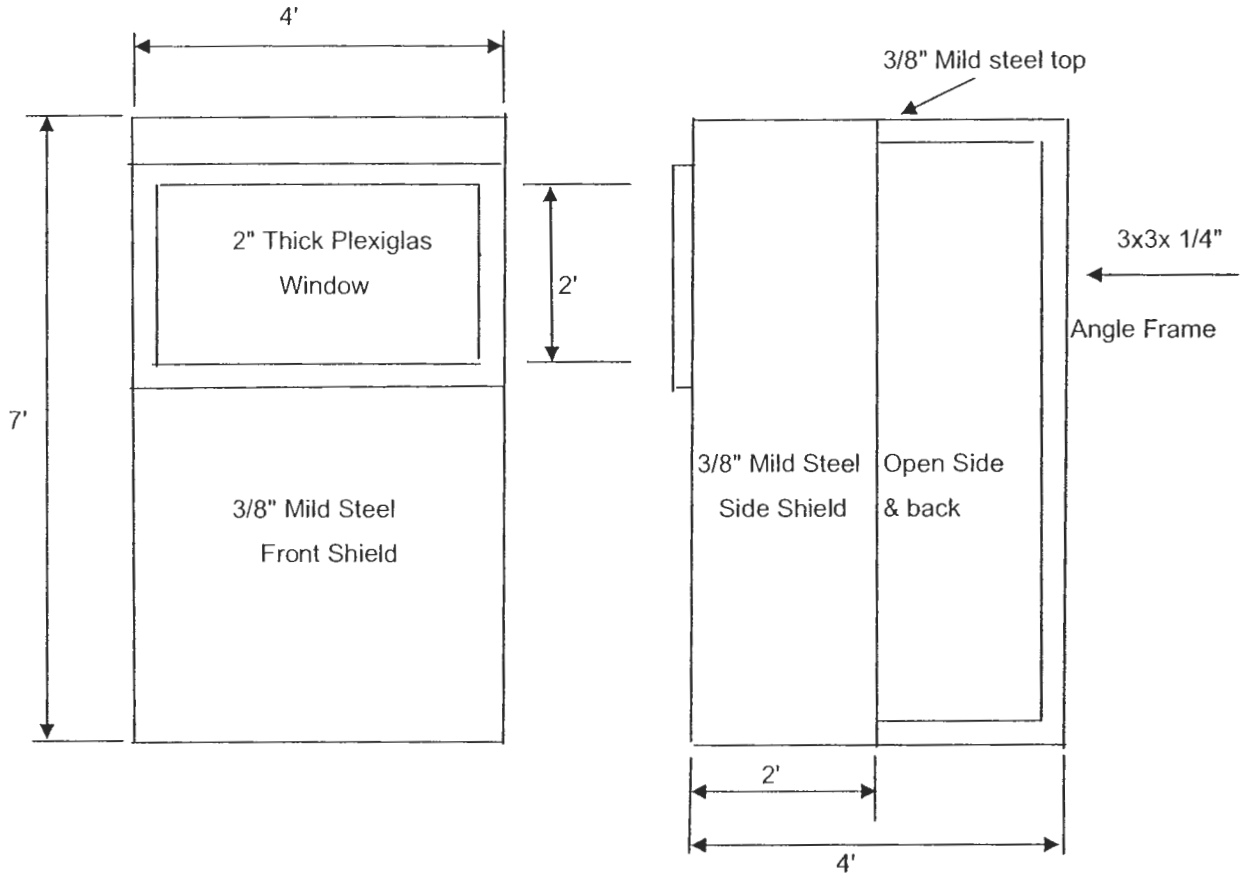
Appendix B
Table 2-1
OE Recovered
Seneca Army Depot Activity OE EE/CA

Anomaly ID	Easting (State Plane - ft)	Northing (State Plane - ft)	Approx Depth (inches)	COMMENT	CATEGORY
GRG5-30	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

Anom notation: 17D2-1 (SEAD-17, Grid D-2, Anom #1)
EA2 - EOD Area #2, EA3 - EOD Area #3, GR - Grenade Range

APPENDIX C

BLAST SHIELD DIAGRAM



MPM 37 mm MK II (.053lb)

Horizontal range of Max. Wt. Fragment 980ft

Intentional MSD K328 Distance 131 ft

Plexi-Glass min thickness 1.94 inches

Mild Sreel Thickness 0.37 inches

Minimum Separation Distance 200 ft

Notes:

1 All mild steel

2 All welded construction

3 Plexiglas bolted to frame

4 Back, bottom and 1/2 of side open.

PARSONS

Seneca Army Depot

Blast Shield for Processing @ Site 57

SK 2 3/23/2006

APPENDIX D

FRAGMENTATION DATA REVIEW FORMS

FRAGMENTATION DATA REVIEW FORM

Category:	HE Rounds	DODIC:	
Munition:	37 mm MK II (0.053lb)	Date Record Created:	7/30/2004
		Last Date Record Updated:	7/30/2004
Primary Database Category:	projectile	Individual Last Updated Record:	Crull
Secondary Database Category:	37 mm	Date Record Retired:	
Tertiary Database Category:	TNT		

Munition Information and Fragmentation Characteristics

Explosive Type:	TNT
Explosive Weight (lb):	0.05300
Diameter (in):	1.4567
Max Fragment Weight (lb):	0.024500
Critical Fragment Velocity (fps):	3302

Theoretical Calculated Fragment Range

Range to No More Than 1 Hazardous Fragment/600 Square FeetA (ft):	200
Vertical Range of Maximum Weight Fragment (ft):	754
Horizontal Range of Maximum Weight Fragment (ft):	980

Overpressure Distances

Inhabited Building Distance (12 psi), K40 Distance:	16
Inhabited Building Distance (09 psi), K50 Distance:	20
Intentional MSD (0065 psi), K328 Distance:	131

Minimum Thickness to Prevent Perforation

4000 psi Concrete (Prevent Spall):	2.00
Mild Steel:	0.37
Hard Steel:	0.30
Aluminum:	0.79
LEXAN:	3.25
Plexi-glass:	1.94
Bullet Resist Glass:	1.51

Required Sandbag Thickness

Max Fragment Weight (lb)SB:	0.024500
Critical Fragment Velocity (fps)SB:	3302
Kinetic Energy 106 (lb-ft2/s2)SB:	0.1336
Required Wall Roof Sandbag Thickness (in)SB:	12
Expected Maximum Sandbag Throw Distance (ft)SB:	25
Minimum Separation Distance (ft)SB:	200

Water Containment System and Minimum Separation Distance

Max Fragment Weight (lb)W:	0.024500
Critical Fragment Velocity (fps)W:	3302
Kinetic Energy 106 (lb-ft2/s2)W:	0.1336
Water Containment System:	5 gal carboys/ inflatable pool
Minimum Separation Distance (ft)W:	200/200

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FRAGMENTATION DATA REVIEW FORM

Category:	Grenades & Mines	DODIC:	B571
Munition:	40 mm M383 (grenade)	Date Record Created:	7/30/2004
		Last Date Record Updated:	7/30/2004
Primary Database Category:	projectile	Individual Last Updated Record:	Crull
Secondary Database Category:	40 mm	Date Record Retired:	
Tertiary Database Category:	RDX		

Munition Information and Fragmentation Characteristics

Explosive Type:	RDX
Explosive Weight (lb):	0.12000
Diameter (in):	1.5580
Max Fragment Weight (lb):	0.000438
Critical Fragment Velocity (fps):	7707

Theoretical Calculated Fragment Range

Range to No More Than 1 Hazardous Fragment/600 Square FeetA (ft):	NA
Vertical Range of Maximum Weight Fragment (ft):	280
Horizontal Range of Maximum Weight Fragment (ft):	344

Overpressure Distances

Inhabited Building Distance (12 psi), K40 Distance:	22
Inhabited Building Distance (09 psi), K50 Distance:	27
Intentional MSD (0065 psi), K328 Distance:	177

Minimum Thickness to Prevent Perforation

4000 psi Concrete (Prevent Spall):	1.30
Mild Steel:	0.32
Hard Steel:	0.26
Aluminum:	0.72
LEXAN:	2.87
Plexi-glass:	1.55
Bullet Resist Glass:	1.11

Required Sandbag Thickness

Max Fragment Weight (lb)SB:	0.003314
Critical Fragment Velocity (fps)SB:	7707
Kinetic Energy 106 (lb-ft2/s2)SB:	0.0984
Required Wall, Roof Sandbag Thickness (in)SB:	12
Expected Maximum Sandbag Throw Distance (ft)SB:	25
Minimum Separation Distance (ft)SB:	200

Water Containment System and Minimum Separation Distance:

Max Fragment Weight (lb)W:	0.003314
Critical Fragment Velocity (fps)W:	7707
Kinetic Energy 106 (lb-ft2/s2)W:	0.0984
Water Containment System:	5 gal carboys/ inflatable pool
Minimum Separation Distance (ft)W:	200/200

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