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SITE SAFETY AND HEALTH PLAN (SSHP)
TO SUPPORT
ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
SENECA ARMY DEPOT

Prepared for

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

Contract No. DACA 87-95-D0018
Task Order No. 0052

Prepared by

PARSONS ENGINEERING SCIENCE, INC.

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FINAL

APPENDIX B
PARSONS SITE SAFETY & HEALTH PLAN

ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
SENECA ARMY DEPOT

SITE SAFETY AND HEALTH PLAN (SSHP)
TO SUPPORT
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SENECA ARMY DEPOT

Reviewed and Approved By:

Michael Duchesneau, P.E.
Project Manager: Michael Duchesneau 3/15/00
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TABLE OF CONTENTS

Page

TABLE OF CONTENTS

ATTACHMENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX B1
INTRODUCTION

B1.1 PURPOSE

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

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

B1.1.3 This SSHP provides general guidance for making decisions during field activities. Sections cover field personnel responsibilities and work procedures, physical and chemical risks, emergency procedures, and levels of personal protection. Site-specific information such as a project description and site history, a contingency plan, a list of emergency contacts, and necessary health and safety equipment are also discussed. Attachments B-1 and B-2 contain an Accident Report Form and a Plan Acceptance Form, respectively. Attachment B-3 contains an Occupational Safety and Health Administration (OSHA) Job Health and Safety Protection Poster. Attachment 4 entitled "Safety Concepts and Considerations For Unexploded Ordinance (UXO) Operations" serves as the safety Standard of Procedure regarding UXO identification, handling, transportation and disposal. Attachment B-5 is the Air Monitoring Calibration Log, and Attachment B-6 is the Field Monitoring Log Form. Attachment B-7 addresses Contractor Requirements at Seneca Army Depot.

B1.2 APPLICABILITY

B1.2.1 The plan provisions are mandatory for all on-site activities undertaken at SEAD by Parsons Engineering Science, Inc. (Parsons) and USA Environmental (USA) UXO Subcontractor personnel. All site activities comply with the provisions of the Corporate Health and Safety (H&S) Policies and Procedures Manual and applicable standards in 29 CFR Parts 1910 and 1926. As site activities change, this plan may need to be modified. Such modifications are submitted as SSHP addenda and are numbered sequentially. All SSHP addenda are reviewed and approved by the Project H&S Manager.

B1.2.2 All Parsons and USA project personnel must read this plan and submit a signed Plan Acceptance Form prior to the start of the work at this site. The Plan Acceptance Form is shown as Attachment B-2.

B1.2.4 Hazard Communication. All project work will be conducted in accordance with Parsons's standard policies for hazard communication. Material safety data sheets for any hazardous chemicals on site will be located at Parsons's field trailer. Site orientation and training will be provided to all new employees brought on site and this will include an overview of all known hazards associated with the site.

B1.3 SITE DESCRIPTION AND HISTORY

B1.3.1 Site Description

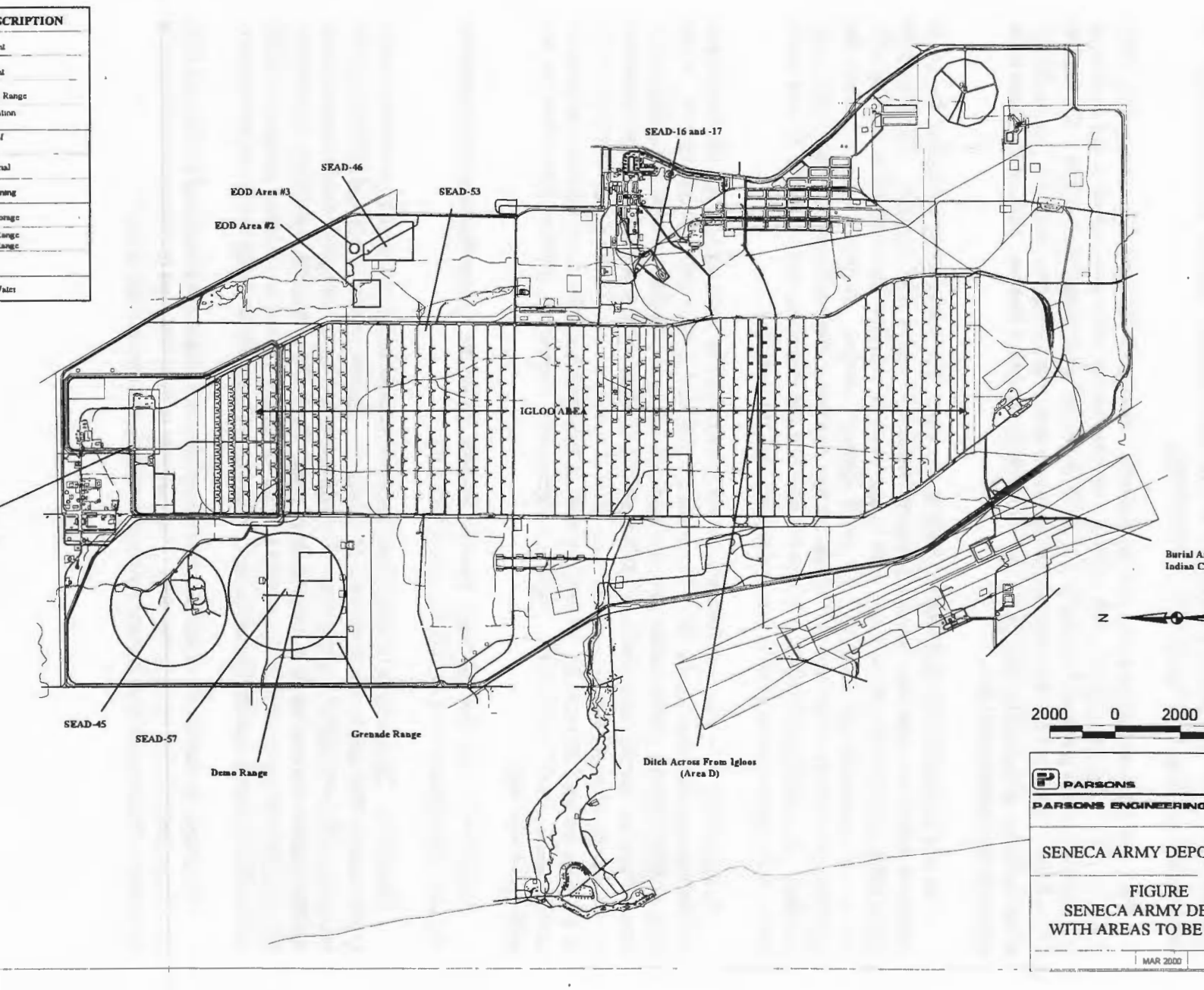
The Seneca Army Depot, a 10,587 acre facility in Seneca County, Romulus, New York, has been owned by the United States Government and operated by the Department of the Army since 1941 (Figure 1). Since its inception in 1941, SEAD's primary mission has been the receipt, storage, maintenance, and supply of military items. This function includes disposal of military ammunition and explosives by burning and detonation.

Refer to Figure B5.1 for locations of Emergency Exits from the Depot.

During active military use, the land use was divided into three categories at the depot. The Main Post accounted for 9,832 acres and consists of an exclusion area containing partially buried, reinforced concrete igloos, general storage magazines, and warehouses. The cantonment areas of the facility consist of the North and South Posts. The North Post, at the north end of the Main Post, included troop housing, troop support, and community services. The South Post is located in the southeast portion of the facility near Route 96 and was a developed area containing warehouses, administration buildings, quarters, and community service.

SEAD-16: The Abandoned Deactivation Furnace, Building S-311, is located in the east-central portion of SEAD. Directly to the northwest of Building S-311 and separated by two sets of SEAD railroad tracks which pass through the site, is a smaller abandoned building. The site is permanently closed. The entire site is enclosed by a chain-link fence with a second gate. Access to the area is restricted. The site is composed of grasslands to the north, east, and west and by a general storage area for empty boxes and wooden debris and an unpaved roadway to the south.

The Abandoned Deactivation Furnace is an elongated building and contains stacks on the eastern end and western end and is surrounded by loading docks on the southwestern and


SCRIPTION
Range
SEAD-16 and -17
SEAD-46
EOD Area #3
SEAD-53
EOD Area #2
IGLOO AREA
Burial A
Indian C
N
2000 0 2000
SEAD-45
SEAD-57
Demo Range
Grenade Range
Ditch Across From Igloos
(Area D)
PARSONS
PARSONS ENGINEERING
SENECA ARMY DEPO
FIGURE
SENECA ARMY DE
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northwestern sides. The building condition is poor with localized flooding in the basement. A sloping concrete ramp leads to the base of the building.

Two underground storage tanks (USTs) formerly existed at Building S-311. One of the USTs (Tank 311-A) had a capacity of 1,000 gallons, was installed in 1953, was located to the northwest of the building, and provided Number 2 fuel oil to the boiler used to heat the building. The second UST (Tank 311-B) had a 2,000 gallon capacity, was installed in 1953, was located to the southwest of the building, and provided Number 2 fuel oil to the deactivation furnace. Both of the tanks were removed in September of 1992.

The site is generally flat and slopes gently to the west. The northeastern portion of the site is vegetated with low grass and the southwestern portion is paved with asphalt. There is little topographic relief on the site with no water bodies evident. Surface water run-off is directed off-site to the southeast and southwest by small drainage swales. A water main traverses the southwestern portion of the site with a service line leading to the northwestern side of the large building. An abandoned sewer line enters the site from the northeast, approximately 50 feet south of the access gate, and connects to the central portion of Building S-311.

Surface water flow from precipitation events is controlled by local topography, although there is little topographic relief on the site. There are no sustained surface water bodies on-site. In the grass-covered eastern portion of the site, surface water likely accumulates in local topographic low areas. Near the survey monuments SEAD16 and SEAD16A, surface water is directed off-site to the southeast and northwest, respectively, via small drainage swales. In the paved western portion of the site, the asphalt provides an impenetrable surface which results in an increased amount of surface water runoff on the site. Based on topographic expression, surface water flow on the asphalt is to the west.

SEAD-16 is classified as High Priority SWMU under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

SEAD-17: The Existing Deactivation Furnace is located in the east-central portion of SEAD approximately 800 feet to the southwest of SEAD-16. Access to this site is restricted due to its location in the ammunition storage area. It is characterized by an elongated deactivation furnace building that is surrounded by a crushed shale road. Beyond the crushed shale road is grassland. Two small sheds are located in the eastern portion of the site. There is vehicular access to the site within SEAD from a road to the north. Both vehicular and pedestrian access to the site is restricted.

The actual deactivation furnace is a steel rotary kiln incinerator and is enclosed by an eight foot high uncovered reinforced concrete wall. The concrete wall is designed to contain the effects of a detonation. The deactivation furnace building contains an emission stack and air

pollution control devices including an afterburner, 2 gas coolers, a cyclone and a baghouse on the southwestern side. The building appears to be in good condition and structurally sound.

Number 2 fuel oil was used to fire the burners in both the kiln and the afterburner, and propane is used as a pilot fuel for the afterburner burner. The liquid propane storage tank and the Number 2 fuel oil tank are located approximately 100 feet to the southeast of the deactivation furnace building. The propane and fuel oil piping from the storage and pumping area to the incinerator area is installed in a concrete ditch for leak containment. The propane storage tank is a 1000 gallon horizontal drum mounted on a concrete pad. The appropriate valves, fittings, regulators and piping are installed for propane pressure reduction and transportation to the afterburner burner pilot train.

The fuel oil storage tank is a 4000 gallon drum mounted on a 24 by 14-foot concrete pad. The fuel oil storage tank pad has a 30-inch-high wall on all sides for secondary containment. A pump, with the required valves and piping, is used to transport the fuel oil to the incinerator area.

The site is generally flat and slopes gently to the southwest. A small drainage ditch is located approximately 100 feet east of the furnace and transports surface water to the west past the southern end of the building. This ditch intersects with a well-defined ditch which flows south and ultimately flows into Kendaia Creek. In the extreme northern portion of the site, a small swale drains to the north.

Surface water flow from precipitation events is controlled by local topography. There are no sustained surface water bodies on-site. Most of the surface water flows off of the crushed shale roadway surrounding the deactivation furnace onto lower ground which surrounds it. A drainage swale traverses the eastern and southern portions of the site and transports surface water to the west. This swale intersects with a well-defined south-draining swale that is defined by a elongate stand of low brush and trees. In the extreme northern portion of the site, a small swale drains to the north and west. The regional surface water flow is believed to be controlled by the overall westward sloping ground surface.

SEAD-17 is classified as High Priority SWMU under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

SEAD-45: The Open Detonation (OD) Grounds are approximately 60 acres in area, located north west of the center of the Seneca Army Base. Aerial photographs from 1954 show there may have been burn pads which were covered by 1978. A variety of ordnance was destroyed by detonation at this area, including explosives, rockets, and heavy artillery. A large number of items have been dug up including a number of complete unfired large artillery shells. Live ordnance is likely to be found up to the blast radius of 1800' feet from the center of the area.

The OD Grounds is characterized by an unvegetated, elongate detonation mound that is surrounded by an unvegetated area to the east and lightly vegetated grassland to the west, north and south. The mound is approximately 500 feet long and 14 feet high and contains many smaller excavated areas on its east side. These excavated areas are used to bury the explosives that are destroyed during detonation events. A small soil-covered bunker, from which the

detonation events are controlled, is present in the eastern portion of the site near Reeder Creek. Topography on-site slopes to the east.

Approximately 700 feet east of the detonation mound is Reeder Creek, which defines the eastern boundary of the site. At the southern boundary of the site is a crushed shale road which separate the OD Grounds from the OB Grounds. Grassland and low brush are located to the west and north of the site.

Vehicular access to the site is provided via a paved roadway that leads from North South Baseline Road, however, access to the OD Grounds is restricted by a locking gate. In the southeastern portion of the site the paved roadway divides into several dirt roads which provide direct access to the detonation mound. The OD Grounds are not fenced, but access to the site is restricted since it is located within the Ammunition Storage Area.

From the detonation mound, surface water flow is in all directions. In general, the drainage ditches at the site flow from the west to the east, and the culverts and the roads channel the surface water into Reeder Creek.

In 1988 the OD Grounds was designated a Solid Waste Management Unit (SWMU), SEAD-45, and was added to SEAD's application for a Part B, RCRA permit. Under the RCRA Hazardous and Solid Waste Amendments of 1984 (HSWA), Part B Permits issued after November 8, 1984, require identification and corrective action at any SWMU located on the installation that is releasing hazardous constituents or hazardous wastes to the environment.

SEAD-45 is classified as a High Priority Area of Concern (AOC) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

SEAD-46: SEAD-46 is the Small Arms Range and it is located in the northeastern portion of SEAD. It is characterized by an open area covered with low brush approximately 2 acres in size. It was clear cut at one time, probably at the start of its use, as shown by the larger trees surrounding the area. A vegetated berm approximately 150 feet long and 20 feet high is located in the northwestern portion of the site. Access to the site is provided by a dirt road which forms the southwestern boundary of the site. A vehicle pull-off area is located immediately to the south of the berm and is unvegetated. Currently, the site is not active, but it is occasionally used for training troops. Blank ammunition is used during training practices.

SEAD personnel claim that they have seen rockets on the ground, although none were noticed during an examination of the site in 1990. The site appears from 1954 aerial photos to have been a long open area along which 3.5" rockets were fired. Subsequently, a number of small trees have grown up in the area. The area has a number of small rolling hills.

The open area to the southeast of the berm suggests that the tracers and rockets were fired from the southern end of the site towards the north, either at the berm or at targets in front of the berm.

Access to the area is not restricted. The area is composed of wooded areas to the north, south and east, and brush and wetlands to the west. SEAD-13 East is located approximately 700 feet northwest of SEAD-46. A large body of surface water (referred to as the Duck Pond) is also located approximately 700 feet to the northwest.

No standing water bodies exist at SEAD-46. Other than the berm, there is little topographic relief on the site. The site is generally flat and slopes gently to the west. Surface water run-off is directed to the west toward the feeder creek for the Duck Pond by a small drainage depression located on the western side of the dirt road. Water draining into the Duck Pond ultimately leaves SEAD by way of Kendig Creek approximately one mile to the north of SEAD-46. The direction of groundwater flow at SEAD-13 East was determined to be to the north-northwest (draft ESI Report, ES, August 1994), and it is assumed to be the same at SEAD-46.

Through 1960, SEAD-46 was used for testing fire tracers, 3.5-inch rockets and possibly other ammunition. An unknown number of rockets were fired into the large earthen barricade at one end of the range.

In January 1980, this facility was identified by the U.S. Army Toxic and Hazardous Materials Agency as a location of known or suspected waste materials. In 1987, the facility was deleted from the SWMU submission list by the U.S. Army Environmental Hygiene Agency. The reason for deleting the unit was due to the fact that wastes were not handled at the unit. The facility was again added to the SWMU list in August, 1988 by the New York Department of Environmental Conservation (NYSDEC). The Small Arms Range was included in the final list of SWMUs at SEAD in the Federal Facilities Agreement under CERCLA Section 120 (Docket Number: II-CERCLA-FFA-00202) signed by the EPA, Army and NYSDEC.

In accordance with the decision process outlined in the Interagency Agreement (IAG) between the U.S. Army Corps of Engineers (USACE) the U.S. Environmental Protection Agency (EPA) Region II, and NYSDEC, SEAD-46 is classified as a Low Priority Area of Concern (AOC) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

SEAD-57: SEAD-57 is the Explosive Ordnance Disposal (EOD) Area. This area consists of approximately 58 acres north west of the center of the base. The entire area is visible in 1991 aerial photos. A berm 30' in diameter and 6' high is located near the northeast corner of the area, which does not appear in aerial photos until after 1978. An earlier visit in 1998 found the remains of many flares in and around this berm, and shotholes on the opposite side of the access road from the berm. Other shotholes were located at the south side of the access road, visible on aerial photographs taken in 1954. The overall area is grassy and open with a few small trees at the south end of the site.

The disposal area was used by Army EOD personnel for the disposal of conventional ammunition or explosives weighing less than 5 pounds. The site was active from 1941 to 1993. Because of the nature of EOD work, open detonations at the site were performed irregularly.

According to a current SEAD employee, however, a training mission was performed approximately every month.

The open detonation at the site was performed inside the rectangular bermed enclosure. Before the berm was built, the open detonation at the site may have been performed in four pits approximately 15 feet by 30 feet in size located immediately to the west of the unpaved road.

The berm is surrounded on all sides by open grassland for several hundred feet. A shallow depression approximately 150 feet by 75 feet in size is located approximately 150 west of the berm. A paved east-west road is located 600 feet to the north of the berm, and Building T2105, a dilapidated wood frame structure, is located 700 feet to the north of the berm. A munitions storage igloo used for munitions scheduled to be disposed of at the explosive ordnance disposal area is located approximately 700 feet to the northwest of the berm.

Topography near the berm and to the west of the berm slopes to the southwest. A local topographic high is located one hundred feet to the east of the berm and to the east of that, the ground surface slopes to the east-southeast.

Surface water flow from precipitation events is controlled by local topography on the site. Surface water on the site would likely be collected in one of three north-south trending swales which originate near the paved road in the northern portion of the site and drain to the south. One swale is located east of the berm and the other two are between the berm and the unpaved access road. Immediately north of the road is a local topographic high where the ground elevation is greater than 634 feet. Topography on-site slopes to the south and southwest, however, in the eastern portion of the site it slopes gently to the east, indicating that there may be a local surface water flow divide in this area. The eastern-most drainage swale which drains predominantly to the south on-site eventually bends to the east.

SEAD-57 is classified as a Moderately High Priority Area of Concern (AOC) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Grenade Range: The former grenade range consists of about 30 acres at which rifle-fired grenades were used. The grenade range is visible from the air as an open area near the middle part of the western edge of the base. According to the base personnel, only 40 mm practice grenades were used at this site. A site visit in 1998 showed a number of these projectiles scattered on the ground at the site. The site also has mannequins, wood structures, and armored vehicles set up as targets, and foxholes at the firing lines. The area has some small trees and hills scattered across the site.

EOD Area #2: EOD area #2 consists of a five acre water-covered marsh about a quarter mile west of EOD area #3. The area appears on aerial photographs as the south end of a mile or so long duck pond. According to base personnel, explosive devices were used in this area, and non-explosive projectiles were dumped in the water area. The area is currently underwater.

EOD Area #3: This area is located north of SEAD-46. It consists of about a 300' x 300' partially wooded area. Although the site is visible as an open area in a 1954 photograph, it has since been mostly overgrown. The tree cover is surprisingly low in much of it indicating possible subsurface contamination. Supposedly, this area was used as an EOD disposal area although a site investigation in 1991 showed no surface ordnance.

Burial Area Near Indian Creek: This area consists of 2 acres at the junction of two roads in the southwest central portion of the base, visible as a small open area from aerial photographs. Supposedly, ammunition and non-ordnance items were buried here; a surface examination of the area showed no visible ordnance. The area is flat and has little vegetation.

Demolition Area Near SEAD-57: The Demo range is a 40 acre wooded lot adjacent to SEAD 57. This area was used in the 1940's and 1950's for projectile demolition. A 1963 aerial photograph shows it as being an open area which has subsequently grown up to be fairly heavily wooded, as shown in a 1991 aerial photo. A 75 mm projectile was found on an inspection of this range.

B1.3.2 Site History

When the Army arrived in Seneca, New York in 1941, the nearly 10,000 acres in Central New York State were abundant farmland. In June 1941, the War Department approved the munitions project, and in July 1941, construction for the Seneca Ordnance Depot (Depot) began. Construction workers completed nearly 500 storage igloos and six aboveground magazines by the end of the year (Johnson 1984). With the construction of the administrative area, ammunition facilities, warehouses, utility structures and a few housing quarters completed in 1943, the Depot began its primary mission of receipt, storage, maintenance and supply of ammunition. As a filler Depot, it also issued and reconditioned ammunition for the First and Second Service Commands and for the Boston Port of Embarkation. This included all classes of ammunition and explosives except chemical ammunition other than smoke. In 1946, the Army assigned the Depot to the First Army, which included the Mid-Atlantic States of New York, New Jersey and Delaware (Seneca Ordnance Depot 1946).

SEAD-16: The original Popping Plant, Building S311, was built during 1942 and 1943. The Abandoned Deactivation Furnace is located in this building and was active between 1945 through the mid 1060s. Small arms and munitions were destroyed by incineration.

SEAD-17: An additional Popping Plant, Building 367, was built near the original one in 1961. The existing Deactivation Furnace was active in Building 367 from 1962 through 1989. The furnace at the Popping Plant processed fired brass or steel cartridge cases at a temperature of 1,400°F. Cartridge cases having a live primer were popped and rendered inert (History 1943).

SEAD-45: Since 1941, the OD Grounds have been used to demolish waste munitions. The main feature of the OD facility is a detonation mound which covers approximately 1.0 acre. The mound is composed of soil from the surrounding area which was moved via bulldozer to create the mound. Aerial photos from 1968 show that the mound was previously located at least 200 feet west of its present location. Waste munitions are placed in a bulldozed hole in the hill with additional demolition material, covered with a minimum of 8 feet of soil, and detonated remotely using blasting caps and primer cord. A Resource Conservation and Recovery Act (RCRA) Subpart X permit application is pending New York State Department of Environmental Conservation (NYSDEC) approval, and the operation of the OD facility is currently under interim status.

SEAD-46: Through 1960 the site was used for testing fire tracers, 3.5-inch rockets and possibly other ammunition. An unknown number of rockets were fired into a large earthen barricade at one end of the range.

SEAD-57: The disposal area was used by Army EOD personnel for the disposal of conventional ammunition or explosives weighing less than 5 pounds. The site was active from 1941 to 1993. Because of the nature of EOD work, open detonations at the site were performed irregularly. According to a current SEAD employee, however, a training mission was performed approximately every month.

B1.4 SCOPE OF WORK

B1.4.1 Parsons Engineering Science, Inc. (Parsons) received Contract No. DACA87-95-D-0018, Delivery Order No. 52, from the Corps of Engineers, Huntsville Center (CEHNC), to conduct an Engineering Evaluation/Cost Analysis (EE/CA) at the former Seneca Army Depot, Seneca, New York. The EE/CA will implement ordnance and explosives (OE) risk management actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and in substantial compliance with the National Contingency Plan (NCP). In accordance with the NCP on-site actions will not require Federal, State, or local permits. The EE/CA will adhere to the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS) and relevant U.S. Army regulations and guidance for OE programs.

The purpose of the EE/CA is to characterize OE risk, analyze risk management alternatives, and recommend feasible OE risk reduction alternatives for Areas of Interest (AOIs) identified within the approximately 10,587 acres comprising the former Seneca Army Depot. The objective of the EE/CA is to allow and document meaningful stakeholder participation; to characterize OE nature, location, and concentration; to provide a description of the OE related problems affecting human use of the site; to identify and analyze reasonable risk management alternatives; and to provide a convenient record of the process for use in the final decision making and judicial review, if necessary.

The project scope involves the geophysical and intrusive assessment of ten sites. Task for this project include surface OE clearance and then vegetation clearing of sampling grids, geophysical surveys, excavation and identification of subsurface targets identified by geophysical surveys, and disposal of UXO and UXO related scrap.

Brush clearance will be accomplished using a combination of mechanical (brush hog or hydroaxe) and hand clearance using weedeaters and chainsaws. Vegetation clearance will include pathways (ingress and egress routes) to the selected sampling areas. Vegetation will be cut to no closer than six (6) inches above ground level. Trees larger than three (3) inches in diameter will not be cut.

Prior to beginning the brush clearing work at each grid, the areas within each grid shall be surface cleared of OE items by UXO technicians. The UXO technicians will conduct visual surveys for surface ordnance prior to brush clearing crew entering a suspected area. A magnetometer may be used to aid in searching the vegetation for surface OE/UXO prior to cutting or removing brush. Any OE/UXO encountered by the brush team will be marked with a red pin flag, reported to the UXOSO, and left in place for later disposal.

The number of grids for each site and the grid size was chosen to provide sufficient coverage to show the likely existence of UXO's or to prove that no UXO's are likely to exist at each sites. Grids of 100' x 100' size will be laid out on each site for all areas that can be cleared effectively. For areas that cannot be cleared effectively smaller grids or a meandering path survey will be

performed. Meandering path data will be collected at SEAD-57 & 45, at EOD#2, and in the ditches in the Igloo Area.

After the grids are laid out, geophysical surveys will conducted to determine the presence of surface and subsurface ordnance. EM-61, magnetometer, or a hand held metal detector will be used for the surveys.

Intrusive investigations of identified anomalies will be conducted following the geophysical surveys. Intrusive excavations will be limited to a radius of 1.5 feet and a not-to-exceed depth of 4 feet (or to the water table whichever comes first). Excavations will be performed with hand tools. No digging of other potential sources of this zone of interest will be performed.

The disposal of OE will be performed by detonation in place, or by consolidated shots.

B1.5 PROJECT TEAM AND ORGANIZATION

B1.5.1 FIELD PERSONNEL AND RESPONSIBLITIES

The names of principal personnel are delineated below.

Contractor: **Parsons Engineering Science**

Project Manager (PM): Michael Duchesneau,P.E.-Canton, MA

Field Task Manager: John Baptiste – Canton, MA

Project Safety Officer (PSO): Brian Powell,CSP,CIH - Syracuse, NY

UXO Safety Officer (UXOSO): Howard Stepp – Pasedena, CA

UXO Quality Control Specialist (UXOQCS): Howard Stepp – Pasedena, CA

UXO Subcontractor: **USA Environmental, Inc.**

Senior UXO Supervisor (SUXOS): Sam Newberry

The Safety and Health (S&H) requirements and personnel listed in this plan may change as work progresses at the site, however, no changes will be made without approval of Parsons, USA, and the ACOE. The safety organization structure and responsibilities for field personnel operating at SEDA are described in the following paragraphs.

PARSONS PROJECT SAFETY OFFICER (PSO): BRIAN POWELL

The PSO is responsible for the development, implementation, and oversight of the SSHP. Reports to the Project Manager.

Responsibilities

- Approve, sign and date the SSHP;
- Consult with the UXOSO and Task Manager to implement and enforce the SSHP;
- Maintain documentation of accidents and safety violations forwarded by the UXOSO;
- Notifies the Project Manager of all accidents, safety violations, or other important safety related issues;
- Conduct safety audits;
- Consult with the UXOSO to ensure proper monitoring and PPE.
- Make amendments to the SSHP as required.

PARSONS SITE MANAGER (SM) : JOHN BAPTISTE

The Site Manager is responsible for field team operations and safety.

Responsibilities

- Manages field operations and reports to the PM/PSO ;
- Oversee subcontractors field operations and insures SSHP complience;
- Enforces site control;
- Documents field activities.

PARSONS UXO SAFETY OFFICER (UXOSO): HOWARD STEPP

The UXOSO has primary responsibility for job safety. He reports Site Manager, and has direct access to the Parsons Project Safety Officer for safety and health issues. The UXOSO will monitor all safety related activities at all sites to be examined for surface and subsurface UXO's by all on-site personnel. The UXOSO meets the USACE requirements as a graduate of the U.S. Naval School of Explosive Ordnance Disposal; 40-hour and 8-hour Hazardous Waste Site Worker; Supervisor courses in accordance with 29 CFR 1910.120; and has at least 15 years of EOD experience, 10 of which have been in supervisory EOD positions. Three years of documented OE contractor experience may be substituted for 3 years of active duty EOD experience. The UXOSO will have the following safety and health related responsibilities:

Responsibilities

- Has STOP WORK authority for safety and health reasons;
- Complete Personnel Data Sheets on all site personnel;
- Implement and enforce the SSHP, and report safety violations to the PSO;

- Establishing work zones and controlling access to these zones;
- Confirm all contractor and subcontractor personnel's suitability for work, based upon OSHA and site specific medical and training requirements;
- Conduct daily General Safety Briefings;
- Implement and document the Site Specific Hazard Information Training Program (as specified by 29 CFR 1910.120);
- Ensure proper condition, maintenance, storage, and use of PPE;
- Conduct air quality monitoring during operations as required.
- Consulting with the UXO Supervisors prior to downgrading or upgrading of alternating monitoring or PPE requirements;
- Assisting in the continued development of the SSHP and other safety and health procedures;
- On-site enforcement of the Parsons Alcohol/Drug Abuse Policy;
- Investigate accidents and "near misses" and files reports with the PM and PSO.
- Conduct visitor orientation;
- Enforce the "buddy" system;
- Conduct and document daily safety inspections, and weekly OE team safety audits;
- Maintain and calibrate safety monitoring equipment, and document calibration data in the monitoring or safety log;
- Restrict site personnel from site activities if they exhibit symptoms of alcohol or drug use or illness, and continually monitor site personnel for signs of chemical exposure or physical stress;
- Maintain the site safety and monitoring logs;
- Act as the On-Scene-Incident-Commander (OSIC) in the event of an emergency, notify and coordinate off-site emergency and medical response agencies;
- Post the descriptions and maps associated with hospital and emergency evacuation routes;
- Ensure field implementation of the Parsons I&T Health & Safety Policies;
- Conduct on-site safety orientation and operational review. The orientation and review will be accomplished during the first working day at SEDA.

PARSONS UXO QUALITY CONTROL SPECIALIST (UXOQCS): HOWARD STEPP

Responsibilities

The UXOQCS has the responsibility of ensuring personnel are in compliance with the SSHP. The Parsons UXOQCS reports directly to the Site Manager or the UXOSO on safety issues. The UXOQCS meets the USACE requirements of being a graduate of the U.S. Naval Explosive Ordnance Disposal School, 40-hour and 8-hour Hazardous Waste Site Worker, and Site Supervisor courses in accordance with 29 CFR 1910.120; the UXOS has at least 10 years EOD/UXO experience, 3 years of which must be active duty military EOD experience. The UXOQCS can act concurrently as the UXOSO when total number of workers is 15 or less.

USA SENIOR UXO SUPERVISOR (SUXOS): SAM NEWBERRY

The SUXOS is charged with developing and implementing the Work Plan and Accident Prevention Plan for this project. Internally, the SUXOS reports directly to the UXO PM. The SUXOS meets the USACE requirements as a graduate of the U.S. Naval School of Explosive Ordnance Disposal; 40-hour and 8-hour Hazardous Waste Site Worker; Supervisor courses in accordance with 29 CFR 1910.120; and has at least 15 years of EOD experience, 10 of which have been in supervisory EOD positions. Three years of documented OE contractor experience may be substituted for 3 years of active duty EOD experience. The SUXOS will have the following safety and health related responsibilities:

Responsibilities

- Reports directly to the USA Vice President and the UXOSO;
- Managing the funding, manpower and equipment necessary to safely conduct site operations;
- Reviewing and becoming familiar with the site Work Plan (WP) and SSHP;
- Furnishes copies of the WP and SSHP to site and subcontract personnel for their review;
- Reviewing the scope of work (SOW) and ensuring that the required safety and health elements are addressed in the SSHP and/or WP;
- Coordinating the assignment of subcontractor personnel and ensuring that the personnel and equipment provided by the subcontractor meet the requirements of the WP and SSHP;
- Ensuring implementation of project quality and safety and health procedures through close coordination with the UXOSO, UXOQCS, and UXOS. Early detection and identification of potential problem areas, including safety and health matters, and instituting corrective measures;
- Directly interfacing with the Project/Field Manager and advising him of safety and health matters related to conduct of the site operations.
- Enforcement of the USA Substance Abuse Policy.

USA UXO SUPERVISOR (UXOS)

The UXOS takes daily direction from and reports directly to the SUXOS. The UXOS directs the action of an OE team in accordance with the approved WP and the daily verbal direction of the SUXOS. The UXOS maintains continuous communication with the SUXOS during the performance of OE operations and has the authority to temporarily stop the performance of work to resolve and correct any unsafe condition. The UXOS is a graduate of the U.S. Naval Explosive Ordnance Disposal School, 40-hour and 8-hour Hazardous Waste Site Worker, and Site Supervisor courses in accordance with 29 CFR 1910.120; the UXOS has at least 10 years EOD/UXO experience, 3 years of which must be active duty military EOD experience. The UXOS will have the following safety and health related responsibilities:

- Task/team compliance with all aspects of the SSHP;

- Documents daily tailgate safety meetings and all OE team safety related activities, including air monitoring. Documentation is reviewed and filed by the UXOSO.
- Coordinate with the UXOSO proper PPE requirements;
- Consult with the UXOSO before the upgrade or downgrade of levels of protection or the requirement of air monitoring;
- Coordination with the UXOSO to ensure that all site safety considerations are enforced;
- Enforcement of the USA Substance Abuse Policy.

USA UXO SPECIALIST

All USA UXO specialists are required to comply with the provisions of this SSHP, the WP and all applicable Federal State and local regulations. They will report all safety violations, unsafe conditions, and injuries/illnesses immediately to the UXOSO.

RESPONSIBILITIES OF ALL SITE PERSONNEL

Ensuring the safe and healthful conduct of site operations is the responsibility of everyone assigned to the site, therefore, all personnel involved in site activities will be responsible for the following:

- Complying with the SSHP and all other required safety and health guidelines;
- Taking all necessary precautions to prevent injury to themselves and to their fellow employees;
- Continual alertness to any potentially harmful situation and the need to immediately inform the UXOSO of any such conditions;
- Performing only those tasks that they believe they can do safely and have been trained to do;
- Notifying the UXOSO of any special medical conditions (i.e., allergies, contact lenses, diabetes) which could affect their ability to safely perform site operations;
- Notifying the UXOSO of any prescription and/or over-the-counter medication which they are taking that might cause drowsiness, anxiety or other unfavorable side affects;
- Preventing spillage and splashing of materials to the greatest extent possible;
- Practicing good housekeeping by keeping the work area neat, clean and orderly;
- Immediately reporting all injuries, no matter how minor to the UXOSO;
- Maintaining site equipment in good working order, and reporting defective equipment to the UXOSO;
- Reporting to work clean shaven, if required to use respiratory protection;
- Properly inspecting and using the PPE required by the SSHP or the UXOSO.

APPENDIX B2
RISK ANALYSIS/CONTROL

B2.1 NATURE AND EXTENT OF CHEMICAL HAZARDS

Five sites included in the Scope of Work have been classified as Areas of Concern under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These Solid Waste Management Units (SWMU's) are SEAD's 16,17,45,46, and 57.

The primary chemicals that present a risk of exceeding exposure limits in soil are heavy metals, along with a lesser potential of exposure to petroleum products and explosive compounds. Table B2.1 summurizes maximum concentrations detected at the SEAD's 16, 17, 45, and 57. The maximum explosive compound concentration detected in soil, (7.47 ppm), is far below levels of potential detonation. Table B2.2 shows exposure limits to chemicals of concern at the work sites. This information will be used to determine the proper PPE and monitoring requirements for the tasks and locations covered by the SSHP.

Non-designated SWMU areas included in the scope work have no history that would indicate a potential of chemical contamination of the soil, (i.e. buried drums or spills). However any intrusive investigation of geophysical anomalies must consider that possibility. Refer to Section B3 on monitoring requirements.

Studies of this project area have not identified any chemical or biological warfare hazards on this site. Should suspected chemical warfare munitions (CWM) or biological warfare munitions (BWM) be encountered, personnel will immediately evacuate the work area to an upwind location and notify the UXOSO and USAESCH for guidance.

B2.1.1 SEAD-16: SEAD-16 has been described in five reports. The first report is a SWMU Classification Report (Parsons, 1994) that describes and evaluates the Solid Waste Management Units (SWMUs) at SEAD. This report was an initial step to provide a cursory evaluation of all of the SWMUs at SEAD. The second report is the Work Plan for CERCLA Expanded Site Inspection (ESI) of Ten Solid Waste Management Units (SWMUs) (Parsons Main Inc., 1993.) This report detailed the site work and sampling to be performed for the ESI. The third report is an Expanded Site Inspection Report (Parsons, 1995.) This report presents the results of a more detailed investigation of SEAD-16 and SEAD-17. The fourth report is the Final Closure Report for the Underground Storage Tank Removal (Science Applications International Corporation, May 1994.) This report describes the removal of two USTs at SEAD-16 and presents the confirmatory sampling records and chemical analyses associated with the closure. The fifth report,

the Remedial Investigation Report (Parsons, March 1999), presents the results of the remedial investigation program and estimates the potential risk to human health and the environment.

The nature and extent of the chemicals of concern at SEAD-16 were evaluated through a comprehensive field investigation program. Primary media investigated at SEAD-16 included building materials, indoor air quality, surface soil, subsurface soil, surface water and sediment, and groundwater.

Table B2.1
Maximum Concentrations of Primary Chemicals of Concerns at Work Sites

Site	Location	Chemical of Concern	Maximum Concentration		Matrix
SEAD-16	SS16-26	Lead	140000	mg/kg	Surface Soil
	SB16-5	Lead	35400	mg/kg	Subsurface Soil
SEAD-17	SS17-37	Lead	6270.0	mg/kg	Surface Soil
	SB17-3	Lead	21.2	mg/kg	Subsurface Soil
SEAD-45	SS45-9	Lead	77.7	mg/kg	Surface Soils
	TP45-3	Lead	87.8	mg/kg	Subsurface Soils
	SS45-9	Total Explosives	7470	ug/kg	Surface Soils
	TP45-4	Total Explosives	5750	ug/kg	Subsurface Soils
SEAD-57	SS57-9	Lead	42.4	mg/kg	Surface Soil
	TP57-2	Lead	1860	mg/kg	Subsurface Soil

TABLE B2.2
PERMISSIBLE EXPOSURE LIMITS FOR SELECTED COMPOUNDS AT SEDA

		Permissible Exposure Limits(1) (mg/m3)	Short-Term Exposure Limits (mg/m3)(2)	Ceiling Limits (mg/m3)(3)	Other Exposure Limits (mg/m3)(4)	Carcinogenic Rating(5)
Metals	Arsenic	0.010	--	--	0.002(6)	A
	Barium	0.5	--	--	--	--
	Cadmium dust	0.005	--	0.6	--	A
	Chromium (VI)	--	--	0.1	0.001(7)	A
	Copper, Dust and Mist	1.0	--	--	--	D
	Lead	0.03	--	--	0.05(9)	B2
	Mercury	0.01	0.03	0.1	.05	D
	Nickel	1.0	--	--	0.015(7)	A
	Selenium	0.2	--	--	--	(8)
	Zinc Total Dust	15	10.0	15.0	5.0	--
Volatiles		(PPM)	(PPM)			
	Benzene	1.0	5	--	0.1(7)	A
	Toluene	200	150	300	100(7)	D
	Xylene	100	150	--	--	D
	Petroleum Products					
	trans 1,2-Dichloroethene	200			200 (7)	D
	cis-1,2-Dichloroethene	200			--	--
	Trichloroethene	100		200	25(7)	D
	Vinyl chloride	1		5	5 (7)	A
Semi-volatiles	PCB's	0.5 (skin)	--	--	0.001(7)	B2
	DDT	1.0 (skin)	--	--	0.5(7)	B2
	Nicotine	0.5	--	--	--	--
Explosives						
	HMX	--	--	--	1.5(9)	--
	RDX	--	--	--	1.5(9)	C
	2,4,6-TNT	1.5 (skin)	--	--	0.5(7)	(8)
	2,6-DNT	1.5 (skin)	--	--	1.5(7)(skin)	B2
	2,4-DNT	1.5 (skin)	--	--	--	B2
	Tetryl	1.5 (skin)	--	--	0.5 (skin)(10)	--
Ionizing Radiation	Beta/Gamma	--	--	--	2 mRem/hr	(6)
	Alpha	--	--	--	2 mRem/hr	(6)

Notes:
(1) OSHA 8-hour time-weighted average Permissible Exposure Limits (PEL). For metals, PEL shown is lowest of compounds likely to be encountered on-site.
(2) OSHA Short-Term Exposure Limit. 15 minute time-weighted average concentration
(3) OSHA Ceiling Limit. Concentration not to be exceeded during any part of the work day.
(4) Occupational Exposure Limits from other sources.
(5) EPA weight of evidence ratings for each compounds.
- A Confirmed human carcinogen
- B1 Probable confirmed human carcinogen. Limited human evidence.
- B2 Probable confirmed human carcinogen. Sufficient animal evidence.
- C Possible Human Carcinogen, Limited Animal Evidence
- D Not classifiable
- -- No data or carcinogenic rating not determined.

(6) NIOSH REL Ceiling
(7) NIOSH REL TWA
(8) Substance identified as suspected or confirmed human carcinogen by agency other than USEPA.
(9) ACGIH TLVs, 1999-2000 edition.

For soil, the concentrations established by the NYSDEC Technical Administrative Guidance Memorandum (TAGM) values, HWR-94-4046, Revised January 24, 1996. TAGM values were used for screening of site contaminants because these concentrations are levels at which the NYSDEC considered reasonable alternatives to pre-disposal conditions. For groundwater, the NYSDEC Class GA groundwater standards were used for comparison. For surface water, the Class C surface water standards were considered. For sediment, the NYSDEC Sediment Criteria described in the NYSDEC, Division of Fish, Wildlife and Marine Resources, *Technical Gudance for Screening Contaminated Sediments, January, 1999.* For metals in sediment, the Lowest Effect Level (LEL) was used for comparison.

A brief summary of the analytical results is presented below. A detailed description of the analytical results is presented in the SEAD-16 and SEAD-17 Remedial Investigation Report (Parsons, March 1999).

Tables B2.1.1 and B2.1.2 summarize concentrations of the chemicals of concern at SEAD 16. Figure B2.1 show the sampling location's highest concentration values.

Metals and SVOCs, predominantly PAH compounds, were found to be pervasive in the surface and subsurface soils, particularly adjacent to the Abandoned Deactivation Furnace. Twenty-one metals were detected in the surface soils at concentrations above their respective TAGM values. Lead, copper, arsenic, and zinc were detected in almost all of the surface soil samples at concentrations above their respective TAGM values. In the subsurface soil, 14 metals were detected in the subsurface soils at concentrations above their respective TAGM values. Copper and lead were found to be the most pervasive.

SVOCs were also detected at concentrations above their respective TAGM values. The highest concentration of PAH compounds in surface soils were detected in samples located adjacent to the northwestern corner of the Abandoned Deactivation Furnace Building. Nitroaromatic compounds were also present in the surface and subsurface soil near both buildings. Impacts from pesticides, PCBs, and herbicides in soil were less significant than the impacts from SVOCs and metals.

Based on the RI data, seven metals (aluminum, antimony, iron, lead, manganese, sodium, and thallium) were detected above their respective NYSDEC AWQS Class GA or Federal MCL groundwater standards. It should be noted that SEAD-16 monitoring wells were resampled on October 30, 1999 and analyzed for thallium. The results indicate that all groundwater samples had a thallium concentration at the detection limit of 1.5 ug/l, which is less than the EPA MCL (2 ug/l). SVOCs and nitroaromatics were not detected above the groundwater standards. No VOCs, pesticides, or PCBs were detected in groundwater at SEAD-16.

Based on the RI data, surface water impacts were primarily from metals. Six metals (lead, copper, zinc, cadmium, selenium, and iron) were detected at several locations at

Table B2.2.1
SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:	SB16-1		SB16-3		SB16-3		SB16-4		SS16-1		SS1
					SAMP ID:	16037		16032		16033		16030		SS16-1-1		SS16
					QC CODE:	SA		SA		DU		SA		SA		S
					STUDY ID:	RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		ESI		E
					TOP:	0		0		0		0		0		
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		0
				No.	MATRIX:	SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFAC E SOIL		SUR E S
				Above	Sample Date:	8/14/1996		8/14/1996		8/14/1996		8/14/1996		#########		11/9
	Unit	Max	TAGM	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VA
E ORGANICS																
ene	UG/KG	85000		0		420	U	1800	U	3500	U	1100	U	2200	J	
ene	UG/KG	8000	1000	3		420	U	1800	U	3500	U	1100	U	180	J	
acene	UG/KG	220000	224	10		420	U	1800	U	3500	U	1800		420	J	
e	UG/KG	200000	61	13		420	U	1800	U	3500	U	4400		560	J	
nthene	UG/KG	200000	1100	5		420	U	1800	U	3500	U	3800		480	J	
rylene	UG/KG	100000	50000	1		32	J	900	J	340	J	6300		160	J	
nthene	UG/KG	170000	1100	4		420	U	1800	U	3500	U	2300		740	J	
	UG/KG	89000		0		420	U	1800	U	3500	U	100	J	710	UR	
	UG/KG	220000	400	9		420	U	96	J	3500	U	2100		500	J	
alate	UG/KG	16000	8100	1		420	U	1800	U	3500	U	150	J	1300	J	
thracene	UG/KG	49000	14	9		26	J	260	J	220	J	1100	J	710	UR	
ATICS																
ene	UG/KG					120	U	6800	J	280	J	2200		320		
ene	UG/KG		1000			120	U	250	U	120	U	130	J	130	U	
initrotoluene	UG/KG					120	U	250	U	120	U	120	U	130	U	
	UG/KG					120	U	250	U	120	U	120	U	130	U	
	MG/K	1930	3.59	16		0.42	UJ	0.39	UJ	0.38	UJ	1.6	J	[redacted]		
	MG/K	32.2	7.5	10		5	J	4	J	3.8	J	3	J	4.9		
	MG/K	9340	300	8		198	J	67.6	J	61.5	J	44.4	J	102		
	MG/K	16.6	1	8		0.36		0.06	U	0.06	U	0.18		0.44	U	
	MG/K	37900	25	42		19	J	[redacted]	J	[redacted]	J	[redacted]	J	[redacted]		
	MG/K	140000	21.86	41		[redacted]	J	[redacted]	J	[redacted]	J	[redacted]	J	[redacted]		
	MG/K	11.4	0.1	25		0.1	J	0.05	U	0.04	J	[redacted]	J	[redacted]		
	MG/K	148	33.62	18		30	J	[redacted]	J	[redacted]	J	12.3	J	23		
	MG/K	11.1	0.4	5		0.3		0.25	U	0.25	U	0.24		0.9	U	
	MG/K	16.6	0.28	14		[redacted]		0.82	U	0.79	U	[redacted]		1.6	U	
	MG/K	14600	82.5	35		[redacted]		[redacted]		79.8		[redacted]		[redacted]		

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Table B2.2.1

SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:	SS16-11		SS16-12		SS16-13		SS16-14		SS16-15		SS16-16	
					SAMP ID:	SS16-11-1		SS16-12-1		SS16-13-1		SS16-14-1		SS16-15-1		SS16-16-1	
					QC CODE:	SA		SA		SA		SA		SA		SA	
					STUDY ID:	ESI		ESI		ESI		ESI		ESI		ESI	
					TOP:	0		0		0		0		0		0	
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		0.2	
				No.	MATRIX:	SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL	
				Above	Sample Date:	########		########		########		########		########		########	
	Unit	Max	TAGM	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
ORGANICS																	
ne	UG/KG	85000		0		440	U	360	U	750	U	370		350	U	1800	UJ
ne	UG/KG	8000	1000	3		440	U	360	U	750	U	56	J	350	U	1800	UJ
cene	UG/KG	220000	224	10		110	J	31	J	45	J	26	J	350	U	1800	UJ
	UG/KG	200000	61	13		99	J	27	J	40	J	24	J	350	U	1800	UJ
thene	UG/KG	200000	1100	5		100	J	31	J	49	J	33	J	350	U	1800	UJ
lene	UG/KG	100000	50000	1		62	J	360	U	750	U	19	J	350	U	1800	UJ
thene	UG/KG	170000	1100	4		98	J	34	J	53	J	30	J	350	U	1800	UJ
	UG/KG	89000		0		22	J	360	U	750	U	370	U	350	U	1800	UJ
	UG/KG	220000	400	9		130	J	49	J	72	J	44	J	16	J	1800	UJ
ate	UG/KG	16000	8100	1		250	J	19	J	750	U	76	J	350	U	1800	UJ
racene	UG/KG	49000	14	9		440	U	360	U	750	U	370	U	350	U	1800	UJ
ICS																	
ne	UG/KG					130	U	130	U	130	U	1200		130	U	150	
ne	UG/KG		1000			130	U	130	U	130	U	130	U	130	U	130	U
itrotoluene	UG/KG					130	U	130	U	130	U	130	U	130	U	130	U
	UG/KG					130	U	130	U	130	U	130	U	130	U	130	U
	MG/K	1930	3.59	16		13.9	U	6.6	U	8.2	U	[redacted]		6.2	U	9	U
	MG/K	32.2	7.5	10		[redacted]		5.2		6.8		[redacted]		4.8		3.8	
	MG/K	9340	300	8		195		52		88.2		211		35.1		56.6	
	MG/K	16.6	1	8		0.87	U	0.41	U	0.51	U	0.61	J	0.39	U	0.56	U
	MG/K	37900	25	42		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
	MG/K	140000	21.86	41		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
	MG/K	11.4	0.1	25		[redacted]		[redacted]		[redacted]		0.07	J	0.05	J	0.04	J
	MG/K	148	33.62	18		[redacted]		[redacted]		[redacted]		29.4		30.5		28.5	
	MG/K	11.1	0.4	5		1.8	U	0.84	U	1	U	0.93	U	0.79	U	1.1	U
	MG/K	16.6	0.28	14		0.26	U	0.25	U	0.16	U	0.14	U	0.24	U	0.23	U
	MG/K	14600	82.5	35		[redacted]		[redacted]		[redacted]		[redacted]		68.6		[redacted]	

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Table B2.2.1
SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:		SS16-18		SS16-19		SS16-2		SS16-20		SS16-21		SS
					SAMP ID:		16041		16042		SS16-2-1		16043		16058		1
					QC CODE:		SA		SA		SA		SA		SA		
					STUDY ID:		RI ROUND1		RI ROUND1		ESI		RI ROUND1		RI ROUND1		RI R
					TOP:		0		0		0		0		0		
					BOTTOM:		0.2		0.2		0.2		0.2		0.2		
				No.	MATRIX:		SURFACE SOIL		SURFACE SOIL		SURFAC E SOIL		SURFACE SOIL		SURFACE SOIL		SU
				Above	Sample Date:		8/19/1996		8/19/1996		########		8/19/1996		8/21/1996		8/2
	Unit	Max	TAGM	TAGM		Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	V
E ORGANICS																	
ne	UG/KG	85000		0		U	420	U	340	U	760		58	J	15000		
ne	UG/KG	8000	1000	3		U	420	U	340	U	410	U	350	U	1200	J	
cene	UG/KG	220000	224	10		U	420	U	340	U	260	J	26	J	2300	U	
	UG/KG	200000	61	13		J	420	U	340	U	300	J	34	J	2300	U	
thene	UG/KG	200000	1100	5		J	420	U	20	J	500		32	J	2300	U	
ylene	UG/KG	100000	50000	1		U	420	U	340	U	130	J	350	U	2300	U	
thene	UG/KG	170000	1100	4		J	420	U	16	J	310	J	32	J	2300	U	
	UG/KG	89000		0		U	420	U	340	U	48	J	350	U	2300	U	
	UG/KG	220000	400	9		J	19	J	24	J	470		37	J	2300	U	
ate	UG/KG	16000	8100	1		U	420	U	340	U	710		350	U	2300	U	
racene	UG/KG	49000	14	9		U	420	U	340	U	410	U	32	U	2300	U	
TICS																	
ne	UG/KG						120	U	220		500		310		7300		
ne	UG/KG		1000			U	120	U	120	U	130	U	120		250	U	
itrotoluene	UG/KG					U	120	U	120	U	130	U	120	U	250	U	
	UG/KG					U	120	U	120	U	130	U	120	U	250	U	
	MG/K	1930	3.59	16		J	2.5	J	3.5	J	[redacted]		[redacted]	J	[redacted]	J	
	MG/K	32.2	7.5	10		J	4.1	J	4.5	J	[redacted]		5.2	J	6.5		
	MG/K	9340	300	8		J	148	J	124	J	[redacted]		175	J	[redacted]	J	
	MG/K	16.6	1	8			0.25		0.36		1.6	R	0.49		0.69		
	MG/K	37900	25	42		J	[redacted]	J	[redacted]	J	[redacted]		[redacted]	J	[redacted]		
	MG/K	140000	21.86	41		J	[redacted]	J	[redacted]	J	[redacted]		[redacted]	J	[redacted]		
	MG/K	11.4	0.1	25		J	[redacted]	J	0.04	U	[redacted]		[redacted]	J	[redacted]		
	MG/K	148	33.62	18		J	20.3	J	[redacted]	J	21.7		[redacted]	J	[redacted]		
	MG/K	11.1	0.4	5			0.32	U	0.31		1.5	U	0.28		0.21	U	
	MG/K	16.6	0.28	14		J	[redacted]	J	[redacted]	J	0.19	U	[redacted]	J	[redacted]	J	
	MG/K	14600	82.5	35			[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		

ues exceed the NYSDEC TAGM.
617ri\s16sscl

SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:	SS16-22		SS16-23		SS16-24		SS16-25		SS16-26		SS
					SAMP ID:	16049		16051		16060		16050		16046		1
					QC CODE:	SA		SA		SA		SA		SA		
					STUDY ID:	RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI R
					TOP:	0		0		0		0		0		
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		
				No.	MATRIX:	SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SU
				Above	Sample Date:	8/20/1996		8/20/1996		8/21/1996		8/20/1996		8/20/1996		8/2
R	Unit	Max	TAGM	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	V
LE ORGANICS																
uene	UG/KG	85000		0		95	J	380	U	1800		39	J	870		
uene	UG/KG	8000	1000	3		360	U	380	U	160	J	340	U	350	U	
racene	UG/KG	220000	224	10		190	J	380	U	340	U	26	J	500		
ne	UG/KG	200000	61	13		250	J	380	U	340	U	30	J	520		
anthene	UG/KG	200000	1100	5		420		380	U	480		28	J	810		
erylene	UG/KG	100000	50000	1		210	U	380	U	340	U	24	J	440	U	
anthene	UG/KG	170000	1100	4		290	J	380	U	340	U	33	J	600		
	UG/KG	89000		0		26	J	380	U	41	J	340	U	110	J	
	UG/KG	220000	400	9		370		380	U	340	U	40	J	720		
nalate	UG/KG	16000	8100	1		32	J	380	U	340	U	340	U	430		
nthracene	UG/KG	49000	14	9		67	U	380	U	38	J	340	U	100	U	
ATICS																
uene	UG/KG					160	J	120	U	450	J	200	J	490		
uene	UG/KG		1000			120	U	120	U	120	U	120	U	120	U	
Dinitrotoluene	UG/KG					120	U	120	U	120	U	120	U	120	U	
	UG/KG					120	U	120	U	120	U	120	U	120	U	
	MG/K	1930	3.59	16		20.3	J	10.4	J	7.1	J	3.1	J	1930	J	
	MG/K	32.2	7.5	10		6.2	J	7.2		6.1		4	J	2.1	J	
	MG/K	9340	300	8		169	J	263	J	148	J	121	J	9340	J	
	MG/K	16.6	1	8		1.3		0.76		1.2		0.25		2.1		
	MG/K	37900	25	42		35.7	J	291		324		86.6	J	37900	J	
	MG/K	140000	21.86	41		2910	J	1360		1450		1.9	J	140000	J	
	MG/K	11.4	0.1	25		0.7	J	0.93		0.27		0.1	J	0.6	J	
	MG/K	148	33.62	18		34.1	J	25		43		5.5	J	30.2	J	
	MG/K	11.1	0.4	5		0.33		0.27		0.28		0.32		11.1		
	MG/K	16.6	0.28	14		0.9	J	0.85	U	0.66	U	0.82	U	16.6	J	
	MG/K	14600	82.5	35		299		411		327		11.5		14600		

lues exceed the NYSDEC TAGM.
617ri\s16sscl

Table B2.2.1
SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:	SS16-28		SS16-29		SS16-3		SS16-30		SS16-31		SS1
					SAMP ID:	16044		16045		SS16-3-1		16048		16062		16
					QC CODE:	SA		SA		SA		SA		SA		S
					STUDY ID:	RI ROUND1		RI ROUND1		ESI		RI ROUND1		RI ROUND1		RI RO
					TOP:	0		0		0		0		0		
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		0
				No.	MATRIX:	SURFACE SOIL		SURFACE SOIL		SURFAC E SOIL		SURFACE SOIL		SURFACE SOIL		SUR S
				Above	Sample Date:	8/19/1996		8/19/1996		#########		8/20/1996		8/21/1996		8/20
	Unit	Max	TAGM	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VA
LE ORGANICS																
ene	UG/KG	85000		0		500		1800		7100		9400		91000	UJ	
ene	UG/KG	8000	1000	3		51	J	150	J	310	J	680	J	91000	UJ	
acene	UG/KG	220000	224	10		42	J	340	U	110	J	1300	U	220000	J	
ne	UG/KG	200000	61	13		61	J	17	J	120	J	1300	U	200000	J	
anthene	UG/KG	200000	1100	5		84	J	17	J	170	J	1300	U	200000	J	
erylene	UG/KG	100000	50000	1		350	U	340	U	1100	U	1300	U	100000	J	
anthene	UG/KG	170000	1100	4		65	J	340	U	97	J	1300	U	170000	J	
	UG/KG	89000		0		350	U	340	U	1100	U	1300	U	89000	J	
	UG/KG	220000	400	9		70	J	17	J	200	J	170	J	220000	J	
alate	UG/KG	16000	8100	1		350	U	150	J	1200		1500		91000	UJ	
thracene	UG/KG	49000	14	9		28	U	340	U	1100	U	1300	U	49000	J	
ATICS																
ene	UG/KG					310		180	J	1100		510		120	U	
ene	UG/KG		1000			120	U	120	U	130	U	120	U	120	U	
Dinitrotoluene	UG/KG					120	U	120	U	430	J	120	U	120	U	
	UG/KG					120	U	120	U	220	J	120	U	120	U	
	MG/K	1930	3.59	16		6.7	J	1	J	121	R	[redacted]	J	0.81	J	
	MG/K	32.2	7.5	10		5.2	J	2.9	J	23.6		[redacted]	J	6.6		
	MG/K	9340	300	8		107	J	48.1	J	1540	R	[redacted]	J	70.9	J	
	MG/K	16.6	1	8		0.3		0.11		2.5		[redacted]		0.49		
	MG/K	37900	25	42		192	J	28.3	J	1730		[redacted]	J	39.5		
	MG/K	140000	21.86	41		626	J	66.6	J	9140		[redacted]	J	81.1		
	MG/K	11.4	0.1	25		0.11	J	0.03	U	11.4	J	[redacted]	J	0.07		
	MG/K	148	33.62	18		35.1	J	18.1	J	47.3		22.7	J	28.9		
	MG/K	11.1	0.4	5		[redacted]		0.37		1.1	UJ	[redacted]		0.26	U	
	MG/K	16.6	0.28	14		0.86	U	0.75	U	0.24	U	0.71	U	[redacted]	J	
	MG/K	14600	82.5	35		[redacted]		42.7		929		[redacted]		[redacted]		

ues exceed the NYSDEC TAGM.
17ri\s16sscl

Table B2.2.1
SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

					LOC_ID:	SS16-33		SS16-34		SS16-35		SS16-36		SS16-37		SS
					SAMP ID:	16067		16053		16066		16061		16054		1
					QC CODE:	SA		SA		SA		SA		SA		
					STUDY ID:	RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI R
					TOP:	0		0		0		0		0		
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		
				No.	MATRIX:	SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SURFACE SOIL		SU
				Above	Sample Date:	8/22/1996		8/20/1996		8/22/1996		8/21/1996		8/20/1996		8/2
	Unit	Max	TAGM	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	V
E ORGANICS																
ne	UG/KG	85000		0		510	U	1800	U	6900		700	U	350	U	
ne	UG/KG	8000	1000	3		510	U	1800	U	400	J	700	U	350	U	
cene	UG/KG	220000	224	10		1900		1800	U	1000		700	U	350	U	
	UG/KG	200000	61	13		1900		1800	U	1000		700	U	350	U	
thene	UG/KG	200000	1100	5		3300	J	1800	U	850	U	700	U	350	U	
ylene	UG/KG	100000	50000	1		1000		1800	U	570	J	700	U	350	U	
thene	UG/KG	170000	1100	4		510	U	1800	U	1700	J	700	U	350	U	
	UG/KG	89000		0		160	J	1800	U	410	J	700	U	350	U	
	UG/KG	220000	400	9		1700		1800	U	910		700	U	350	U	
ate	UG/KG	16000	8100	1		510	U	1800	U	2000		700	U	350	U	
racene	UG/KG	49000	14	9		700		1800	U	390	J	700	U	350	U	
TICS																
ne	UG/KG					120	U	4400		3000	J	120	U	120	U	
ne	UG/KG		1000			120	U	120	U	120	U	120	U	120	U	
itrotoluene	UG/KG					120	U	120	U	120	U	120	U	120	U	
	UG/KG					120	U	120	U	120	U	120	U	120	U	
	MG/K	1930	3.59	16		1.2	J	0.35	UJ	7.1	J	0.5	J	0.37	UJ	
	MG/K	32.2	7.5	10		6		5.8		5.3		6.7		5.5		
	MG/K	9340	300	8		70.7	J	47.7	J	314	J	42.3	J	42	J	
	MG/K	16.6	1	8		0.06	U	0.31		[illegible]		0.29		0.14		
	MG/K	37900	25	42		44.6		41.5		40		[illegible]		30.9		
	MG/K	140000	21.86	41		131		43.7		1290		[illegible]		[illegible]		
	MG/K	11.4	0.1	25		0.12		0.03	U	0.12		0.04	U	0.04	U	
	MG/K	148	33.62	18		31.2		23.7		28.6		24.7		27.6		
	MG/K	11.1	0.4	5		0.28	U	0.3		0.5		0.2	U	0.24	U	
	MG/K	16.6	0.28	14		0.91	U	0.98		0.78	U	0.64	U	0.77	U	
	MG/K	14600	82.5	35		109	J	109		466	J	[illegible]		80.6		

es exceed the NYSDEC TAGM.
17ri\s16sscl

Table B2.2.1
SEAD-16 Summary of Analytes Detected in Surface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

ER	Unit	Max	TAGM	No. Above TAGM	LOC_ID:	SS16-4		SS16-5		SS16-6		SS16-7		SS16-8		SS16-
					SAMP ID:	SS16-4-1		SS16-5-1		SS16-6-1		SS16-7-1		SS16-8-1		SS16-9
					QC CODE:	SA		SA		SA		SA		SA		SA
					STUDY ID:	ESI		ESI		ESI		ESI		ESI		ESI
					TOP:	0		0		0		0		0		0
					BOTTOM:	0.2		0.2		0.2		0.2		0.2		0.2
					MATRIX:	SURFAC E SOIL		SURFAC E SOIL		SURFAC E SOIL		SURFAC E SOIL		SURFAC E SOIL		SURFA E SOI
					Sample Date:	########		########		########		########		########		11/9/19
						VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALU
TILE ORGANICS																
oluene	UG/KG	85000		0		7200	U	530	J	14000	U	1300	U	1800	U	27
oluene	UG/KG	8000	1000	3		7200	U	750	U	14000	U	1300	U	1800	U	27
thracene	UG/KG	220000	224	10		7200	U	240	J	14000	U	1300	U	1800	U	27
rene	UG/KG	200000	61	13		7200	U	270	J	14000	U	1300	U	1800	U	27
oranthene	UG/KG	200000	1100	5		7200	U	350	J	14000	U	1300	U	1800	U	27
)perylene	UG/KG	100000	50000	1		7200	U	180	J	14000	U	1300	U	1800	U	27
oranthene	UG/KG	170000	1100	4		7200	U	330	J	14000	U	1300	U	1800	U	27
	UG/KG	89000		0		7200	U	78	J	14000	U	1300	U	1800	U	27
	UG/KG	220000	400	9		7200	U	340	J	14000	U	1300	U	1800	U	27
thalate	UG/KG	16000	8100	1		7200	U	350	J	14000	U	1300	U	1400	J	5
anthracene	UG/KG	49000	14	9		7200	U	750	U	14000	U	1300	U	1800	U	27
MATICS																
oluene	UG/KG					170		780	J	130	U	130	U	770		4
oluene	UG/KG		1000			130	U	130	U	130	U	130	U	130	U	1
6-Dinitrotoluene	UG/KG					130	U	130	U	130	U	130	U	130	U	1
	UG/KG					130	U	130	U	130	U	130	U	130	U	1
	MG/K	1930	3.59	16		26.3		27.3		7.9	U	8.8	U	8.2	U	
	MG/K	32.2	7.5	10		11.3		10.8		5.1		5		5.2		4
	MG/K	9340	300	8		227		630		45.1		41.2		72.2		53
	MG/K	16.6	1	8		0.55	U	2.8		0.49	U	0.55	U	0.52	U	0.
	MG/K	37900	25	42		399		635		26.2		28.9		88.9		3
	MG/K	140000	21.86	41		2940		2860		8.5		8.1		18.9		7
	MG/K	11.4	0.1	25		0.21		0.09		0.03	U	0.04	U	0.08		0.
	MG/K	148	33.62	18		31.6		31.8		22.7		21.7		28.7		29
	MG/K	11.1	0.4	5		1.1	U	1	U	1	U	1.1	U	1	U	0.
	MG/K	16.6	0.28	14		0.22	U	0.24	U	0.14	U	0.14	U	0.23	U	0.
	MG/K	14600	82.5	35		416		562		65.8		66.1		105		78

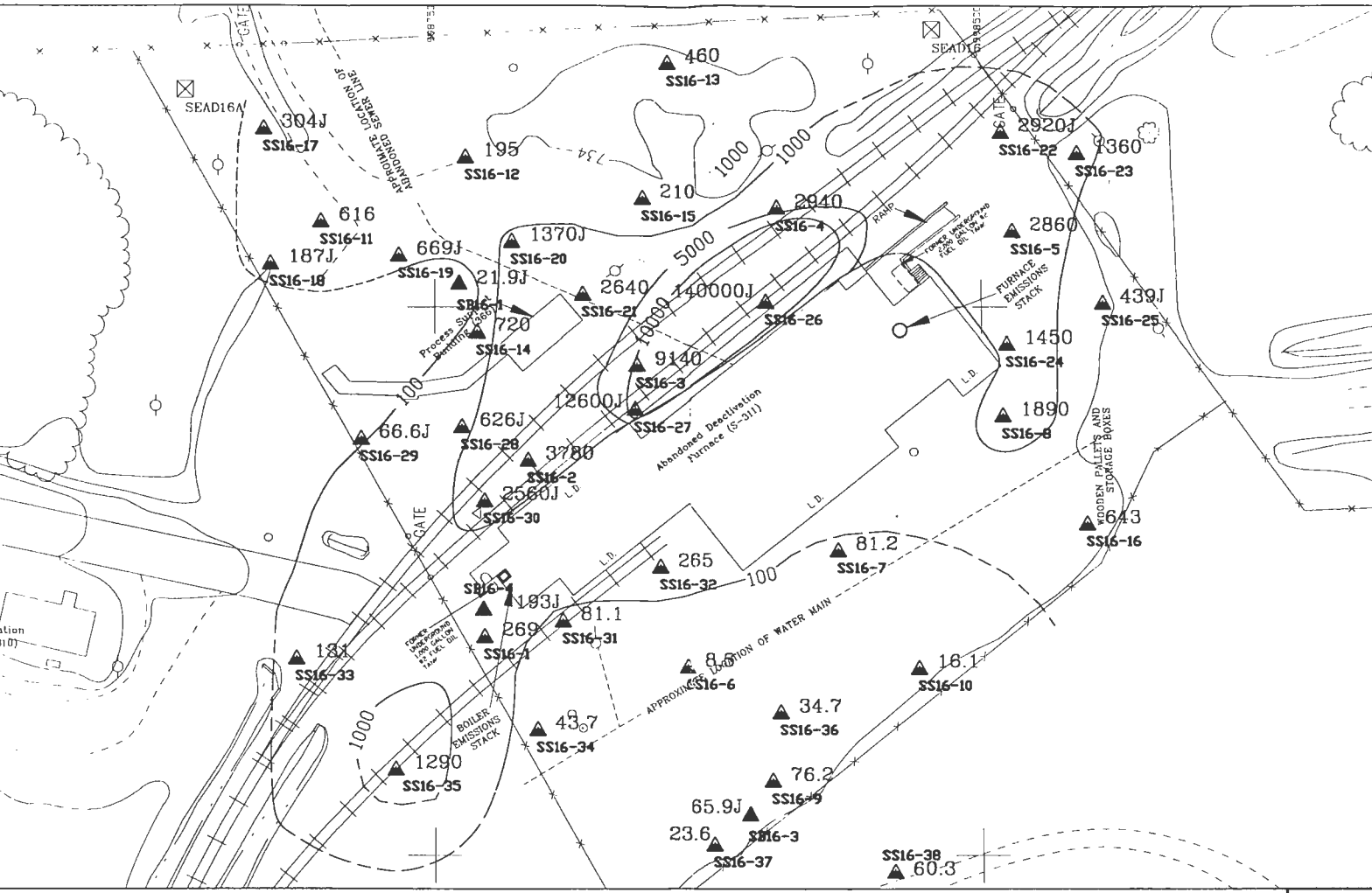
es exceed the NYSDEC TAGM.
17ri\s16sscl

Table B.2.2.2
SEAD-16 Summary of Analytes Detected in Subsurface Soil

SEAD-16 Remedial Investigation
Seneca Army Depot Activity

			LOC_ID:	SB16-1		SB16-1		SB16-2		SB16-4		SB16-5		SB16-5
			SAMP ID:	16038		16093		16036		16031		16034		16035
			QC CODE:	SA		SA		SA		SA		SA		SA
			STUDY ID:	RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1		RI ROUND1
			TOP:	2		6		1		2		1		2
			BOTTOM:	3		12		2		4		2		3.3
			MATRIX:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
			Sample Dat	8/14/1996		8/22/1996		8/14/1996		8/14/1996		8/14/1996		8/14/1996
ETER	Unit	TAGM		VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE
ene	UG/KG	50000		390	U	340	U	380	U	310	J	2000		40
)anthracene	UG/KG	224		390	U	340	U	55	J	420	J	6600		110
)pyrene	UG/KG	61		390	U	20	J	63	J	1400	J	6200		170
)fluoranthene	UG/KG	1100		390	U	18	J	72	J	670	J	6000		110
ne	UG/KG	400		390	U	22	J	90	J	480	J	7000		120
S														
	MG/K	25		23.6	J	[redacted]		[redacted]	J	16.4	J	[redacted]	J	[redacted]
	MG/K	21.86		12.6	J	[redacted]		[redacted]	J	21.4	J	[redacted]	J	[redacted]
	MG/K	0.1		0.04	U	[redacted]		[redacted]	J	0.04	J	[redacted]	J	0.03
	MG/K	33.62		23.8	J	[redacted]		23.9	J	30.7	J	[redacted]	J	29.2
	MG/K	0.28		0.94	U	0.85	U	[redacted]		0.87	U	88.2	U	0.85

d values exceed the NYSDEC TAGM.



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- GROUND SURFACE ELEVATION CONTOUR
- SURVEY MONUMENT
- LOADING DOCK
- ROAD SIGN
- DECIDOUS TREE
- FIRE HYDRANT
- MANHOLE
- GUIDE POST
- POLE
- UTILITY BOX
- CORDINATE GRID (250' GRID)
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL

167J SS17-6 — SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION (ppm)

100 — CHEMICAL CONCENTRATION CONTOURS (DASHED WHERE INFERED)

25 0 25 50
1" = 50'

N

PARSONS

CLIENT/PROJECT TITLE
SENECA
SEAD-16 AE

DEPT
ENVIRONMEN

SEAD-
LEAD

SCALE
1" = 50'

concentrations exceeding the NYSDEC Ambient Water Quality Standard (AWQS), Class C surface water standards.

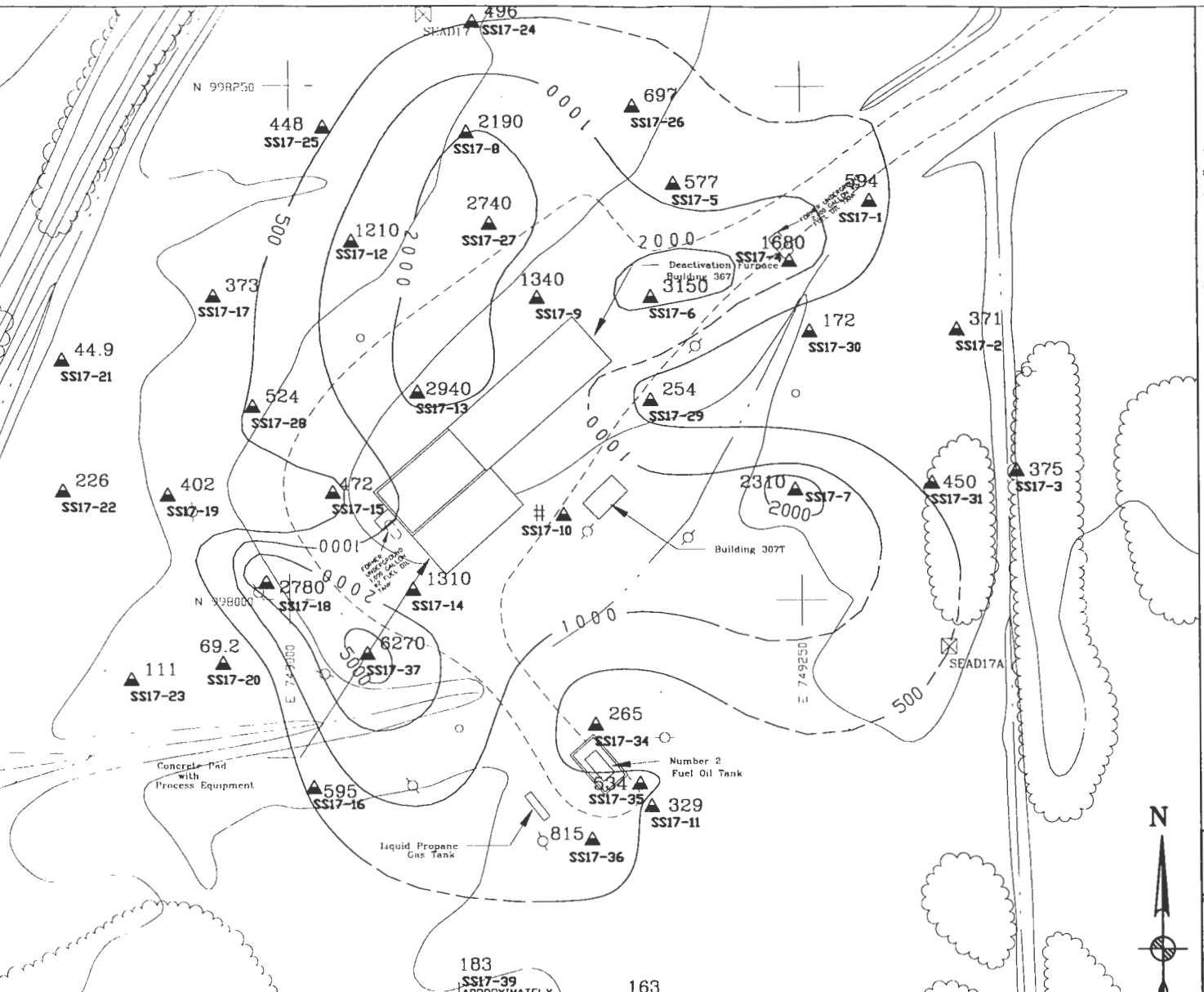
Sediment impacts were primarily from SVOCs, pesticides, and metals. Several samples contained pesticide compounds and SVOCs, which exceeded their respective NYS sediment criteria. The most significant exceedence was in sediment sample SW/SD16-1, which was collected from the northeastern corner of the Abandoned Deactivation Furnace. Several samples contained metals (antimony, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc) at concentrations above the NYS LEL. Samples SW/SD16-3 and SW/SD16-10 had the highest concentration of metals. Impacts from nitroaromatics were less significant.

B2.1.2 SEAD-17

SEAD-17 has been described in five reports. The first report is a SWMU Classification Report (Parsons, 1994) that describes and evaluates the Solid Waste Management Units at SEAD. This report was an initial step to provide a cursory evaluation of all of the SWMUs at SEAD. The second report is the Work Plan for CERCLA Expanded Site Inspection (ESI) of Ten Solid Waste Management Units (SWMUs) (Parsons Main Inc., 1993.) This report detailed the site work and sampling to be performed for the ESI. The third report is an Expanded Site Inspection Report (Parsons, 1995.) This report presents the results of a more detailed investigation of SEAD-16 and SEAD-17. The fourth report is the Final Closure Report for the Underground Storage Tank Removal (Science Applications International Corporation, May 1994.) This report describes the removal of two USTs at SEAD-16 and presents the confirmatory sampling records and chemical analyses associated with the closure. The fifth report, the Remedial Investigation Report (Parsons, March 1999), presents the results of the remedial investigation program and estimates the potential risk to human health and the environment.

The nature and extent of the chemicals of concern at SEAD-17 were evaluated through a comprehensive field investigation program. Primary media investigated at SEAD-17 included surface soil, subsurface soil, surface water and sediment, and groundwater. Samples collected during the ESI and the RI were screened against available standards, criteria and guidelines. This screening effort identified constituents and media that may have the potential to cause unacceptable risk.

For soil, the concentrations established by the NYSDEC Technical Administrative Guidance Memorandum (TAGM) values, HWR-94-4046, Revised January 24, 1996. TAGM values were used for screening of site contaminants because these concentrations are levels at which the NYSDEC considered reasonable alternatives to pre-disposal conditions. For groundwater, the NYSDEC Class GA groundwater standards were used for comparison. For surface water, the Class C surface water standards were considered. For sediment, the NYSDEC Sediment Criteria described in the NYSDEC, Division of Fish, Wildlife and


SEAD17
SS17-24
496
N 998250
448
SS17-25
2190
SS17-8
697
SS17-26
577
SS17-5
594
SS17-1
2740
SS17-27
1210
SS17-12
1680
SS17-4
Deactivation Purpose
Building 367
1340
SS17-9
3150
SS17-6
373
SS17-17
172
SS17-30
371
SS17-2
44.9
SS17-21
524
SS17-28
2940
SS17-13
254
SS17-29
226
SS17-22
402
SS17-19
472
SS17-15
2310
SS17-7
450
SS17-31
375
SS17-3
SS17-10
Building 307T
2780
SS17-18
1310
SS17-14
N 998000
E 749600
69.2
SS17-20
111
SS17-23
6270
SS17-37
E 749250
SEAD17A
265
SS17-34
Number 2
Fuel Oil Tank
Concrete Pad
with
Process Equipment
595
SS17-16
634
SS17-35
329
SS17-11
Liquid Propane
Gas Tank
815
SS17-36
183
SS17-39
APPROXIMATELY
9.5' SOUTH OF
THE ARROWHEAD
163
SS17-38
N
2000
1000
500

Marine Resources, *Technical Gudance for Screening Contaminated Sediments, January, 1999*. For metals in sediment, the Lowest Effect Level (LEL) was used for comparison.

A brief summary of the analytical results is presented below. A detailed description of the analytical results is presented in the SEAD-16 and SEAD-17 Remedial Investigation Figure B5.2 shows theReport (Parsons, March 1999).

Figure B2.2 show the soil sampling location's highest concentration values for lead at SEAD 17.

Metals were found to be pervasive in the surface and subsurface soils at SEAD-17. Based on the RI and ESI data, twenty-one metals were detected in the surface soils at concentrations above their respective TAGM values. Antimony, arsenic, copper, lead, mercury, and zinc were detected in almost all of the surface soil samples at concentrations above their respective TAGM values. The metals were generally evenly distributed around Building 367, although some of the highest concentrations were located immediately to the southwest of the building. A potential source for the high concentrations of metals in this area of the site may be the discharge pipe, which has an outfall near sample SS17-18 and drains the retort inside Building 367. In the subsurface soils, lead was detected at concentrations above the TAGM value in all samples analyzed. Two SVOC parameters were detected at four surface soil sampling locations and one pesticide parameter was detected at two surface soil sampling locations above their respective TAGM value.

Based on the RI data, the groundwater at SEAD-17 has not been significantly impacted by any of the chemical constituents. Low concentrations of SVOCs were detected below the NYSDEC AWQS Class GA and federal MCL groundwater standard. Six metals (aluminum, iron, lead, manganese, sodium, and thallium) did exceed the groundwater standard. It should be noted that SEAD-17 monitoring wells were resampled on October 30, 1999 and analyzed for thallium. The results indicate that all groundwater samples had a thallium concentration at the detection limit of 1.5 ug/l, which is less than the EPA MCL (2 ug/l). Additionally, no VOCs, pesticides, PCBs, or nitroaromatics were detected in the groundwater.

Surface water impacts were not widespread and many of the chemical constituents analyzed for were not detected in the samples. Most of the impacts from metals occurred in the surface water samples from the drainage ditch south of the Deactivation Furnace. No VOCs, pesticides, PCBs, or nitroaromatics were detected in the samples. Copper, iron, lead, and selenium were detected at concentrations above the NYSDEC AWQS Class C surface water standard.

Sediment impacts were from SVOCs, pesticides, and metals. Impacts from SVOCs were most significant at one location in the drainage ditch, in the northeastern corner of the site. Pesticides were found in the drainage ditches in the western and northeastern portions of the site. Metals were found in sample SW/SD17-3, located in the drainage ditch in the eastern portion of the site. Antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese,

mercury, nickel, and zinc were detected at concentrations above the NYS LEL. No PCBs or nitroaromatics were detected.

B2.1.3 SEAD-45

SEAD-45 has been described in six investigations. The purpose of the previous investigations described below, which were performed over a period of approximately 16 years was to determine if previous activities at SEAD had impacted soil, groundwater, sediment or surface water at SEAD-45.

The first study was conducted in 1979 in which groundwater and surface water from Reeder Creek were sampled and analyzed. The second study was a 1982 study conducted by the USAEHA. Eight soil samples were collected from the demolition mound. The third study was conducted between 1982 and 1987. Monitoring wells MW-1 through MW-5 were sampled on a quarterly or semi-annual basis. The fourth study was conducted in 1988 by Metcalf and Eddy. Monitoring wells MW-1 through MW-5 were sampled as part of an investigation involving the OB Grounds. The fifth study was conducted as part of the OB Grounds Remedial Investigation in which surface water and sediment samples were collected from drainages into Reeder Creek and from Reeder Creek itself. The sixth study was an Expanded Site Inspection (ESI) conducted by Parsons in 1993. This study involved completing 14 test pits in and near the demolition mound; installing four groundwater monitoring wells up and downgradient of the demolition mound; and the collection of surface soil, subsurface soil, surface water, groundwater, and sediment samples. A geophysical investigation was conducted across the OD Grounds, including the OD mound, to locate any subsurface features. The test pits excavated in the mound uncovered various components of high explosives and fuzes. The test pits excavated away from the detonation mound located the electrical conduits that served the previous locations of the detonation mound.

Soil Data

The first soil samples taken from the detonation mound in 1982 detected no metals at concentrations exceeding the Extraction Procedure Toxicity Limits. There were, however, three explosive compounds and the decay product of an explosive compound detected in these samples. Explosives were also found in each sample. RDX was found at concentrations of 1.4 to 1.7 ppb, Tetryl at 1.6 to 16.3 ppb, 2,4,6-TNT at 2.2 to 61 ppb, and 2,4-DNT at 1.1 to 19 ppb.

The five subsurface samples taken from the demolition mound during the ESI in 1993 contained high concentrations of explosive compounds and metals, notably cadmium, copper, mercury, and silver. The surface soil samples taken from nine locations at the site also contained high concentrations of explosive compounds, cadmium, copper, and mercury.

SEAD 45 Summary of Analytes Detected in Soil
Seneca Army Depot

MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-1 202506	SOIL SEAD-45 0-0.2 10/25/93 SS45-2 202507	SOIL SEAD-45 0-0.2 10/25/93 SS45-3 202508	SOIL SEAD-45 0-0.2 10/25/93 SS45-4 202509	SOIL SEAD-45 0-0.2 10/25/93 SS45-5 202512	SOIL SEAD-45 0-0.2 10/25/93 SS45-10 202517 SS45-5DUP
ug/kg	470	NA	130 U	130 U	130 U	130 U	120 J	140 J
ug/kg	5800	NA	130 U	130 U	100 J	82 J	280 J	290 J
ug/kg	190	NA	130 U	130 U	100 J	100 U	130 UJ	130 UJ
ug/kg	330	NA	130 U	130 U	130 U	90 J	130 UJ	130 J
ug/kg	1400	NA	130 U	130 U	96 J	130 U	84 J	80 J
ug/kg	270	NA	130 U	130 U	130 U	130 U	130 UJ	130 UJ
ug/kg	680	NA	130 U	130 U	99 J	130 U	280 J	270 J
ug/kg	190	NA	130 U	130 U	130 U	110 J	150 J	140 J
mg/kg	8.2	7.5	5	5.5	5.1	5.1	6.2	6.4
mg/kg	365	300	122	194	115	143	161	151
mg/kg	13.1	1	2.8	2.4	1.1	3.9	9.5 J	9.5 J
mg/kg	39.3	24	24.1	39.3	27.4	22.9	26.9	23.8
mg/kg	1240	25	79.4	192	55.8	155	538	405
mg/kg	87.8	30	20.4	15.7	12	34.9	63.6	54.9
mg/kg	4.3	0.1	0.43	0.63	0.17	0.43	1.5 J	2.1 J
mg/kg	51	37	29.4 R	41.3 R	40.5	35.2 R	40.5	36.4
mg/kg	26.2	0.5	1.3 UJ	1.5 UJ	2.1	1 UJ	3.5 J	2.7 J
mg/kg	557	90	148 R	122 R	115 R	208 R	427	361
mg/kg	8.3	NA	0.56 U	0.57 U	0.58 U	0.54 U	0.72 U	0.67 U

Table B2.2.3
SEAD 45 Summary of Analytes Detected in Soil
Seneca Army Depot

MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-9 202516	SOIL SEAD-45 3 11/08/93 TP45-1 203646-203648	SOIL SEAD-45 3 11/08/93 TP45-11 203656-203658 TP45-1DUP	SOIL SEAD-45 3 11/08/93 TP45-2 203650-203652	SOIL SEAD-45 3 11/08/93 TP45-3 203654	SOIL SEAD-45 3 11/09/93 TP45-4 204026-204028
ug/kg	470	NA	130 UJ	250 J	430 J	470 J	240 J	350
ug/kg	5800	NA	5800 J	2500 J	1600 J	2700 J	2500 J	4300
ug/kg	190	NA	130 UJ	150 J	170 J	190 J	130 UJ	180
ug/kg	330	NA	130 UJ	130 UJ	130 UJ	130 UJ	130 UJ	130 U
ug/kg	1400	NA	1400 J	330 J	340 J	600 J	400 J	330
ug/kg	270	NA	270 J	130 UJ	130 UJ	130 UJ	130 UJ	130 U
ug/kg	680	NA	130 UJ	430 J	430 J	680 J	530 J	480
ug/kg	190	NA	130 UJ	130 UJ	140 J	190 J	120 J	110 J
mg/kg	8.2	7.5	6.1	6.8	6.3	7.1	8.2	8 J
mg/kg	365	300	202	208	177	201	248	216
mg/kg	13.1	1	5.5 J	10.4 J	9.6 J	9.5 J	13.1 J	10.9 R
mg/kg	39.3	24	27.4	31.3	25.7	30.1	35.5	32.1
mg/kg	1240	25	267	722	555	561	791	1240 J
mg/kg	87.8	30	77.7	54.1	73.3	69.4	87.8	74.7
mg/kg	4.3	0.1	1.9 J	3.1 J	1.4 J	3.1 J	4 J	3.6
mg/kg	51	37	42.5	41.8	39.1	40.5	51	48.3
mg/kg	26.2	0.5	1.3 J	3.2 J	4.7 J	5 J	6.6 J	26.2 J
mg/kg	557	90	383	345	360	390	538	557 J
mg/kg	8.3	NA	0.7 U	0.7	0.54 U	0.55 U	0.55 U	0.62

Notes:
a) The TAGM value for PCBs is 1000 ug/kg for surface soils and 10,000 ug/kg for subsurface soils.
b) * = As per proposed TAGM, total VOCs < 10ppm; total Semi-VOCs <500ppm; individual semi-VOCs < 50 ppm.
c) NA = Not Available
d) U = Compound was not detected.
e) J = the reported value is an estimated concentration.
f) R = the data was rejected in the data validating process.
g) UJ = the compound was not detected; the associated reporting limit is approximate.

LEGEND

MAJOR WAT
MINOR WATE
FENCE
UNPAVED RO
BRUSH LINE
LANDFILL EX
RAILROAD
GROUND SU
ELEVATION
SIGN POST
DECIDUOUS TREE
GUIDE PO
FIRE HYDRANT
MANHOLE
COORDINATE
(250' GRI
POLE
UTILITY BOX
MAILBOX/RR
OVERHEAD UTILITY POLE
SURVEY
MONITORING WELL
SOIL BORING
SURFACE SOIL SAMPLE
SURFACE WATER/SEDIMENT SA
TEST PIT

SS45-1
77.7
SAMPLE LOCATION WITH LEAD CONCENTRATION (mg/Kg)

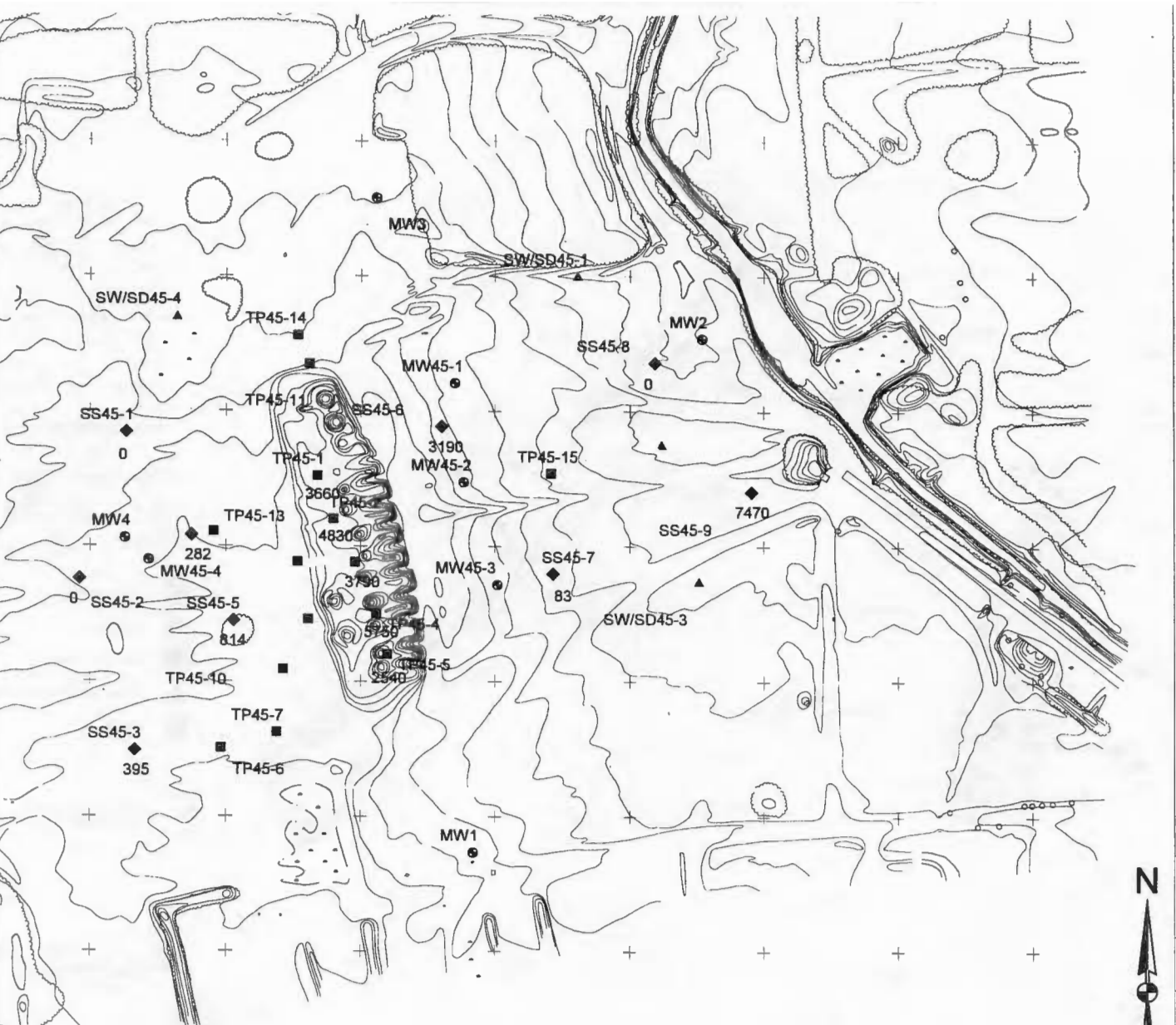
100 0 100 200

PARSONS
PARSONS ENGINEERING SC

SENECA ARMY DE

FIGURE B2 3
SEAD-45 OPEN DETONATION GROU
LEAD IN SURFACE SOILS (mg

SCALE AS NOTED | DATE MAY 1995 | PAGE 1 O


MW3
SW/SD45-1
SW/SD45-4
TP45-14
MW2
SS45-8
0
MW45-1
TP45-11
SS45-6
SS45-1
0
3190
MW45-2
TP45-15
TP45-1
3660
7470
MW4
TP45-13
4830
SS45-9
282
MW45-4
MW45-3
SS45-7
3790
83
0
SS45-2
SS45-5
SW/SD45-3
5750
814
2540
TP45-10
TP45-7
SS45-3
395
TP45-6
MW1
MW5
N
SIGN POST
FIRE HYDRANT
POLE
OVERHEAD UTILITY POLE
MONITORING
SOIL BORING
SURFACE
TEST PIT
SS45-1
7470
100
0
PARSONS
SENECA
SEAD-45 OPEN DET
EXPLOSIVES IN
SCALE
AS NOTED

Fourteen of the 16 soil samples analyzed had cadmium concentrations above the criteria value of 1 ppm. The highest cadmium concentration was identified in sample TP45-3, where 13.1 ppm was reported. This test pit soil sample was collected from the center of the OD mound. This sample also had elevated concentrations of all the other metals of note, and had the highest detected concentrations of lead, nickel, and vanadium, and the second highest detected concentrations of copper and mercury. In all of the soil samples collected, copper and mercury exceeded TAGM criteria. The subsurface samples taken from the mound contained the highest concentrations for both of the metals. In general, the highest concentrations for all of the metals were found in the samples collected from the five test pits completed in the OD mound. The exception was chromium, where the highest concentration (39.3 ppm) was found in the surface soil sample SS45-2, collected west of the OD mound. Even though the highest metals concentrations were in the test pit soil samples, there were TAGM exceedances in the surface soil samples as well. The highest metals concentrations in the surface soil samples were in the samples SS45-5, collected just west of the OD mound, and SS45-6 and SS45-9, collected east of the OD mound.

The evaluation of the information collected to date indicates that metals and explosive compounds have been transported away from the demolition mound. Surface water transport may be a significant pathway by which soil is eroded from the demolition mound, and the unvegetated nature of the OD Grounds suggests that wind erosion may also be a pathway by which contaminants are transported from the mound to the surrounding surface soil. No air monitoring has been performed during a detonation event, so air has not been evaluated as a transport pathway. Aside from the samples taken from the test pits at the demolition mound, no subsurface soil sampling was conducted at the site. There is no information, therefore, about the vertical extent of the contamination.

Refer to Table B2.1.3 for a Summary of Analytes Detected in Soil at SEAD 45. Locations of lead concentrations are shown in Figure B2.3 and for copper in Figure B2.4.

Groundwater Data

When originally sampled in 1979, the monitoring wells MW-1 to MW-4 contained iron in excess of New York State Ground Water Standards (NYSGWS). Each of the monitoring wells, as well as samples taken from Reeder Creek, also contained explosive compounds.

Groundwater sampling conducted from 1982 through 1988 detected no explosive compounds in the monitoring wells, but NYSGWS were exceeded for metals in MW-1 (chromium, iron, lead), MW-2 (manganese, lead), MW-3 (lead), MW-4 (cadmium, chromium, lead), and MW-5 (chromium, manganese, lead, selenium). Verbal communication with USAEHA suggests that the collected groundwater samples were invalid due to high turbidity.

During the Quarterly Sampling Program for the OB Grounds, explosive compounds were detected on two different occasions in MW-4. Groundwater standards were exceeded for

metals in MW-1 (iron, mercury), MW-2 (iron, mercury, antimony), MW-3 (iron), MW-4 (iron, magnesium, sodium), and MW-5 (iron). In most of the samples collected in January 1993, various metals, including iron, mercury, and zinc were found exceeding NYSGWS. These samples were extremely turbid, and the validity of the samples is questionable.

During the groundwater sampling program conducted for the ESI, explosive compounds were detected in MW-1 and MW-5. MW-1 contained 0.5 ppb HMX and MW-5 contained 0.067 ppb 1,3-dinitrobenzene. A variety of metals, particularly antimony, iron and manganese were found to exceed the NYSGWS in each of the eight monitoring wells sampled.

Cadmium, chromium, iron, lead, manganese, mercury, selenium, sodium, and zinc have all been detected in the OD monitoring wells at concentrations exceeding the NYSGWS, but no explosive compounds have been detected at concentrations exceeding the NYSGWS. Since explosive compounds are not naturally occurring compounds it must be concluded that they are the result of demolition activities carried out in the OD Grounds. Monitoring wells MW-1 and MW-5 lie between the detonation ground and the burning pads and could reflect the result of activities conducted at either area, but the remaining six monitoring wells discussed above are primarily influenced by the OD Grounds. This groundwater data suggests that metals and explosive compounds have leached from the demolition mound into the on-site groundwater.

Surface Water Data

Surface water sampling that was conducted during the OB RI detected both an explosive compound and metals in areas influenced by runoff from the OD mound. The surface water samples were taken from standing water in an area between the OB Grounds and the OD Grounds, from drainage swales leading from the OD mound into Reeder Creek, and from Reeder Creek itself. RDX was the only explosive compound found. It was detected in SW-120 (0.67 ppb), collected from Reeder Creek, and SW-160DL 9.4 ppb), collected from standing water between the OB Grounds and the OD Grounds. New York State has no water quality guideline for RDX in Class D surface water. Various metals were detected, but only SW-290, a sample from a drainage swale leading into Reeder Creek, contained metals (Cu, Fe) in concentrations above New York State guidelines.

Surface water samples taken during the ESI conducted at SEAD-45 detected both explosive compounds and metals as well. The surface water samples were collected from drainage ditches leading from the demolition mound to Reeder Creek and from standing water near the mound. The explosive compounds RDX and HMX were detected in SW45-2, collected from a drainage between the demolition mound and Reeder Creek; RDX was detected from SW45-1, located in the same drainage swale that SW-290 was collected. HMX was detected in SW45-3 collected from standing water between OB and OD where SW-160DL was collected. Two explosives, HMX and RDX were detected in three of the surface

water samples. SW45-1 contained 0.24 ppb RDX, SW45-2 contained 0.45 ppb HMX and 2 ppb RDX, and SW45-3 contained 0.49 ppb HMX.

Metals including aluminum, cadmium, copper, iron, lead, mercury, and zinc were found in the surface water. Of those, aluminum, iron, and mercury exceeded New York State guidelines in each of the four samples collected, and copper exceeded New York State guidelines in three of the four samples.

Explosive compounds and metals have been detected in standing water near the demolition mound, in water draining from the demolition mound, and in the Reeder Creek, which is the main transport pathway of water from the site. Some of the standing water collected and the water taken from Reeder Creek is in the area influenced by both the OB and the OD Grounds, and contamination could be a result of activities at either area. The surface water data suggests that surface runoff via overland flow is a significant pathway for contaminants to be transported away from the demolition mound and off of the site.

Sediment Data

Sediment samples for the OB RI were collected from the same locations as the surface water samples were collected for the OB RI. Two explosive compounds were detected in SD-290, located in a drainage swale leading from the demolition mound into Reeder Creek. HMX was detected at a concentration of 130 ppb, and 2-amino-4,6-dinitrotoluene was detected at a concentration of approximately 85 ppb. No explosive compounds were detected in the surface water collected at that location, but metals exceeding New York State surface water guidelines were found there. Six explosive compounds were detected at SD-190, collected in a drainage ditch between the OB and OD Grounds. The explosive compounds detected were HMX (120 ppb), RDX (500 ppb), 2,4,6-trinitrotoluene (100 ppb), 4-amino-2,6-dinitrotoluene (160), 2-amino-4,6-dinitrotoluene (180 ppb), and 2,4-dinitrotoluene (98 ppb). This location was dry at the time of sampling, so there is no surface water data from this location.

Metals exceeding NYSDEC sediment criteria were found at each of the nine sediment locations sampled for the OB RI. These metals were arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc. Copper and iron exceeded NYSDEC criteria in eight of the nine samples, and lead, nickel, and zinc exceeded NYSDEC criteria in seven of the nine samples.

Sediment samples collected during the ESI conducted at SEAD-45 were also collected at the same location as the corresponding surface water sample. Explosive compounds were detected at only one of the sample locations, SD45-2. Five explosive compounds were detected there, RDX (210 ppb), Tetryl (140 ppb), 2,4,6-trinitrotoluene (120 ppb), 2-amino-4,6-dinitrotoluene (260 ppb), and 2,4-dinitrotoluene (83 ppb). The surface water sample at that location also contained explosive compounds.

Metals in excess of NYSDEC sediment criteria were detected at three of the four sampling locations. SD45-2, SD45-3, and SD45-4 each contained copper and mercury in excess of NYSDEC criteria SD45-2 also contained cadmium and iron, and SD45-4 also contained cadmium.The explosive compounds and metals detected in the sediment does not correlate directly with the explosive compounds found in the surface water samples, but the contaminants found in each of the two mediums do suggest that the contaminants are being transported by the surface water and are being deposited in the drainages leading from the demolition mound.

B2.1.4 SEAD-46

SEAD-46, the small arms range, is discussed in the SWMU Classification Report for Seneca Army Depot Activity (Parsons, 1994). This report does not provide any detailed information about the site, but it does provide clues to it current and past uses. The report states that the range was used for testing fire tracers. An unknown number of 3.5-inch rockets were fired into an earthen berm at one end of the range. It further states that the area is occasionally used for training troops, however, blank ammunition was used during training practices. The report also discusses other characteristic of the contaminants of concern at the site, the details of which are discussed in other sections of this report.

A Remedial Investigation was conducted in late 1999, but data is not yet avalible.

From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site, and the potential for impacts to surface water and sediment exists due to the direction of surface water run-off and the proximity of the Duck Pond.

The potential contaminants of concern at SEAD-46 are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been verified at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.5 SEAD 57

An Expanded Site Inspection (ESI) was conducted by Parsons Engineering Science, Inc. in 1993 and 1994 at the Explosive Ordnance Disposal Area. The results of the ESI are presented in the draft final Three Moderately High Priority SWMUs Expanded Site Inspection Report (Parsons, June 1995). Chemical analyses were performed on a total of nine surface soil samples, eleven subsurface soil samples and three groundwater samples as part of the ESI.

Refer to Figures B2.5 for locations and concentrations of lead in soils, and Figure B2.6 for locations and concentrations of copper.

LEGEN

760

ROAD SIGN
DECIDUOUS TREE
FIRE HYDRANT
MANHOLE
POLE
UTILITY BOX
OVERHEAD UTILITY POLE

TP57-1
60.9
SAMPLE LOCA
AND CONCENT

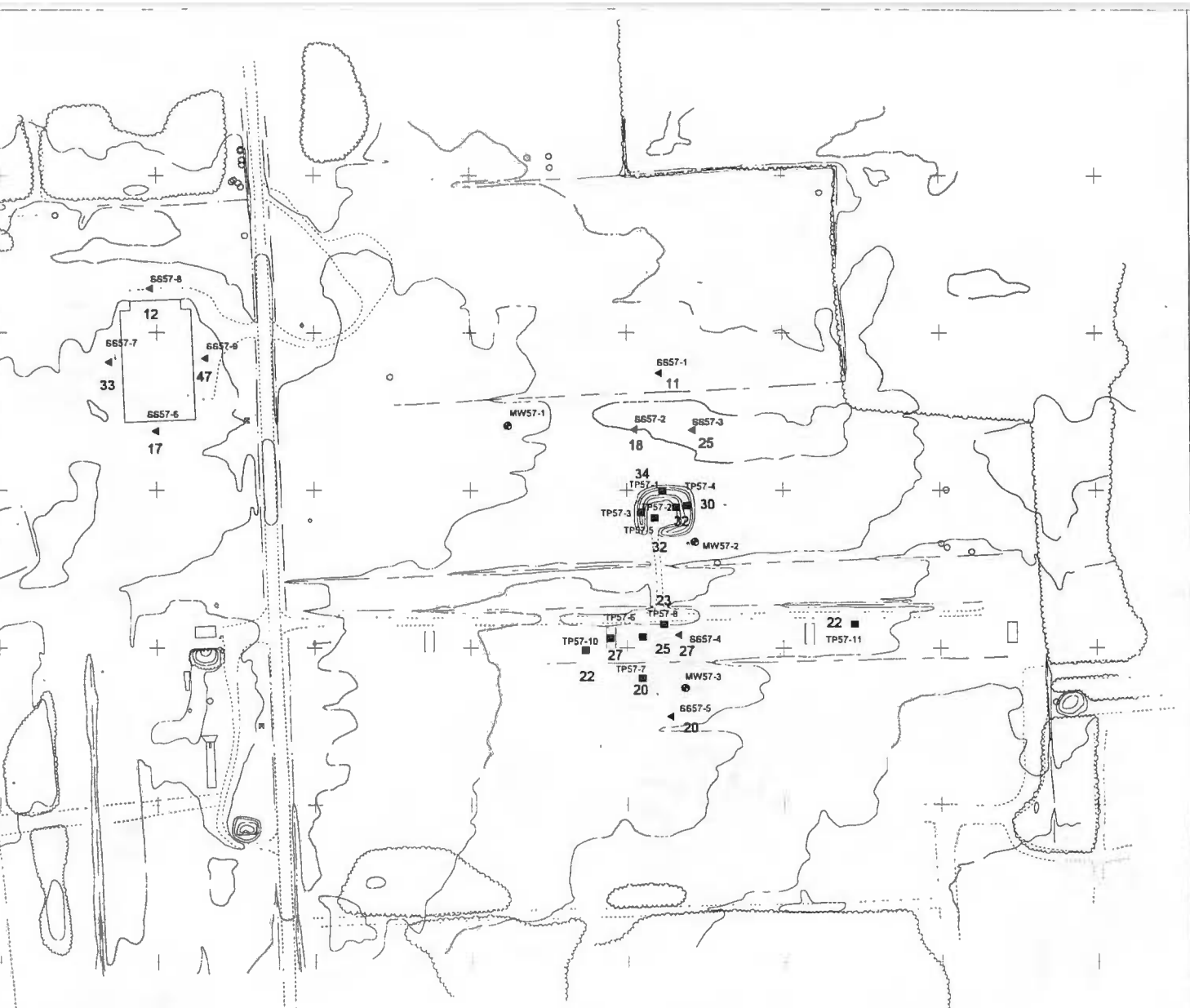
PARSONS
PARSONS ENGINEERING

SENECA ARMY DEPO

DEPT ENVIRONMENTAL ENGINEERING

FIGURE B2 5
SEAD-57 EXPLOSIVE O
DISPOSAL AR
LEAD IN SOILS (m

SCALE 1" = 200'
DATE


SB57-8
12
SB57-7
SB57-9
33
47
SB57-6
17
SB57-1
11
MW57-1
SB57-2
SB57-3
18
25
34
TP57-1
TP57-4
TP57-3
TP57-2
30
32
TP57-5
32
MW57-2
23
TP57-8
TP57-6
22
TP57-11
TP57-10
SB57-4
27
25
27
TP57-7
22
20
MW57-3
SB57-5
20
ROAD SIGN
FIRE HYDRANT
POLE
OVERHEAD UT
POLE
TP57-
60.9
PARSONS
SENECA
DEPT ENVIRONME
SEAD
SCALE

Eleven test pits were excavated at SEAD-57: three on the berm (TP57-1, 3, and 4), two within the detonation area (TP57-2 and 5), five in the depressed area (TP57-6 to 10), and one at a background location (TP57-11). Seven of the eleven test pits were located at anomalies detected during the geophysical surveys in these three areas.

Based on the results of the ESI, it appears that the site soil and groundwater have been impacted by the release of metals. In particular, the metals aluminum, chromium, copper, lead, nickel, potassium and zinc were identified at concentrations which were significantly above TAGM values and/or present above the TAGM value in a large number of soil samples. The test pit sample TP57-2, which was collected from within the bermed enclosure, contained copper, lead, and zinc concentrations which exceeded their respective TAGM values by at least an order of magnitude.

The results of the groundwater sampling program at SEAD-57 indicated that antimony was present in the groundwater collected from MW57-1 and MW57-3 at concentrations which exceeded both MCL and NY AWQS Class GA criteria. Additionally, magnesium and manganese were detected in the groundwater sample collected from MW57-2 at concentrations which exceeded their respective NW AWQS Class GA criteria.

Surface Soil

Constituents which were detected in the surface soil at SEAD-57 include VOCs, SVOCs, pesticides, one PCB compound, metals, and nitrate/nitrite nitrogen. Of all the compounds detected, only metals were found at concentrations which exceeded their respective TAGM values. No herbicides or nitroaromatic compounds were detected in the surface soil samples. The metals aluminum, chromium, copper, iron, lead, potassium, nickel and sodium were detected at concentrations that only slightly exceeded their respective TAGM values in one or more samples. The metal silver, however, was detected in the sample SS57-1 at a concentration of 1.7 mg/kg, which significantly exceeds the TAGM value of 0.5 mg/ kg.

Subsurface Soil

Subsurface soil at the site has been impacted primarily by metals. Other constituents that were detected include VOCs, SVOCs, pesticides, herbicides, and nitrate/nitrite-nitrogen. All of these constituents other than metals are not considered to be significant because they were detected at concentrations which are below their respective TAGM values.

Of the 22 metals reported in soil, 15 of these were found in one or more samples at concentrations above their respective TAGM values. While several of these exceedances were found in only one or two samples, or were only marginally above the TAGM value, several metals were identified at significant concentrations and/or in a large number of

potassium which were detected in a large percentage of the samples at concentrations exceeding their respective TAGM values. Copper, lead and zinc were detected at concentrations which were an order of magnitude or greater above their respective TAGM values. The highest concentrations of these (copper at 2930 J mg/kg, lead at 1860 mg/kg and zinc at 1250 J mg/kg) were detected in test pit sample TP57-2.

Groundwater Data

The major constituents of concern detected in the groundwater at the site are inorganic elements. Other constituents that were detected include SVOCs and nitrates. These latter constituents were considered to be insignificant because they are present at low concentrations which were below their respective criteria values. Constituents that were not detected in the groundwater include VOCs, pesticides, PCBs, herbicides, and nitroaromatic compounds.

Antimony was found in two of the three groundwater samples at concentrations above the criteria value. The maximum concentration for antimony, 44.7 μg/L, was found in the groundwater sample collected from monitoring well MW57-1.

The metals magnesium and manganese were found in one of the groundwater samples at concentrations above the criteria value. The maximum concentration for magnesium, 36,900 μg/L, and the maximum concentration for manganese, 327 μg/L, were found in the groundwater sample for monitoring well MW57-2.

B2.1.6 Grenade Range

No analytical data exists for the Grenade Range. From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site, and the potential for impacts to surface water and sediment exists due to the direction of surface water run-off.

The potential contaminants of concern at the Grenade Range are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been detected at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.7 EOD Area #2

No analytical data exists for EOD Area #2. From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site, and the potential for impacts to surface water

and sediment exists due to the direction of surface water run-off and the proximity of the Duck Pond.

The potential contaminants of concern at EOD Area #2 are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been detected at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.8 EOD Area #3

No analytical data exists for EOD Area #3. From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site, and the potential for impacts to surface water and sediment exists due to the direction of surface water run-off and the proximity of the Duck Pond.

The potential contaminants of concern at EOD Area #3 are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been detected at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.9 Burial Area Near Indian Creek

No analytical data exists for the Burial Area Near Indian Creek. From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site, and the potential for impacts to surface water and sediment exists due to the direction of surface water run-off and the proximity of Indian Creek.

The potential contaminants of concern at the Burial Area Near Indian Creek are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been detected at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.10 Demolition Area Near SEAD-57

No analytical data exists for the Deomolition Area Near SEAD-57. From the information available concerning activities at the site and the nature of the materials used at the site, a threat to human health and the environment may exist. The potential for impacts to surface soil exists due to the way in which materials were handled a the site.

The potential contaminants of concern at the Demolition Area Near SEAD-57 are explosive compounds, metals, and SVOCs, and the environmental fate of these potential contaminants of concern is discussed below. Although explosive compounds have not been detected at the site, explosive compounds are still considered potential contaminants of concern because material containing explosive compounds was handled.

B2.1.11 Toxicity of Chemicals of Concern

The following is a summary of the toxic effects of these compounds. Exposure limits are given in Table B2.2.

Arsenic - Arsenic becomes a skin irritant with prolonged exposure: moist areas of the skin; respiratory mucosa; angles of eyes, ears, nose, and mouth; and the wrists being common sites of irritation. Acute exposure symptoms include abdominal pain, vomiting, and watery diarrhea followed by shock due to fluid loss. Acute inhalation exposure can cause chest pain, coughing, giddiness, and general weakness which precede gastrointestinal symptoms. Symptoms of chronic inhalation exposure proceed in three phases. Initial symptoms are weakness, loss of appetite, occasional nausea and vomiting, and some diarrhea. The second phase consists primarily of irritant effects of the eyes, nose, and respiratory passages, with perforation of the nasal septum common, and allergic reactions of the skin. The third phase consists of peripheral neural effects, usually numbness. Arsenic has been causally associated with skin cancer and implicated in increases in the incidence of lung cancer.

Barium - Barium and its compounds are highly toxic. Acute symptoms are excessive salivation; vomiting; colic; diarrhea; convulsive tremors; slow, hard pulse; and elevated blood pressure. Bleeding in the stomach, intestines, and kidneys may occur. Chronic exposure results in enlargement of the liver and spleen, and increases in white blood cell counts. Barium has been found to produce lung cancer in rats.

Cadmium - Cadmium compounds induce vomiting at low oral doses and systemic oral poisoning is rare. Acute exposure can occur by inhalation, producing irritation in the respiratory tract followed hours later by coughing, chest pain, sweating and chills and, later, general weakness, severe respiratory irritation, and fluid build up in the lungs. These symptoms can lead to emphysema or death. Chronic exposure can lead to emphysema, kidney damage, and possible heart and blood pressure effects. Animal studies have shown cadmium to produce cancer, birth defects, testicular atrophy, and liver and nerve damage. Some studies in man have shown an association of cadmium exposure with cancers of the prostate and kidney.

Chromium - Chromium compounds can act as allergens, resulting in local irritation of the skin and respiratory tract. Systemic effects are generally a result of the irritating properties of chromium compounds on the eyes, nose, and respiratory tracts. Chromium compounds has been shown to be carcinogenic in rats and has been associated with increases in lung cancer in humans. The irritant and carcinogenic effects differ widely for various compounds of chromium.

Copper - Copper is a soft, heavy metal which occurs naturally as a variety of salts, as well as in the pure metallic form. Copper is an essential trace element in humans and animals. Copper salts are irritating to the skin and cause itching, erythema, and dermatitis. They may cause conjunctivitis, ulceration and clouding of the cornea. Metallic copper can cause keratinization of the hands and soles of the feet. Inhalation of copper fumes can cause congestion of the nasal mucous membranes and perforation of the septum. Ingestion causes irritation of the gastrointestinal tract, producing nausea, vomiting, gastritis, and diarrhea. If vomiting fails to occur, gradual absorption from the bowel may cause systemic poisoning. The systemic effects of copper include capillary damage, kidney and liver damage, and excitation followed by depression. Jaundice and hemolytic anemia can also occur following acute poisoning.

Mercury - Mercury is a local irritant of skin and mucous membranes any may be a skin sensitizer in some people. Acute poisoning symptoms are generally irritant: acute inhalation exposure results in inflammation of the lung and bronchioles. Chronic exposure symptoms are non-specific: weight loss, appetite loss, memory loss, insomnia, indigestion, weakness, metallic taste in mouth, tremors in eyelids, fingers, lips, or tongue, and loosening of teeth. Symptoms may vary among individuals. Long-term or high dose exposures can produce irritability, delirium, anxiety, or manic depressive psychosis.

Nickel - Dermal exposure to nickel and nickel compounds results in contact dermatitis and chronic eczema. Nickel and its compounds are also irritants to the conjunctiva of the eye and mucous membranes of the upper respiratory tract. Chronic exposure to elemental nickel and its salts may result in lung and nasal passage cancer. Effects are also seen on the heart, muscles, brain, and kidney.

Selenium - Selenium and various selenium compounds can effect the body if inhaled, if they come into contact with the eyes or skin, or if swallowed. Selenium compounds if inhaled in large quantities can cause severe breathing difficulties. Skin contact can cause burns or rashes. Long-term exposure can cause paleness, stomach disorders, coated tongue, and nervousness. Fluid in the abdominal cavity, damage to the liver and spleen have been reported in animals.

Explosives

HMX - The chemical name of HMX is octahydro-1,3,5,7 -tetranitro -1,3,5,7 -tetrayocine. Considered a poison by ingestion or intravenous injection, HMX remains an explosive of concern to many industries who handle this compound. At high temperatures, HMX decomposes violently and emits toxic fumes such as oxides of nitrogen (NO_x).

RDX - The chemical name of RDX is hexahydro-1,3,5 -trimethyl -1,3,5 -triazine. The solubility of RDX in water at 18° was found to be 44.7 ppm and hydrolysis is slow. RDX is a corrosive irritant to the skin, eyes and mucous membranes. Experimental reproductive abnormalities and epileptiform convulsions from exposure have been reported. It is one of the most powerful high explosives in use today. RDX has more shattering power than TNT and is

often mixed with TNT as a bursting charge for aerial bombs, mines and torpedoes. When heated to decomposition it emits toxic fumes such as oxides of nitrogen (NO_x).

2,4,6-TNT - The chemical name of 2,4,6-TNT is 2,4,6-trinitrotoluene. It is not been known to undergo hydrolysis in the environment. Symptoms of exposure to TNT are sneezing, coughing, sore throat, and muscle pain. TNT effects the blood, liver kidneys, skin, central nervous system, and cardiovascular system. Human systemic effects when ingested include: hallucinations, cyanosis, and gastrointestinal changes. Experimental reproductive abnormalities and mutagenic data have been reported. This chemical has been classified as a skin irritant and has been implicated in aplastic anemia. TNT can cause headaches, weakness, anemia, liver injury and may be absorbed through the skin. TNT is flammable or explosive when exposed to heat or flame. Moderate explosion hazard; will detonate under strong shock. It is a comparatively insensitive explosive, however, sudden heating of any quantity will cause detonation.

2,6-DNT - The chemical name of 2,6-DNT is 2,6-dinitrotoluene. It is not expected to hydrolyze under normal environmental conditions. NIOSH recommends to reduce exposure to DNT to the lowest levels possible. Experimental testing of 2,6-DNT has shown it to be more active as a liver carcinogen than 2,4-DNT isomer. The major target organs are the blood, liver, and central nervous system. Symptoms of exposure include anoxia, cyanos, anemia, and jaundice.

2,4-DNT - The chemical name of 2,4-DNT is 2,4-dinitrotoluene. It is not expected to hydrolyze under normal environmental conditions. 2,4-DNT is poisonous if swallowed or injected subcutaneously. It has been shown to be carcinogenic, teratogenic, and mutagenic in experimental tests. 2,4-DNT can cause anemia, methemoglobinemia, cyanosis, and liver damage. The chemical will combust when exposed to heat or flame; can react with oxidizing materials. There have been cases of explosion during manufacture and storage and mixture with nitric acid is a high explosive. Other mixtures such as alkalies can cause a significant increase in pressure. When heated to decomposition it emits toxic fumes such as oxides of nitrogen (NO_x).

B2.1.12 CHEMICAL HAZARD CONTROL

Before intrusive activities are conducted at a forementioned SEAD location the UXOSO will review the site-specific information and discuss with the UXOQCS and SUXOS methods of insuring a safe working environment. Engineering controls will be used to minimze potential exposure:

- Position personnel and equipment upwind of excavation (use wind flag);
- Minimize size of excavation if possible;
- Use disposible PPE (Section B3.1);

- Monitor breathing zones (Section B3.2);

B2.2 UXO HAZARDS/CONTROL

Parsons and USA have analyzed the scope of work tasking to determine the work risk hazards associated with each task. The tasks consist of direct tasks and the implied tasks, or sub tasks, to accomplish the work.

PERFORM OE SURVEY

- plant life; exposure to wildlife, rodents, insects, ticks, and snakes which present the possibility of bites and associated diseases;
- Potential trip hazard associated with Exposure to hazards associated with surface OE. These items if moved or handled improperly could detonate, either killing or seriously injuring personnel;
- Biological hazards: exposure to poison oak, poison ivy, or other types of irritating or toxicground cover, irregular terrain, and vegetation;
- Heat Stress.

PERFORM OE IDENTIFICATION DURING EXCAVATION

- Exposure to hazards associated with buried OE. These items if moved or handled improperly could detonate, either killing or seriously injuring personnel at the work site;
- Biological hazards: exposure to poison oak/ivy or other types of irritating or toxic plant life; exposure to wildlife, rodents, insects, ticks, and snakes which present the possibility of bites and associated diseases;
- Potential trip hazard associated with ground cover, irregular terrain, and vegetation;
- Lifting hazards, such as back strain, associated with handling UXO scrap ;
- Heat Stress.

The following Task Hazard Analyzes Sheets identify the following hazards/risks for the SEDA site:

Hazard Analysis

PROJECT NAME: Seneca Army Depot Activity **CUSTOMER: CEHNC** **ACTIVITY:** UXO Avoidance/Identification		**ANALYZED BY/DATE:** George Spenser - 3/14/00
PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
Locate, identify, and mark visual surface and subsurface OE.	Potential OE; unplanned detonation. Wildlife, insects. Toxic Plants. Slips, trips, fall. Heat stress. Cuts and scrapes. Sunburn/Windburn. Exposure to contaminated soil.	UXO safety precautions IAW the WP and SSHP. UXO qualified personnel will accompany all non-UXO qualified personnel. Only UXO personnel will handle UXOs; Mark UXO IAW the WP. Do not subject UXO to heat, shock or friction; Do not move armed/fuzed UXO. Avoid toxic plants; Watch for snakes, do not handle wildlife, Wear Level D PPE. Use insect repellent/barrier cream as necessary; Be alert, watch for trip hazards. Dress for the weather; use Buddy system monitoring; Use Sunscreen as necessary. No Smoking except in designated areas. Wear proper PPE to avoid direct contact of contaminated soils.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; first aid kit; fire extinguisher, radio, hand tools, flagging material, PPE as needed. magnetometers.	Daily PMCS and calibration checks. Radio check; inspect first aid kit and extinguishers.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures. UXO identification and safety precautions training for non-UXO trained personnel.

Hazard Analysis

PROJECT NAME: Seneca Army Depot Activity
CUSTOMER: CEHNC
ACTIVITY: UXO Excavation
ANALYZED BY/DATE: George Spenser - 3/14/00

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Excavating and identifying contacts. Hand digging. Down hole monitoring.	Potential UXO, unplanned detonation. Slips, trips, and falls. Scrapes and cuts. Heat/Cold Stress. Sunburn/Windburn. Unauthorized personnel within the EZ. Exposure to contaminated soil/dust.	Only UXO technicians will excavate or handle UXO. Personnel in the immediate vicinity of UXO operations will be kept to the minimum necessary for safe operations but no less than two UXO technicians. Only hand excavation permitted within 1 foot of UXO. Check soil borings every two feet for anomalies. If anomaly is detected during down hole monitoring, relocate bore hole. Do not subject UXO to heat, shock or friction. Establish exclusion Zone (EZ); post Warning signs; Stop all UXO operations when non-UXO trained personnel are in the EZ. Wear Level D PPE. Be aware of footing and terrain; avoid obstacles when possible. Dress for the weather. Use Buddy system monitoring. Use sunscreen, insect repellent/barrier cream as necessary. Wear proper PPE(see B3.1). Minimize production of dust, monitor for dust and VOC's as needed (see B3.2).
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; extinguishers; first aid kit; magnetometers; communication equipment. Shovels, picks, trowels. PPE and air monitoring instruments as needed.	Daily PMCS first aid kit contents, extinguishers. Hand tool inspection. Radio or telephone check; calibrate Magnetometers.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures. UXO identification and safety precautions training for non-UXO trained personnel.

Hazard Analysis

PROJECT NAME: Seneca Army Depot
CUSTOMER: CEHNC
ACTIVITY: Disposal Operations
ANALYZED BY/DATE: George Spenser - 3/14/00

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Transportation of explosives/UXO. Preparing and placing charges. Blow (detonation) In Place (BIP). Venting inert filled UXOs.	Vehicle accident, Fire, unplanned detonation. Slips, Trips, and Falls. Heat/Cold Stress. Noise, fragmentation, debris.	Load/unload vehicle in designated areas. Use authorized explosive route. Placard vehicle. No personnel in cargo compartment. No explosives in passenger compartment. Observe explosives transportation compatibility requirement. Do not fuel when loaded. No smoking. Shut vehicle off and block wheels when loading. Block/brace secure explosives/UXO. Use Demolition Procedures IAW Work Plan, EODB/TM/TO 60A-1-1-31, SOPs. Maintain Exclusion Zone, distance, tamping, personnel shelters, control of shot size. Be aware of obstacles - watch footing.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicles, fire extinguisher, demolition materials, explosives, blocking, bracing, cushioning material.	All equipment and explosives serviceable. Daily PMCS. Vehicle inspection IAW DD Form 626.	EOD trained personnel. Daily tailgate meetings, procedures IAW WP, SSHP, EODB/TM/TO 60A-1-1-31. Valid State driver license. Current OSHA qualification.

Hazard Analysis

PROJECT NAME: Seneca Army Depot **CUSTOMER: CEHNC** **ACTIVITY:** UXO Escort		**ANALYZED BY/DATE:** George Spenser - 3/14/00
PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
Escort Geophysical/Survey team. Locate, identify, and mark visual surface OE.	Potential OE; unplanned detonation. Wildlife, insects. Toxic Plants. Slips, trips, falls. Heat/cold stress. Cuts and scrapes. Sunburn/Windburn.	UXO safety precautions IAW the WP and SSHP. UXO qualified personnel will accompany all non-UXO qualified personnel. Only UXO personnel will handle UXOs; Mark UXO IAW the WP. Do not subject UXO to heat, shock or friction; Do not move armed/fuzed UXO. Avoid toxic plants; Watch for snakes, do not handle wildlife, Wear Level D PPE. Use insect repellent/barrier cream as necessary; Be alert, watch for trip hazards. Dress for the weather; use Buddy system monitoring; Use Sunscreen as necessary. No Smoking except in designated areas.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; first aid kit; fire extinguisher, radio, hand tools, flagging material.	Daily PMCS and calibration checks. Radio check, inspect first aid kit and extinguishers.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures. UXO identification and safety precautions training for non-UXO trained personnel.

Hazard Analysis

PROJECT NAME: Seneca Army Depot
CUSTOMER: CEHNC
ACTIVITY: Anomaly Investigation — **ANALYZED BY/DATE:** George Spenser - 3/14/00

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Excavating contacts. Hand digging.	Potential UXO, unplanned detonation. Slips, trips, and falls. Scrapes and cuts. Heat/Cold Stress. Sunburn/Windburn. Unauthorized personnel within the EZ. Exposure to contaminated soil/dust.	Only UXO technicians will excavate or handle UXO. Personnel in the immediate vicinity of UXO operations will be kept to the minimum necessary for safe operations but no less than two UXO technicians. Only hand excavation permitted within 1 foot of UXO. Do not subject UXO to heat, shock or friction. Establish exclusion Zone (EZ); post Warning signs; Stop all UXO operations when non-UXO trained personnel are in the EZ. Wear Level D PPE. Be aware of footing and terrain; avoid obstacles when possible. Dress for the weather. Use Buddy system monitoring. Use sunscreen, insect repellent/barrier cream as necessary. Wear proper PPE(see B3.1). Avoid/control making dust. Monitor breathing zone(see B3.2).
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; extinguishers; first aid kit; communication equipment. shovels, picks, trowels, PPE, monitoring instruments	Daily PMCS first aid kit contents, extinguishers. Hand tool inspection. Radio or telephone check; calibrate Magnetometer.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures. UXO identification and safety precautions training for non-UXO trained personnel.

Hazard Analysis

PROJECT NAME: Seneca Army Depot CUSTOMER: **CEHNC** ACTIVITY: Heavy Equipment Operation		**ANALYZED BY/DATE:** George Spenser - 3/14/00
PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
Operating Heavy Equipment. Excavating using Earth Moving Machinery (EMM).	Vehicle accident. Potential UXO, unplanned detonation. Wildlife, insects, poison oak and hazardous plants. Slips, trips, and falls. Scrapes and cuts. Heat/Cold Stress. Sunburn/Windburn, exposure to contaminated soil and dust	Only UXO technicians will excavate or handle UXO. EMM will be operated by trained, experienced personnel. Look before backing; be aware of personnel in the area of EMM. Negotiate slopes straight up or down; do not travel across a slope. All controls in traveling position when moving EMM between sites; When excavating, if personnel are in range of bucket, put bucket on the ground and remove hands from the controls; Place blades and buckets on ground when not operating. Wear Level D PPE with hard hat, hearing protection, steel toe footwear, when working in the vicinity of operating EMM. Be aware of terrain; avoid obstacles when possible; take care when mounting/dismounting EMM. Dress for the weather. Use Buddy system monitoring. Use sunscreen, insect repellent/barrier cream as necessary.; Stop all UXO operations when non-UXO trained are in the EZ. Wear proper PPE in contaminated areas. Avoid dusty conditions, monitor for dust and VOC's(see B3.2).
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Earth Moving Machinery (EMM). Communication equipment, fire extinguisher, first aid kit, PPE, air monitoring instruments	Daily PMCS first aid kit contents, extinguishers. Daily PMCS of EMM. Radio check.	OSHA Qualified; UXO personnel are EOD trained. Experienced operators. Daily Tailgate meeting. Daily inspection, maintenance, calibration, of all equipment. Emergency procedures and safe working practices IAW the SSHP. Symptoms and treatment for biological and chemical hazards IAW the SSHP. Daily checks of all communication equipment and emergency contacts.

Hazard Analysis

PROJECT NAME: Seneca Army Depot **CUSTOMER: CEHNC** **ACTIVITY:** Perform Quality Control		**ANALYZED BY/DATE:** George Spenser - 3/14/00
PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
Quality Control Checking areas. Excavating contacts.	Potential OE, unplanned detonation. Wildlife, insects. Toxic Plants. Slips, trips, falls. Heat/Cold stress. Sunburn/Windburn. Unauthorized personnel within the EZ.	UXO safety precautions IAW the WP and SSHP. Watch for snakes, do not handle wildlife. Use insect repellent; Avoid toxic plants. Wear Level D PPE with gloves when digging; Be alert, watch for trip hazards. Dress for the weather; use Sunscreen, insect repellent/barrier cream as necessary. Do not subject UXO to heat, shock or friction; Only UXO technicians will excavate or handle UXO. Personnel in the immediate vicinity of UXO operations will be kept to the minimum necessary for safe operations. Only hand excavation permitted within 1 foot of UXO; Establish exclusion Zone (EZ); Stop all UXO operations when non-UXO trained are in the EZ.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; extinguishers; first aid kit; communication equipment. shovels, picks, trowels.	Daily PMCS first aid kit contents, extinguishers. Hand tool inspection. Radio or telephone check.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures.

USA Hazard Analysis

PROJECT NAME: SEAD
CUSTOMER: Parsons ES
ACTIVITY: Site Preparation, vegetation clearance **ANALYZED BY/DATE:** George Spenser - 3/14/00

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Vegetation clearance, OE surface clearance.	Potential OE. Wildlife, insects, poison oak. Slips, trips falls. Cuts and lacerations from using cutting tools and brush. Flying debris from grubbing machinery. Noise hazard from gas powered equipment. Heat/Cold Stress. Sunburn/Windburn	Be alert, Mark and report and mark all OE located. Be alert. Watch for snakes, do not handle wildlife. Use insect repellent and barrier cream. Change clothing daily Be alert. Watch for trip hazards; look where you are walking. Keep clear of grubbing machinery. Remain at least 200 feet from the Hydro-Axe and other mechanical grubbing machinery when operating. Wear Level D PPE to include gloves and eye protection. Wear Level D PPE to include: eye and hearing protection, and gloves when operating powered equipment. Use Kevlar chaps when using chainsaw. Dress for the weather. Use sunscreen if necessary. Buddy system monitoring.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicle; heavy equipment grubbing machinery, Hydro-Axe, communication equipment; first aid kit; extinguishers. Hammer and Stakes. Chainsaws, axes, brushhooks, weedeaters.	Daily PMCS IAW Manufacturer's instructions; Radio check. Check chainsaw bar and chain condition, adjustment. check for spark arrestor on all powered equipment. Sharpen all tools	Inspection, maintenance, and adjustment criteria; starting procedures for powered equipment; care, handling and maintenance of cutting tools; required safety equipment for operations; storage and handling of gasoline. MSDSs for gasoline and oil. Daily tailgate meetings, procedures IAW WP, SSHP. Current OSHA qualification.

Hazard Analysis

PROJECT NAME: Seneca Army Depot **CUSTOMER: CEHNC** ACTIVITY: Scrap Inspection and Turn-in		**ANALYZED BY/DATE:** George Spenser - 3/14/00
PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
Recovery and turn-in of OE and non-OE related scrap. Loading vehicles.	Vehicle accident. Potential OE, unplanned detonation. Wildlife, insects. Toxic Plants. Slips, trips, falls. Heat/Cold stress. Sunburn/Windburn. Cuts and lacerations from metal scrap. Lifting hazards.	All scrap inspected by UXO Supervisor and certified by Senior UXO Supervisor. Only UXO technicians will handle UXO; Do not subject UXO to heat, shock or friction. Wear Level D PPE when loading scrap; Wear gloves when handling scrap. No smoking except in designated areas. Be aware of footing and terrain; avoid obstacles when possible. Dress for the weather. Use Buddy system monitoring. Use sunscreen, insect repellent/barrier cream as necessary. Lifting precautions and safe work practices IAW WP SSHP. Use proper lifting techniques.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Vehicles, communication equipment extinguishers, first aid kit, packing material.	Daily PMCS first aid kit contents, extinguishers. Hand tool inspection. Radio or telephone check.	Current state driver license; OSHA Qualifications; UXO personnel are EOD trained. Safe work practices and hazard protection IAW the SSHP. Daily tailgate safety briefings to include evacuation and notification procedures. UXO identification and safety precautions training for non-UXO trained personnel.

UXO HAZARD CONTROL & ACCIDENT PREVENTION

All site personnel will follow the below listed procedures to mitigate the hazards/risks outlined in paragraph B2.2 of the SSHP. Any approach to a suspected UXO will be conducted in accordance with procedures outlined in the U.S. Army Engineering and Support Center (CEHNC) Safety Concepts and Basic Considerations Unexploded Explosive Ordnance (UXO), Revised 16 Feb 96 (see Attachment B-4);

- Any UXO found within the confines of the work area will be positively identified by two UXO qualified technicians;
- UXO items will only be moved or handled by qualified UXO/EOD technicians;
- All personnel will wear as a minimum Level D PPE, sleeves rolled down when in heavy vegetation, leather or canvas work gloves and sturdy work boots. This will minimize contact with potentially irritating and/or toxic plants. In addition to these measures, any person known to have allergic reactions to insect bites or exposure to toxic plants will be identified and will carry appropriate first aid materials at all times;
- While on the job, all personnel will move at a moderate pace and stay alert for possible trip hazards;
- While inspecting suspect OE UXO personnel will ensure equipment and/or truck operators are aware of the UXO Technician's presence;
- If entry to the pit is necessary during excavation, the equipment operator will swing the bucket away from the pit, place the bucket on the ground, and remove his hands from the controls;
- Personnel will avoid, to the maximum extent possible, contact with any wildlife. Should a person become bitten he/she will receive immediate first aid;
- Personnel working in vegetated or wooded areas will be reminded to check themselves for ticks and insect bites after leaving the work area;
- While working on site all personnel will use the "buddy" system. Buddies will be assigned each day prior to beginning work. They will remain in sight of each other at all times to ensure safe working practices. During hazardous operations one buddy will act as a safety observer.

OE SAFETY

These basic safety precautions are the minimum OE safety requirements required of all personnel on site. Other precautions and requirements are in the CEHNC SafetyConcepts and Basic Considerations Unexploded Explosive Ordnance (UXO) at Attachment B-4 and other applicable UXO manuals referenced in this SSHP.

Basic Considerations

The following should be taken into consideration when planning or conducting UXO operations:

- SAFETY IS PARAMOUNT;
- Do not move or disturb unidentified items.
- All OE will be identified independently by two (2) UXO technicians;

- Do not collect souvenirs;
- Do not smoke except in designated areas;
- Do not carry fire or spark producing devices into the site;
- All OE operations will use the "Buddy" system;
- Prohibit unnecessary personnel from visiting the site.

Basic Safety Precautions:

The following safety precautions are applicable to all OE:

- Suspend all operations immediately upon approach of an electrical storm;
- Observe the hazards of electromagnetic radiation (EMR) precautions when working in the vicinity of electrically initiated or susceptible OE;
- Do not handle any UXO unnecessarily;
- Avoid inhalation and skin contact with smoke, fumes, dust, and vapors of detonations and UXO residue;
- Do not attempt to extinguish burning explosives or any fire which might involve explosive materials;
- Incorporate appropriate property and personnel protective measures for shock and fragmentation when conducting OE operations;
- Do not subject OE to rough handling;
- Hand carry no more than two items at a time (one in each hand) and then only as required by the operation being performed;
- Avoid unnecessary movement of armed or damaged OE;
- Avoid the forward portions of munitions employing proximity fuzing;
- Assume unknown fuzes contain cocked strikers or anti-disturbance features.

General Safety Precautions

Projectiles

- Determine if the projectile has been fired and if so consider it armed;
- Check for the presence of unburned tracers;
- Avoid the rear and front of rocket assisted and base ejecting projectiles;

Rockets

- Approach and work on rockets from the side;
- Do not dismantle or strip dud fired rockets or rocket motors;
- Do not expose electrically fired munitions to radio transmissions within 25 feet.
- Approach projectile components such as powder increments, cartridges, and primers with caution.

Grenades

- Do not attempt to re-install safety pins on a dud fired grenade;
- Do not attempt to withdraw impinged firing pins from the fuze of a dud-fired grenade.

B2.3 SAFETY HAZARDS

B2.3.1 Slip, Trip and Fall Hazards

The site may contain slip, trip and fall hazards for site workers, such as:

- Holes, pits, or ditches.
- Slippery surfaces.
- Steep grades.
- Uneven grades.
- Sharp objects, such as nails, metal shards, and broken glass.

Site personnel will be instructed to look for potential safety hazards and immediately contact the UXOSO if hazards are discovered. The UXOSO will inform team members of the locations of slip, trip, and fall hazards during daily site safety briefings.

B2.4 PHYSICAL HAZARDS

B2.4.1 Construction Hazards

Physical hazard awarness and control associated with site activities include:

- Personnel should be cautious of construction debris which may be partially buried or hidden by grass or shrubbery.
- .Personnel must be cautious while working in the vicinity of heavy equipment.
- Personnel should exercise caution while working in the vicinity of a street and near vehicular traffic.

B2.4.2 Safety Hazards

Prior to entry to any work area on-site, USA (UXO Subcontractor) will perform screening (clearance) of areas of interest.

B2.4.3 Heat Stress

B2.4.3.1 Sweating does not cool the body unless moisture is removed from the body. The use of personal protective equipment (PPE) reduces the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired and this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. At the Seneca Army Depot site, Level D PPE will be utilized, thus providing minimal increase in the potential for heat stress.

Standard work clothes with long pants, hard hats (when overhead hazard is present), and safety boots (when working around heavy equipment).

B2.4.3.2 Heat related problems include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. Heat rash occurs because sweat is not evaporating, making the skin wet most of the time. Standing erect and immobile in the heat allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur. Heat cramps are painful spasms of the muscles due to excessive salt loss from profuse sweating. Heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. A person's skin is clammy and moist; and nausea, dizziness, and headaches may be exhibited.

B2.4.3.3 Heat stroke occurs when the body's temperature regulatory system has failed. Skin is hot, dry, red, and spotted. The affected person may be mentally confused, delirious, and convulsions may occur. A person exhibiting signs of heat stroke should be removed from the work area to be shaded area immediately. The person should be soaked with water and fanned to promote evaporation. Medical attention should be obtained immediately. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.

B2.4.3.4 Monitoring of personnel wearing non-breathable coveralls (Tyvek) should begin when the ambient temperature is 70°F or above. Table B2.3 presents the suggested frequency for such monitoring. Monitoring frequency should increase as the ambient temperature increases or as slow recovery rates are observed. Heat stress monitoring should be performed by a person with a current first aid certification who is trained to recognize heat stress symptoms. Other methods for determining heat stress monitoring, such as the wet bulb globe temperature (WBGT) index from American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLV) booklet can be used.

B2.4.3.1 Early Symptoms of Heat Related Problems:

1. Decline in task performance
2. Lack of coordination
3. Decline in alertness
4. Unsteady walk
5. Excessive fatigue

Table B2.3[1]
Suggested Frequency of Physiological Monitoring
For Fit and Acclimatized Workers[a]
Seneca Army Depot
Romulus, New York

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°- 30.8°C)	After each 90 minutes work	After each 60 minutes of work
77.5°-82.5°F (25.3°- 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°- 25.3°C)	After each 150 minutes of work	After each 120 minutes of work

(1) NIOSH/OSHA/USCG/EPA, 1985.

(a) For work levels of 250 kilocalories/hour.

(b) Calculate the adjusted air temperature (ta adj) by using the equation:
ta adj = ta + (13 x percent sunshine)
where: ta is the air temperature in °F.

Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat.

Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow (100 percent sunshine = no cloud cover and a sharp, distinct shadow; zero percent sunshine = no shadows.)

(c) A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

6. Muscle cramps
7. Dizziness

To monitor the worker, measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
  - If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
  - If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
  - If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.
  - If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third.
  - Do not permit a worker to wear a semipermeable or impermeable garment when oral temperature exceeds 100.4°F (38.1°C).

B2.4.3.2 Prevention of Heat Stress

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heart related illnesses. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
  - Modify work/rest schedules according to monitoring requirements.
  - Mandate work slowdowns as needed.
  - Perform work during cooler hours of the day, if possible, or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluids intake must approximately equal the amount of water lost in sweat, i.e, 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be

drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

- Maintain water temperature at 50° to 60°F (10°-16.6°C).
- Provide small disposable cups that hold about 4 ounces (0.1 liter).
- Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

- Train workers to recognize the symptoms of heat-related illnesses.
- Rotate personnel and alternate job functions.
- Avoid double shifts and/or overtime.

B2.4.4 Cold-Related Illness

Cold-Related Illness is unlikely to be a problem for workers at the former Camp since the winter temperatures are generally mild in the region. However, for completeness and in the event of unseasonably cold temperatures during the field effort Cold-Related Illness is discussed in this SSHP.

B2.4.4.1 Symptoms of Cold-Related Illnesses

Exposure to low temperatures presents a risk to employee safety and health both through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Work conducted in the winter months can become a hazard for field personnel due to cold exposure. All personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The symptoms of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Work will cease under unusually hazardous conditions (e.g., windchill less than 10°F, or wind chill less than 20°F with precipitation). Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illness will be discussed during the health and safety briefing conducted prior to the onset of site activities.

- **Hypothermia.** Hypothermia is defined as a decrease in a person's core temperature below 96.8°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interferences with any of these mechanisms can result in hypothermia, even in the absence of "cold" ambient temperatures. The first symptom of systemic hypothermia is shivering. Maximum shivering starts when the core body temperature drops below 95°F. The next set of symptoms as the body's cooling progresses is apathy, listlessness, and sleepiness. The person remains conscious and responsive with normal blood pressure

and a core temperature of 93.2°F. The person must be removed immediately to a facility with heat. As hypothermia advances beyond this point, the person has a glassy stare, slow pulse, slow respiratory rate, and may lose consciousness. Severe hypothermia starts when the core body temperature reaches 91.4°F. Finally, the extremities start to freeze hard and death could result.

- **Frostbite.** Frostbite is both a general and medical term given to areas of local cold injury. Frostbite has progressive degrees and this progression may continue until systemic hypothermia occurs. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Frostbite symptoms are a sudden blanching or whitening of the skin; a waxy or white appearance of the skin and it is firm to the touch; tissues are cold, pale, and solid. Superficial frostbite occurs when the skin is white but the underlying tissue is firm. The skin will return to shape when depressed. Deep frostbite causes the underlying tissue to freeze. The skin will either not depress when pressed by the finger or it will depress but not return to the original contour. DEEP FROSTBITE IS A SERIOUS INJURY.

B2.4.4.2 Prevention of Cold-Related Illnesses

- Educate worker to recognize the symptoms of frostbite and hypothermia.
- Cease work under unusually hazardous conditions.
- Identify and limit known risk factors.
- Assure the availability of an enclosed, heated environment on or adjacent to the site. The nearest heated environment would be the interior of an automobile at the site.
- Assure the availability of insulated dry clothes.
- Develop capability for temperature recording at the site.
- Assure the availability of warm beverages.
- Watch for pain in the extremities, which may be the first early warning of cold stress.

B2.3.4.3 Monitoring at the site will be conducted in accordance with 1999 ACGIH guidelines; at the Field Supervisor's or site health and safety officer's discretion; when suspicion is aroused on changes in worker's performance or mental status; at worker's request; as a screening measure, two times per shift, under unusually hazardous conditions (e.g., windchill less than 30°F); and as a screening measure whenever any worker on the site develops hypothermia. ANY PERSON DEVELOPING MODERATE HYPOTHERMIA MUST BE REMOVED IMMEDIATELY TO A FACILITY WITH HEAT AND CANNOT RETURN TO WORK FOR 48 HOURS.

B2.3.4.4 Evaluation and Control. Continuous exposure should not be permitted to exposed skin. Superficial or deep local tissue freezing will occur only at temperatures below -1°C (30.2°F) regardless of wind speed.

B2.4.4.4.1 Special protection of the hands is required to maintain manual dexterity for the prevention of accidents:

1. If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 16°C (60.8°F), special provisions should be established for keeping the workers' hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be used.
2. If the air temperature falls below 16°C (60.8°F) for sedentary, 4°C (39.2°F) for light, -7°C (19.4°F) for moderate work and fine manual dexterity is not required, then gloves should be used by the workers.

B2.4.4.4.2 To prevent contact frostbite, the workers should wear anti-contact gloves.

1. When cold surfaces below -7°C (19.4°F) are within reach, a warning should be given to each worker by the supervisor to prevent inadvertent contact by bare skin.
2. It the air temperature is -17.5°C (0°F) or less, the hands should be protected by mittens.

B2.4.4.4.3 Provisions for additional total body protection are required if work is performed in an environment at or below 4°C (39.2°F). The workers should wear cold protective clothing appropriate for the level of cold and physical activity:

1. Wind should be reduced by shielding the work area or by wearing an easily removable windbreak garment.
2. If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use may be of a type impermeable to water. With more severe work under such conditions, the outer layer should be water repellent, and the outerwear should be changed as it becomes wet. The outer garments should include provisions for easy ventilation in order to prevent wetting of inner layers by sweat.
3. If exposed areas of the body cannot be protected sufficiently to prevent sensation of excessive cold or frostbite, protective items should be supplied in auxiliary heated versions.
4. If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work should be modified or suspended until adequate clothing is made available or until weather conditions improve.

B2.4.4.5 If work is performed continuously in the cold, heated warming shelters (tents, cabins, rest rooms, etc.) should be made available nearby. The workers should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria are indications for immediate return to the shelter. Dehydration, or the loss of body fluids, occurs insidiously in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow

to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of the diuretic and circulatory effects.

B2.4.4.6 For work practices at or below -12°C (10.4°F), the following should apply:

1. The worker should be under constant protective observation (buddy system or supervision).
2. The work rate should not be so high as to cause heavy sweating that will result in wet clothing.
3. Unacclimated employees should not be required to work full time in the cold during the first days of employment until they become accustomed to the working conditions and required protective clothing.
4. The weight and bulkiness of clothing should be included in estimating the required work performance and weights to be lifted by the worker.
5. The work should be arranged in such a way that sitting still or standing still for long periods is minimized. Unprotected metal chair seats should not be used. The worker should be protected from drafts to the greatest extent possible.

B2.4.5 Other Hazards

The planned field activities may bring personnel into contact with snakes, spiders, ticks, chiggers, mosquitoes, and poisonous plants (poison ivy and oak). The following precautions will be taken as necessary by field personnel to avoid contact with wildlife/insects:

- Hat to ward off insects;
- Wear a long sleeve shirt
- Apply DEET (vapor-active repellent) to any exposed skin surface (except eyes and lips), and apply the Permethrin repellent spray to field clothing. Note. Allow the Permethrin to dry before using the treated clothing.
- Use of Oak-N-Ivy cleanser or equivalent at field hand-wash station.

B2.4.5.1 Biological

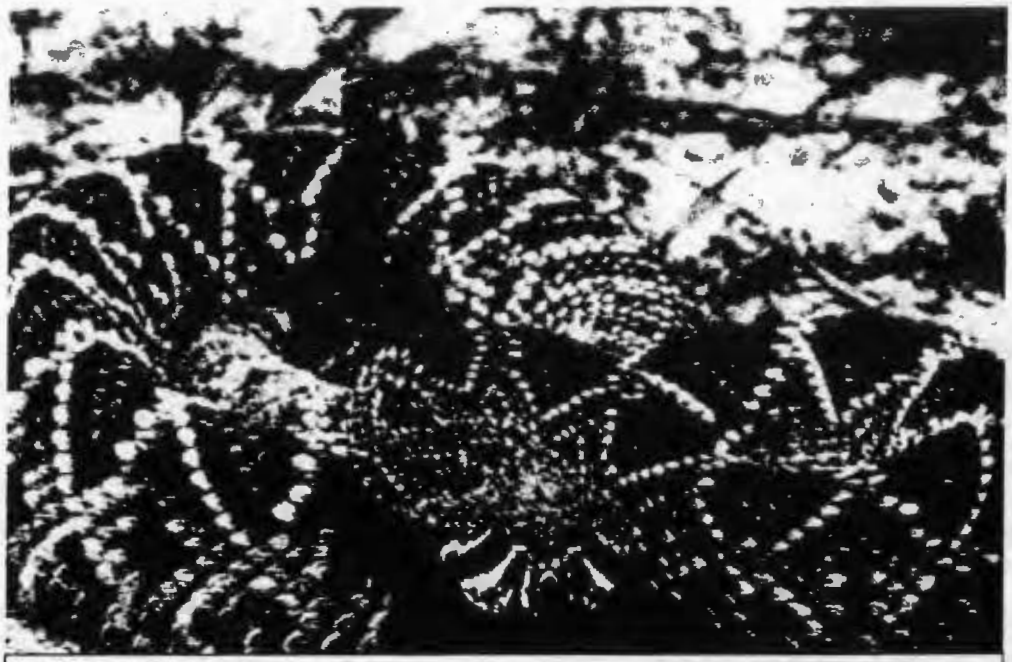
Snakes. B2.3.5.1.3 Venomous snakes that may be encountered at the former Seneca Army Depot, FL include members of the "pit-viper" family, Copperheads, Rattlesnake species, Descriptions and photographs of these snakes are shown below.

Copperhead: These snakes are commonly found near water sources in wooded areas. Copperheads are generally less than four feet in length

and are not particularly aggressive. Coloration ranges from golden brown to tan. These snakes have a banded pattern.

Timber Rattlesnake-35-74"

Timber Rattlesnake: These are large, not particularly aggressive snakes with yellow through or gray to black, with dark back and side blotches on front of body and blotches fused to form crossbands on rear of body. Head unmarked and black tail. They can be found in many habitats including rocky hillsides, swampy areas, and canebrake thickets.



Eastern Diamondback Rattlesnake
24-96"

Eastern Diamondback Rattlesnake: These snakes are commonly found in dry habitats throughout the coastal plain including pine and oak hills, pine flatwoods, and abandoned farmland. They are the largest rattlers ranging from 3 to 8 feet in length. These thick-bodied snakes have highly destructive venom and are considered the most dangerous snakes in North America. The back of the snake is distinctively patterned with dark diamonds with light centers and bordered by cream to yellow-colored scales.

B2.3.5.1.4 A snake bite is usually characterized by extreme pain and swelling at the site of the bite; the presence of one or more puncture wounds created by the fangs; and a general skin discoloration. The manifestations of the bite include general weakness, rapid pulse, nausea and vomiting, shortness of breath, dimness of vision, tingling or numbness of the tongue, mouth or scalp, and shock.

B2.4.5.1.5 Physical reactions are aggravated by acute fear, anxiety, the amount of venom injected and the speed of absorption of venom into the victim's circulation, the size of the victim, protection provided by clothing (including shoes and gloves), quick anti-venom therapy, and location of the bite.

B2.4.3.5.1.6 First Aid – The rules to follow if someone is bitten by a snake are:

1. DO NOT cut "Xs" over the bite area as this will intensify the effect of the venom.
2. DO NOT apply suction to the wound since this has a minimal effective in removing venom.

3. DO NOT apply a tourniquet since this will concentrate the venom and increase the amount of tissue damage in the immediate area.
4. If possible, try to get a good look at the snake so it can be identified for proper selection of anti-venom.
5. DO NOT allow the victim to run for help since running increases the heart rate and will increase the spread of the venom throughout the body.
6. Calm, reassure and keep the victim calm and immobile. Do not delay evacuation.
7. Have the victim hold the affected extremity lower than the body while waiting for medical assistance.
8. Transport the victim to medical attention immediately.

B2.4.5.1.6 An incision through the fang marks is not advisable; this procedure is too hazardous to underlying structures and at best removes only 20% of the venom. Do not use cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy. Several other factors must be considered by the caregiver. A person bitten by a snake should try to lie still and be quiet. If the bite is in the arm or leg, keep the bite lower than the heart. Staying still and holding the bite lower than the heart will help to slow any poison spreading through the body. Get medical care as soon as possible, even if the snake was known to be non-poisonous. The use of snake bite kits is prohibited. Because the fieldwork will be performed in the late fall and in the winter it is doubtful if any snakes would be encountered.

B2.4.5.1.7 Identification Features -- Non-poisonous snakes are often erroneously identified as poisonous. The features identified in Table B2.2 will assist in properly identifying a snake as poisonous or non-poisonous.

Table B2.2
Snake Identification Features

Feature	Poisonous	Non-Poisonous
Eye Pupils	Elliptical, or cat-like	Round
Sensing Pits	Pit between the eyelids and nostrils	No pit between the eyelids and nostrils
Teeth	Two enlarged teeth (fangs) in front of the upper jaw	All teeth are approximately the same size
Scales	Form a single row on the underside and below the tail	Arranged in a double row on the underside of the tail

Feature	Poisonous	Non-Poisonous
Head	Head much wider than the neck	Head slightly wider than the neck
Tail	Single anal plate	Divided anal plate

B2.4.5.1.8 Prevention of Snakebite -- The best snakebite treatment is to avoid getting bitten. The following suggestions will help in this process:

- Learn to identify poisonous snakes - this shall be reviewed during site-specific safety training.
- Watch where you sit and place your hands and feet.
- Avoid rock piles, stacks of old boards, and brush in wooded areas. If movement is necessary, use a remote means to initially relocate the material. Prior to entering a heavily wooded or brush area, look and listen carefully.
- Never handle "dead" snakes; they may not be completely dead.
- Do not attempt to capture or kill ***ANY*** snakes.

Ticks. B2.4.5.1.9 Lyme Disease is caused by a bacterium which may be transmitted by the bite of a tick. Ticks carrying Lyme Disease may be found throughout the U. S. living in grassy and wooded areas, and feeding on mammals such as mice, shrews, birds, raccoons, opossums, deer, and humans. Not all ticks are infected with the bacterium. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. If detected early, Lyme Disease can be treated with antibiotics.

B2.4.5.1.10 The illness typically occurs in the summer months and is characterized by a slowly expanding red rash, that develops a few days to a few weeks after the bite of an infected tick. The illness can be accompanied by flu-like symptoms, headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage, treatment by a physician is usually effective; but if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis; other problems include meningitis, neurological, and cardiac abnormalities. NOTE: some people do not get the characteristic rash but progress directly to the later manifestations. Treatment of follow-on symptoms is more difficult than early symptoms and is not always successful.

B2.4.5.1.11 Rocky Mountain Spotted Fever is another tickborne disease. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache,

chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. Early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.

B2.4.5.1.12 If found crawling on a person, ticks should be removed and burned or smashed between two rocks. Do not smash ticks with fingers. If a tick is found to be holding onto the skin, the tick should be covered with Vaseline until it can no longer breathe and backs out of the skin. At that time, all parts of the tick should be removed with tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, but firmly, until it releases its hold on the skin. Save the tick in a jar labeled with the date, body location of the bite, and the place where it may have been acquired. Areas of the skin where the tick may have crawled, as well as bite area will be scrubbed with soap and water. Hot showers are to be taken as soon as possible after site departure to wash away all ticks that have not adhered to the skin.

B2.4.5.1.13 Precautions:

- Wear long pants and long sleeved shirts that fit tightly at the ankles and wrists; tape cuffs if necessary.
- Wear light colored clothing so ticks can be easily spotted.
- Tick repellents such as DEET (vapor-active repellant) and Permethrin may be useful. Apply DEET to any exposed skin surface (except eyes and lips) and permethrin to field clothing (allow to dry prior to wearing).
- Inspect clothing frequently while in tick habitat.
- Inspect head and body thoroughly when you return from the field.
- Remove any ticks by tugging with tweezers. Do not squeeze or crush the tick. If possible, place the tick into a labeled vial for future identification (see also paragraph B2.3.5.1.12).
- Be sure to remove all parts of the tick's body, and wash and disinfect the bite site with alcohol or an antiseptic.
- For several days to several weeks after removal of the tick, look for the signs of the onset of Lyme disease, such as a rash that looks like a bulls-eye or an expanding red circle surrounding a light area, frequently seen with a small welt in the center.
- Also look for the signs of the onset of RMSF, such as an inflammation which is visible in the form of a rash comprising many red spots under the skin, which appears 3 to 10 days after the tick bite.

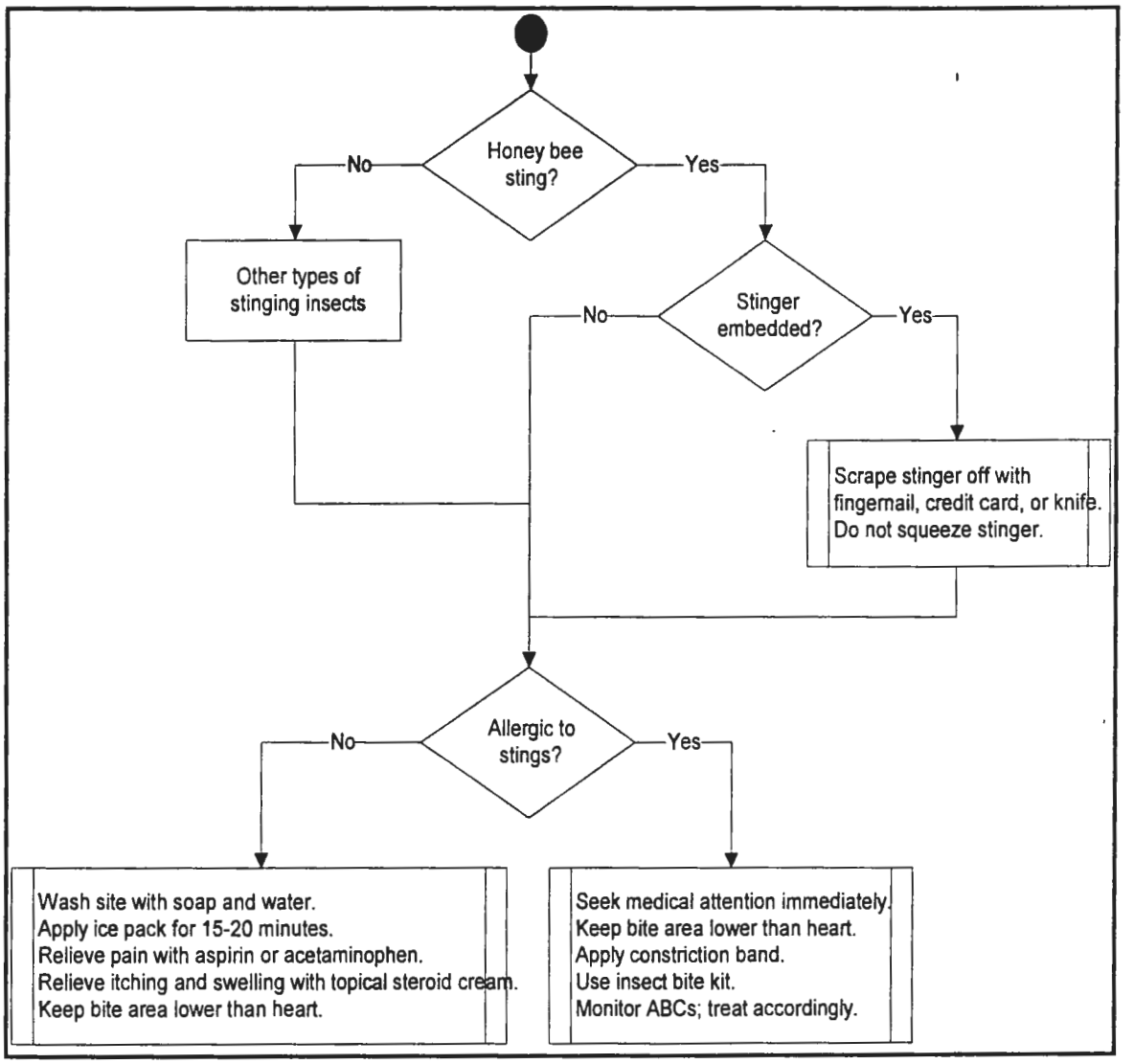
Bees, Wasps, Hornets, and Other Insects. B2.4.5.1.18 Symptoms of an insect bite are normally a sharp, immediate pain in the body part bitten. Poisonous insects and insect-like creatures that may be encountered at former Seneca Army Depot sites include the following:

- Bees (honeybees, bumble bees, wasps, and hornets);
- Scorpions;
- Caterpillars; and
- Beetles/Bugs.

Site personnel will comply with the following work practices:

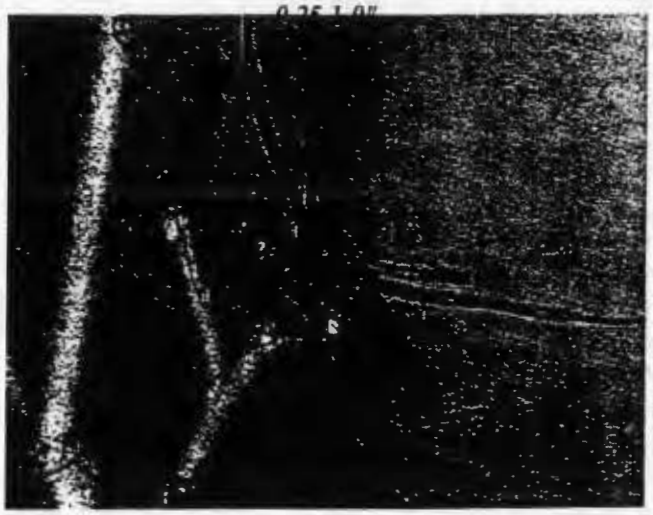
- Personnel with a known hypersensitivity to bee, wasp, or hornet stings will inform the UXOSO of this condition prior to performing site activities.
- Personnel with a known hypersensitivity condition will keep emergency medication in their possession.
- All personnel will remain vigilant for the presence of these stinging insects. Discovered nests will be flagged and their location reported to other site personnel.
- If stung, immediately inform the UXOSO to receive treatment, per Figure B2.1.

Figure B2.1
Decision Diagram for Stings from Insects



Spiders. B2.4.5.1.19 Use extreme caution when lifting manhole covers, sumps, etc., since spiders are typically found in these areas. The two poisonous spiders that may be encountered on the former Seneca Army Depot project are the Brown Recluse and the Black Widow. The Brown Recluse is up to one inch long with a violin or "fiddle" shaped mark on the top of the head. The Black Widow is a smaller, bulbous black spider with a red hourglass-shaped mark on the underside.

Brown Recluse
0.25-1.0"



Black Widow
0.12-0.75"

B2.4.5.1.20 Persons that have been bitten by a Brown Recluse or Black Widow spider should be immediately transported to a hospital. The spider should be collected (if possible) for confirmation of the species. Reactions to a Brown Recluse spider bite include mild to severe pain within two to eight hours and a star shaped area around the bite within three to four days. Significant tissue death and loss accompanies a Brown Recluse spider bite. Reactions to a Black Widow spider include intense pain at the site of the bite after approximately 15 to 60 minutes, followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.

B2.4.5.1.21 First Aid

- If possible, catch the spider to confirm its identity. Even if the body is crushed, save it for identification.
- Clean the bitten area with soap and water or rubbing alcohol.
- To relieve pain, place an ice pack over the bite.
- Keep the victim quiet and monitor breathing.

- Seek immediate medical attention.

Poison Ivy/Poison Oak/Poison Sumac. B2.4.5.1.22 The majority of skin reactions following contact with offending plants are allergic in nature and are characterized by:

- General symptoms of headache and fever;
- Itching;
- Redness; and
- A rash.

B2.4.5.1.23 Some of the most common and severe allergic reactions result from contact with poison ivy, poison oak, and poison sumac. Contact with the poisonous sap of these plants produces a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim also may develop a high fever and may be very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

B2.4.5.1.24 The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each (Figure B2.2). In certain seasons, both plants also have greenish-white flowers and berries that grow in clusters. Poison sumac is a tall shrub or small tree with 6-12 leaflets arranged in pairs with a single leaflet at the end. This plant grows in wooded, swampy areas.

B2.4.5.1.25 Avoidance of plant/sap contact is the only effective means of preventing the poisoning. A person experiencing symptoms of poisoning should remove contaminated clothing; wash all exposed areas thoroughly with soap and water. Apply calamine or other poison ivy/oak lotion if the rash is mild. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. Thorough washing of skin and clothing can be used after site work or after potential exposure to reduce severity of irritation.

Figure B2.2
Poison Ivy/Poison Oak/Poison Sumac

Poison Ivy	Poison Oak	Poison Sumac
		

Bloodborne Pathogens B2.4.5.1.26 Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions (see below) all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens.

B2.4.5.1.27 There are a number of infections that are transmitted by insects and arthropods where the infection cycle includes the human blood system. Examples include malaria and lyme disease, which are transmitted by mosquitoes and ticks, respectively. These diseases are serious, and the possibility for infection should be considered in planning field operations in areas where these disease vectors are present. However, these diseases cannot be transmitted through personal contact with human blood, and are not covered by the OSHA *Bloodborne Pathogen Standard.*

B2.4.5.1.28 Potential bloodborne pathogen exposure include:

- Contact with contaminated medical equipment, medical waste, sharps and other potential infectious material
- Medical emergency response operations such as administering first aid or CPR
- Contact with human wastes such as domestic sewage
- All body fluids in situations where it is difficult or impossible to differentiate between body fluid types

APPENDIX B3
PERSONNEL PROTECTION, MONITORING, AND TRAINING

B3.1 PERSONAL PROTECTIVE EQUIPMENT

B3.1.1 Personnel working in close proximity to the established work zones will be required to wear Level D protection. This will consist of at a minimum:

- Standard work clothes with long pants;
- Hearing protection (when working around heavy equipment or using power tools)
- OSHA approved safety glasses
- Safety boots – Exempted only when using geophysical instruments.
- Hard hat (when overhead hazard is present).
- Tyvek and Disposible Gloves – (Required when there is potential of contact with contaminated objects, soils or liquid).

B3.1.2 Personnel working away from active field investigations will not be required to wear safety boots, safety glasses, or hard hats.

B3.2 MONITORING REQUIREMENTS

Parson Engineering Science personnel and their sub-contractors conducting intrusive activities at designated active hazardous waste sites must be prepared to monitor air quality in the event of recovered buried containers ,(i.e. drums), and when there is potential risk of exposure to contaminated airborne particulate.

B3.2.1 General

Operating Procedures for the calibration and operation of all monitoring instruments and copies of the operating manuals for these instruments will be kept in the command post. Instruments will be field calibrated daily (each day the instrument is used). Calibration log sheets (Attachment B-4) will be kept for each instrument and will become part of the permanent file. Air Monitoring Logs (Attachment B-5) will be maintained as needed.

Instruments will be kept on charge whenever not in use. All monitoring and instrument calibration will be done by persons who have been trained in the use of the equipment.

B.3.2.2 ON-SITE MONITORING (INTRUSIVE OPERATIONS ONLY)

Monitoring Overview

Intrusive work in the designated hazardous waste site will have *on a standby basis* an organic vapor meter (OVM-580B/580S (or equivalent) equipped with a 10.6e V lamp. In the event of unusual odors, stained soil, or suspect containers unearthed during an excavation, work will not continue without VOC air monitoring. A particulate meter (MIE Miniram PDM-3) will be used when there is a risk of exposure to dust. Instrument settings on all direct reading air monitoring instruments will be set on the most sensitive scale unless a reading is detected.

A wind direction indicator (such as survey flagging tied to a stake) will be erected at every active work site. This will enable the site safety monitor and on-site personnel to determine upwind locations necessary for proper health and safety procedure implementation, (work areas relative to the excavation) and, if necessary, evacuation procedures.

Volatile Organics Monitoring

Monitoring of volatile organics will be conducted with an organic vapor meter. Measurements will be taken and logged in the breathing zone, with additional measurements taken at potential sources of hits if safe to do so. The Action Level will be >5.0 PPM (isobutylene standard) measured in the breathing zone. When this Action Level is exceeded the work area will be immediately evacuated to a upwind location and the UXOSO will be contacted. Work may resume upon the return of acceptable readings in the work zone, and approval of the UXOSO.

Particulate Monitoring

Surface and subsurface soils at SEAD 16, 17,45 & 57 have various metals concentrations that exceed TCLP regulatory limits. These metals include cadmium, chromium, copper, lead, nickel, silver, mercury, thallium, and zinc. The concentration of metals in the airborne particulate in work areas **(except SEAD-16)** is below the PEL of "nuisance dust", which is 5.0 mg/m3. It is possible that under dry conditions dust will be a problem, especially at SEAD-45. If working conditions cannot be controlled to minimize the exposure and the production of visible dust in the breathing zone, such as staging equipment and personnel upwind or dampening the soil with water, particulate monitoring will be required. If levels continuously exceed 5.0 mg/m3 (respirable nuisance dust PEL limits) work will stop immediately and the UXOSO notified. **SEAD-16 work areas within 70 ft. of the northeast side of the building**

(see Figure B2.1), the action level for dust shall be 0.1 mg/m^3. Work may resume upon the return of acceptable readings in the work zone, and approval of the UXOSO.

For cadmium, chromium, copper, lead, nickel, silver, mercury, thallium, zinc and PAHs, the following formula is used to justify elimination of the need for real time aerosol monitoring or ambient monitoring of these compounds during work at the site. Accept as noted, the concentration in soil of the metal of concern used for the calculations are the highest detected in all the SEAD work locations.

$$EL_{mix} = \frac{(10^6 \text{ mg/kg}) (\text{EL mg/m}^3)}{(\text{conc. mg/kg}) (\text{Safety Factor})}$$

Where:

- EL_{mix}: Air concentration of <u>total</u> <u>dust</u> at which the contaminants of concern would be at their established exposure limit in mg/m3.
- EL: Exposure limit of the contaminant of concern (e.g., its PEL or TLV, whichever is lower, in mg/m^3)
- 10^6: Conversion Factor
- Conc.: Soil concentration of the contaminant of concern in mg/kg.
- Safety Factor: A number between 1 and 10 used to account for the degree of confidence you have in your concentration information. The lower the number used, the more confidence the evaluator has in how well the data represents site conditions.

For **Cadmium** at the site: EL = 0.005 mg/m^3 , Conc. = 16.6 mg/kg , Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg}) (0.005 \text{ mg/m}^3)}{(16.6 \text{ mg/kg}) (2)}$$

$$EL_{mix} = 151 \text{ mg/m}^3$$

For **Chromium** at the site: EL = 0.1 mg/m^3 , Conc. = 39.3 mg/kg, Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg}) (0.001 \text{ mg/m}^3)}{(39.3 \text{ mg/kg}) (2)}$$

EL_{mix}= 12.7 mg/m^3

For **Copper** at the site: EL = 1.0 mg/m^3 , Conc. = 37900 mg/kg, Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg})\ (1.0 \text{ mg/m}^3)}{(37900 \text{ mg/kg})\ (2)}$$

EL_{mix}= 13.2 mg/m^3

For **Lead** at **SEAD 16**: EL = 0.030 mg/m^3 , Conc. = 140,000 mg/kg, Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg})\ (0.03 \text{ mg/m}^3)}{(140{,}000 \text{ mg/kg})\ (2)}$$

EL_{mix}= 0.1 mg/m^3

For **Lead** at **SEAD 45** and elsewhere: EL = 0.030 mg/m^3 , Conc. = 87.8 mg/kg, Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg})\ (0.03 \text{ mg/m}^3)}{(87.8 \text{ mg/kg})\ (2)}$$

EL_{mix}= 171 mg/m^3

For **Nickel** at the site: EL = 0.015 mg/m^3 , Conc. = 148 mg/kg, Safety Factor = 2.

Therefore:

$$EL_{mix} = \frac{(10^6 \text{ mg/kg})\ (0.015 \text{ mg/m}^3)}{(148 \text{ mg/kg})\ (2)}$$

EL_{mix}= 51 mg/m^3

For **Silver** at the site: EL = 0.01 mg/m^3 , Conc. = 26.2 mg/kg, Safety Factor = 2.

Therefore:

EL_{mix}= $(10^6$ mg/kg) (0.01 mg/m^3)

(26.2 mg/kg) (2)

EL_{mix}= 190 mg/ mg/m^3

For **Mercury** at the site: EL = 0.1 mg/m^3 , Conc. = 11.4 mg/kg, Safety Factor = 2.

Therefore:

EL_{mix}= $(10^6$ mg/kg) (0.1 mg/m^3)

(11.4 mg/kg) (2)

EL_{mix}= 4385 mg/m^3

For **Thallium** at the site: EL = 0.1 mg/m^3 , Conc. = 16.6 mg/kg, Safety Factor = 2.

Therefore:

EL_{mix}= $(10^6$ mg/kg) (0.1 mg/m^3)

(16.6 mg/kg) (2)

El_{mix}= 3012 mg/m^3

For **Zinc** at the site: EL = 5.0 mg/m^3 , Conc. = 14,600 mg/kg, Safety Factor = 2.

Therefore:

EL_{mix}= $(10^6$ mg/kg) (5.0 mg/m^3)

(14600 mg/kg) (2)

EL_{mix}= 171 mg/m^3

For total **PAH's** at the site: EL = 0.20 mg/m^3 , Conc. = 1521 mg/kg, Safety Factor = 2.

The total PAH value used is the sum of the maximum values for all polynuclear aromatic hydrocarbons listed in SEAD 16 Data, (Table B.2.2.1, Sample SS16-31)

Therefore:

EL_{mix}= $(10^6$ mg/kg) (0.2 mg/m^3)

(1521 mg/kg) (2)

EL_{mix}= 66 mg/m^3

Except for Lead in SEAD-16, none of the EL_{mix} values were below 5 mg/m^3, the nuisance particulate PEL for respirable dust required by OSHA. Therefore, by controlling dust levels to below visible dust clouds through actions such as wetting down of site soils during open excavation and site grading work, exposure to include cadmium, chromium, copper, lead, silver, mercury, thallium, zinc and PAHs will be avoided.

For SEAD-16 intrusive operations, where the potential exists to stir up dust from site soils, dust control measures will be implemented. MiniRAM readings shall be taken during intrusive work activities on the north east side of the building, (see Figure B2.1), to ensure that total dust concentrations in the breathing zone remain below 0.1 mg/m3 above background. This will ensure that site personnel are not exposed to lead dust levels at or above the action limit for lead dust (30 micrograms/cubic meter).

B3.3 SAFETY TRAINING

B3.3.1 All field personnel must have received 40 hours of initial training in hazardous waste operations before participating in this project, as required by 29 CFR part 1910.120(e). In addition, all field personnel will have had at least three days of field experience under the supervision of a trained supervisor. On-site personnel must be up to date on their annual 8-hour refresher training. The UXOSO will collect and maintain at the site training (40- and 8-hour HAZWOPER) and medical certifications for all workers participating in site operations at SEAD. Additionally, USA Environmental Inc. personnel must provide the UXOSO with documentation of the successful completion of Naval Explosive Ordnance Disposal training. The Field Team Leader must have completed the above training and an additional 8-hours of supervisory instruction. At least two people on-site will be currently certified in First Aid and CPR.

B3.3.2 The UXOSO is responsible for developing a site-specific occupational hazard training program. The UXOSO is responsible for providing training to all Parsons personnel and Parsons subcontractors under Parsons H&S supervision that are to work at SEDA. This training will cover the following topics:

- Names of personnel responsible for site safety and health.
- Safe work practices.
- SEAD Contractor Instructions (Attachment B-6)
- Site history.

- Safety, health, and other hazards at site.
- Work zones and other locations.
- Emergency procedures, evacuation routes, emergency phone numbers.
- Acute effects of compounds at the site.
- Explosive Ordnance recognition and reporting.
- Prohibitions in areas and zones, including:
- Site layout, and
- Procedures for entry and exit of work areas and zones.
- Cold/Heat Illnesses (Depending on time of year)

Visitors to the support zone will receive training in the following areas:

- Emergency signals and procedures.
- Work areas and locations.
- Names of field team leader and site health and safety officer.

B3.3.3 Any visitor entering the work zone must provide documentation of 40-hour training and enrollment in medical monitoring program. The UXOSO will provide initial safety training as outlined above.

B3.3.4 A short briefing will be held each morning. Topics will include a review of safety procedures for that day's activities. Certificates and records of on-site training will be maintained by the UXOSO. Additionally, each field team member will sign the form in Attachment B-2 attesting to their understanding and acceptance of the SSHP and copies of these forms will be kept on file.

B3.4 MEDICAL SURVEILLANCE FOR PERSONNEL

B3.4.1 OSHA (29 CFR Part 1910.120 [f]) requires the enrollment of personnel engaged in operations involving hazardous materials in a medical surveillance program. The content of the examination must be sufficiently detailed to determine an individual's fitness for duty, including ability to work while wearing protective equipment (e.g., respirator, impermeable clothing, etc.). The results of these examinations will be kept on file at least 30 years after employment has been terminated.

B3.4.2 All personnel who will be engaged in hazardous waste operations on this project will present to the UXOSO a physician's certification of completion of a comprehensive medical monitoring examination within the 12 months prior to the beginning of activities. Additionally, the UXOSO will ensure that workers remain current in their medical monitoring throughout the duration of the project as well as meet the medical surveillance inclusion criteria for their specific job assignments. The certification shall attest to the individual's fitness for duty, including his or her ability to work while wearing PPE (e.g., respirator, impermeable clothing, etc.). Copies of employees' Health Status Reports will be available at the site.

APPENDIX B4
WORK ZONES AND DECONTAMINATION/HYGIENE

B4.1 SITE WORK ZONES

The SUXOS and UXOSO coordinate access control and security on site. Due to the hazardous nature of UXO only authorized personnel will be allowed in the exclusion zone (EZ). The EZ is the work site, encompassing an area large enough to prevent personnel injuries from fragmentation resulting from UXO. During all intrusive operations the initial EZ will be a radius of 200 feet from the operating team. The EZ will be adjusted if UXO is encountered to a distance consistent with the fragmentation hazard of the UXO. The limits of the EZ may be marked with hazard tape, painted stakes, pin flags, or other suitable marking material. During UXO operations (excavating anomalies), only UXO trained or personnel are allowed in the EZ (unless escorted by the SUXOS). Authorized personnel are those that have completed the required training and meet medical requirements

Visitors will report to the UXOSO on site. During all operations on individual sites, the site SUXOS/ UXOSO will cease operations if unescorted personnel are observed within the operating area. During duty hour's assigned personnel will provide security at the site. Equipment will be returned to the CP and secured at the end of the workday.

Representatives from regulatory agencies will be permitted to enter the site at any time during business hours or any other reasonable times provided they have completed the required training and meet medical requirements. Further site controls to ensure safety are as follows:

- Eating, drinking, and smoking are prohibited except in designated areas;
- Hazardous UXO operations (intrusive investigations) will cease if non-UXO trained personnel are present;
- The UXOSO or SUXOS will escort all authorized visitors to the site; All personnel entering the site, including visitors, will be in the proper PPE;
- The UXOSO will maintain the site entry control log to ensure accurate accountability for personnel; The UXOSO will brief this SSHP to all personnel entering the site to inform them of the potential site hazards. All personnel will acknowledge this briefing

by signing the SSHP briefing log; In case of an emergency, personnel will exit the site and move to the designated safe area. The safe area will be located upwind of the site outside of the fragmentation area. The UXOSO will determine the severity of the emergency. If the emergency warrants site evacuation, the UXOSO will notify the Project Manager/Task Manager.

B4.2 DECONTAMINATION (CERCLA SITES)

Decontamination is the physical removal of contaminants from clothing and equipment or the chemical change of such contaminants to innocuous substances. Decontamination procedures will take place in the contamination reduction zone. Disposal is an available option in lieu of decontamination when decontamination is impractical.

The following decontamination procedures are intended to meet the requirements of 29 CFR 1910.120(k). No personnel or equipment shall enter the contaminated zone of the site until workers have acknowledged the decontamination procedures and operating procedures intended to minimize contamination. These procedures shall be monitored by the Site Health and Safety Officer to determine their effectiveness. Ineffective procedures will be corrected.

DECONTAMINATION FACILITIES

The main decontamination facilities at the SEAD SWMU areas will be located adjacent to the support zone. These decontamination facilities will be used for vehicle and heavy equipment decontamination and for personnel decontamination. Personnel decontamination must take place prior to leaving the decontamination area and prior to entering any personnel hygiene facilities or before eating, drinking, or smoking.

PERSONNEL DECONTAMINATION

Personnel decontamination will consist primarily of a segregated equipment drop, removal and disposal of any non-reusable protective equipment, and washing of hands and face. No heavy contamination of clothing is expected and disposable protective clothing will be disposed of as non-hazardous waste. However, if contamination is detected (i.e., elevated PID readings, visual evidence, or known contact with potentially contaminated liquids) personal protective equipment and cartridges from respirators will be bagged separately from daily garbage. Facilities for personnel and sampling equipment decontamination will be set up between the equipment

decontamination pad and the site trailer. Personnel will not enter the office trailer without first going through decontamination, and hands and face must be thoroughly washed before eating, drinking, etc.

EQUIPMENT DECONTAMINATION

Equipment and vehicle decontamination will consist of pressure washing followed by steam cleaning. Solvent and soap and water washes will be performed when required for sampling or for heavy contamination. Gross contamination, such as caked mud and dirt on augers and split spoons, will be removed at the work site and placed back in the borehole or drummed with other drilling spoils if contaminant indicators (e.g., PID readings) warrant drumming of the soils.

PREVENTION OF CONTAMINATION

In an effort to minimize contact with waste and decrease the potential for contamination, the points outlined below will be adhered to during all phases of field investigation and sampling.

1. Personnel will make every effort not to walk through puddles, mud, any discolored surface, and/or any area of obvious contamination.

2. Personnel will not kneel or sit on the ground in the exclusion zone and/or in the Contamination Reduction Zone (CRZ).

3. Personnel will not place equipment on drums, containers, vehicles, or on the unprotected ground.

4. Where appropriate, personnel will wear disposable outer garments and use disposable equipment

5. An adequate supply of potable (drinkable) water, coolers, disposable cups and ice will be provided on site at all times.

6. Containers of water, clearly marked non-potable, additional water will be available with teams for washing.

7. Toilet facilities will be established and maintained IAW or exceeding 29 CFR 1910.120(n) and EM 385-1-1, Section 2.

8. Hand and face washing facilities are available at the SZ/CP, in the site support vehicles, and will be utilized by all personnel during breaks or exiting the EZ prior to eating,

drinking, tobacco use, or other hand to face activities. Washing facilities in the EZ will consist of water containers, buckets, soap, and drying towels.

9. Site Housekeeping:
All work areas will be maintained in a clean/neat fashion, free of loose debris and scrap. Any materials/equipment not being used will be removed and stored or disposed of accordingly. All work areas will be supplied with a trash receptacle with lid, the contents of which will be emptied daily.

APPENDIX B5
ACCIDENT PREVENTION AND CONTINGENCY PLAN

B5.1 ACCIDENT PREVENTION

B5.1.1 Site Training: The UXOSO will conduct site-specific health and safety training and hazard awareness to all project personnel and qualified visitors before starting any site activities. On a day-to-day basis, individual personnel should watch for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Emergencies can be averted by rapid recognition of dangerous situations. The UXOSO will conduct daily tailgate safety meetings prior to work activities. Discussion should include:

- Tasks to be performed;
- Time constraints (e.g., rest breaks);
- Hazards that have been or may be encountered (including subjects covered in B2.4), including their effects, how to recognize symptoms or monitor them, or danger signals;
- Emergency procedures; and
- Radio communication.

B5.1.2 Basic Protective Clothing: Hard hats, safety eyewear, and safety boots must be worn as a minimum within 50 feet of heavy equipment. The UXOSO & UXOQCS supervises the field team to ensure they are meeting health and safety requirements. If deficiencies are noted, work is stopped and corrective action is taken (e.g., retain, purchase additional safety equipment). Reports of health and safety deficiencies and the corrective action taken is forwarded to the Project Manager/Task Manager and PSHO.

B5.1.3 Emergency Equipment : Each vehicle will be equipped with a Fire Extinguisher (10 BC rated), Eyewash Kit, First Aid/Burn Kit, Latex Gloves/CPR Mask, and Bolt Cutters (to cut exit gate chains).

B5.1.4 Emergency Vehicle: At least one vehicle at a work site will be a designated emergency escape vehicle. It will be parked at a easily accessible location, KEYS IN THE IGNITION, and pointed in the direction of escape.

B5.2 CONTINGENCY PLAN

B5.2.1 Introduction

B5.2.1.1 If an emergency develops on site, the procedures delineated herein are immediately followed. Emergency conditions exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure;
- A condition occurs that is more hazardous than anticipated; and/or
- Fires, explosions, structural collapses/failures, and/or unusual weather conditions (thunderstorms, lightning, high winds, etc.) occur.

B5.2.1.2 If an emergency occurs, direct voice communication is used to sound the alarm. If personnel are out of range of direct voice communication, an air horn meeting the requirements of 29 CFR 1910.165 is sounded. General emergency procedures and specific procedures for personal injury are described within this section.

Table B5.1 is a list of emergency contacts.

Figure B5.1 shows best routes to SEAD exits.

Figure B5.3 shows the routes to Geneva General Hospital.

B5.2.2 General Emergency Procedures

The emergency procedures are as follows:

- Notify the contact listed in Table B5.1 of the SSHP when an emergency occurs. This list is posted prominently at the site.
- Use the "buddy" system (pairs).
- Maintain visual contact between "pairs." Each team member remains close to the other to assist in case of emergencies.
- If any member of the field crew experiences any adverse effects or symptoms of exposure, the entire field crew will immediately halt work and act according to the instructions provided by the Site Manager.
- Any condition that suggests a situation more hazardous than anticipated will result in evacuating the field team and re-evaluating the hazard and the level of protection required.
- If an accident occurs, the UXOSO is to complete an Accident Report Form, (Attachment B-1) within 5 working days and submit to the PSHO. Follow-up action will be taken to correct the situation that caused the accident.

B5.2.3 Personal Injury

In case of personal injury at the site, follow the procedures listed below:

- Field team members or on-site emergency medics trained in first aid can administer treatment to an injured worker.
- The victim will be transported to the nearest hospital or medical center. If necessary, an ambulance will be called to transport the victim.
- The Site Manager is responsible for the completion of an Accident Report Form.

TABLE B5.1
EMERGENCY CONTACTS

These contacts and maps should be posted prominently at the site. Should any situation or unplanned occurrence require outside assistance or support services, the appropriate contact from the following list should be made:

Agency	Telephone Number
Police, Fire, & Ambulance Seneca County Sheriff Dispatch	1-315/539-9241
Geneva General Hospital 186-198 North Street Geneva, NY	1-315/798-4222
SEAD Security	1-607/869-1448
Poison Control Center (NJ)	1-800-962-1253
National Response Center/Chemtrec	1-800-424-9300
USEPA Emergency Response	1-215-596-1260
USEPA Hazardous Waste Hotline	1-800-621-3191

Responsible Person	Telephone Number Work	 Home
Mike Duchesneau (Parsons ES Proj. Mgr.)	781-401-2492	508-393-1824
Steve Absolom (SEDA Contact)	607-869-1450	
Brian Powell (Project H&S Officer)	315-451-9560	
Mike Short (Parsons UXO Manager)	800-883-7300 x3115	
Ed Grunwald (Parsons ES Corporate H&S Officer)	678-969-2394	770-594-9760
George Spencer(USA Project Manager)	813 884-5722 x152	
Robert Crownover(USA Project Safety Officer)	813-884-5722 x106	
Medical Services Network (Dr. Mitchell)	1-800-874-4676, ext. 111	

Directions to Geneva General Hospital: The fastest route to the local hospital will depend on where you are on the site. Consult Figure B5.1 to determine which gate to use when emergency exit is required. In most situations the closest exit gate will be locked and will require bolt cutters to cut the chain. **Work crews should include bolt cutters with their emergency equipment.** Figure B5.2 describes directions from SEAD to Geneva General Hospital.

B5.2.4 Procedures Implemented for a Major Fire, Explosion, or On-Site Health Emergency Crisis

For such emergencies, the UXOSO and/or SUXOS shall:

- Refer to this Site SSHP;
- Notify Seneca County Sheriff Dispatch (1-315/539-9241)
- Notify SEAD Security (869-1448)
- Signal the evacuation procedure previously outlined and implement the entire procedure;
- Isolate the area;
- Stay upwind of any fire;
- Keep area surrounding the problem source clear after the incident occurs;
- Complete an Accident Report Form and distribute to appropriate personnel.

N

NORTH: TO GENEVA HOSPITAL

POST 1- Main Entrance
Open During Duty Hours
(ACCESS TO RTE. 96)

Prison Site

ROUTE 96

Prison Gate

SEAD-43

LORAN Tower

SEAD-44A

Ammo Area Gate 23

Ammo Area Gate- POST 4

SEAD- 16 AND -17

SEAD-46

SEAD-53

EOD Area #3

EOD Area #2

IGLOO AREA

Approximate Location
of Geophysical Test Plot Grid.

Burial Area Near Indian Creek

RTE. 96A

RTE. 96A

SEAD-45

SEAD-57

Demo Range

Grenade Range

Weston Truck Gate-Emergency
Access To Rte. 96A
(Cut Chain)

3000 0 3000 6000 Feet

o:/seneca/site/sitemap

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

FIGURE B5.1 LOCATION
OF EMERGENCY EXIT GATES

MARCH 2000