104-24

INTERIM REPORT

(05 DEC TRE)

ARCHAEOLOGICAL INVESTIGATIONS AT SENECA ARMY DEPOT, ROMULUS, NEW YORK

Prepared for:

NEW YORK DISTRICT
U.S. ARMY CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK, NY 10278

Under Contract Number
DACW51-92-D-0003
Delivery Order 0017

Principal Investigator:

Stephen J. Oberon
HeritageAmerica Ltd.

[date]

Prepared by:
WCH Industries, Inc., 14 Felton Street, Waltham, Massachusetts 02154

In Association With:
Boston Affiliates, Inc., 156 Milk Street, Boston, Massachusetts 02109

INTRODUCTION TO THE INTERIM REPORT

This constitutes the first interim report for the archaeological investigations at the Ash Landfill Site at the Seneca Army Depot Activity (SEADA) facility in Seneca County, New York. It is being submitted in accordance with Task 5.1a of the Scope of Work for this project, prepared by the U.S. Army Corps of Engineers New York District Planning Division.

As outlined in Section IV and Section V, Task 2 of that Scope of Work, technical documents prepared for the removal of contaminated soils at the Ash Landfill Site, along with documents that provide information on the testing program conducted to determine the extent of contamination, were reviewed as part of preparations for archaeological field sampling. These documents included the Action Memoranda generated by Engineering-Science, Inc. of Boston, Massachusetts and the Safety, Health and Emergency Response Plan developed by Environmental Science and Engineering of Gainsville, Florida.

In addition, the cultural resources management plan completed in 1986 by the Envirosphere Company of Lyndhurst, New Jersey was also reviewed. This management plan provides a general overview of the culture history of the region, a review of historical maps at the installation, an outline of "Potentially Identifiable But Not Presently Recorded Archaeological Resources on SEAD" and recommendations for future archaeological work at that facility.

Personnel attached to the Directorate of Engineering and Housing at SEADA familiar with the site, as well as experts employed by Environmental Products and Services, Inc. in Albany and Newburgh, New York who are familiar with managing hazardous material of the types expected to be encountered at the Ash Landfill Site were consulted, as were environmental personnel attached to the U.S. Army Corps of Engineers Huntsville District.

HERITAGE AMERICA LTD.
ARCHAEOLOGY • HISTORY • EDUCATION • ARCHITECTURAL RESTORATION AND REHABILITATION CONSULTANTS

SAFETY, HEALTH AND EMERGENCY RESPONSE PLAN
STAGE I-B ARCHAEOLOGICAL INVESTIGATIONS
ASH LANDFILL AREA
SENECA ARMY DEPOT
CAYUGA COUNTY, NEW YORK

Prepared by
HeritageAmerica, Ltd.
Middletown, New York

September 1994

SUITE 144 • 52 ROUTE 211E • MIDDLETOWN, NEW YORK 10940
TEL 914-341-2363 • FAX 914-343-7177

INTRODUCTION

This document has been prepared as a supplement to the health and safety plan developed by Environmental Science and Engineering of Gainsville, Florida (ESE 1991) in conjunction with a 1991 feasibility study conducted for remediation of contaminated sites at the Seneca Army Depot (SEAD).

The purpose of the ESE plan was to provide health and safety measures for a series of tasks (i.e., remediation of the ash landfill area as a whole), involving exposure to the highest levels of contamination present on the site. The present effort will avoid the two subareas of highest contamination and be restricted to locations of low to moderate levels of air and soil contamination. This modified health and safety plan will incorporate those features of the ESE plan that apply to the archaeological investigation and analysis, which are summarized below. Applicable portions of the ESE plan providing greater detail regarding health and safety measures are appended to this document.

TRAINING

All site personnel will have completed an OSHA-approved 40-hour Hazardous Waste/Materials Site Investigations Training Course required by 29 CFR 1910.120 within the previous year or an additional annual OSHA-approved 8-hour refresher course.

FIELD PROCEDURES AND PROTECTIVE MEASURES

Archaeological investigation will be confined to placing a series of hand-dug test holes outside the subareas of high contamination, screening their contents through ¼-inch mesh, removing any cultural items over 50 years old, and refilling the test holes. No heavy equipment will be used in this effort. No unexploded ordnance is anticipated in this area, since the incinerator ash fill was not used for disposal of ammunition or explosives of any kind. All vehicles brought to the site will adhere to SEAD regulations requiring fire extinguishers and removal of cigarette lighters. There will be no smoking on site.

Exposure of field personnel to contamination will be kept to a minimum. A technician using a gas chromatograph or portable infrared spectophotometer will sample each subarea to be archaeologically sampled for presence in the air of TRCLE, 1,2-dichloroethane, vinyl chloride and chloroform. Any locations where such substances are found to be present in air will be excluded from sampling in favor of less contaminated subareas.

The upper stratum of deposited waste ash, where relative contamination can be expected to be highest in any given portion of the ash landfill area, will be removed by shovel and placed directly into an OSHA-approved recepticle as each hole is being dug. The potential culture-bearing natural soils beneath will then be passed through the screen and returned to the excavated hole. The test hole will be capped with the fill from the recepticle and the upper soil moistened with water to minimize airborne particle movement. Any cultural material that is recovered will be placed in plastic bags and retained at the site until all archaeological sampling has been completed.

Level C personal protective equipment will be worn in all work areas except if ionization detector measurements verify that background total organic vapor (TOV) levels are not exceeded, in which case Level D personal protective equipment will be worn. An outline of the components of these levels of personal protective equipment is provided on page B-26 of the appendix. Spare personal protective equipment will be maintained on site to serve as replacements if needed. A first-aid kit will be maintained on site at all times.

The subareas of highest contamination have been identified by ESE and confirmed by International Technologies (IT), whose personnel have marked them with blue flags. A 25-foot buffer will be maintained at all times around these subareas, which will constitute the Exclusion Zone and be off-limits to all personnel. A Work Zone of reduced contamination will be established and maintained using portable monitoring equipment. Should the level of contamination in a given location rise due to shifts in wind patterns or other factors, the Work Zone will be adjusted accordingly to exclude such subareas. No food or drink will be consumed within the Work Zone.

DECONTAMINATION

All site personnel will undergo decontamination prior to leaving the site for lunch, at the end of the workday or at any other time. Tools used in archaeological sampling and any other Work Zone activity will be deposited in a designated receptacle just prior to leaving the Work Zone. Decontamination procedures for personnel will consist of washing boots, clothing, head- and face-gear with a detergent solution adequate for removing particles of the contaminants present on the site. Outer gloves and boot covers will be discarded prior to removal of coveralls, head- and face-gear. All protective equipment worn in the Work Zone will be left in the Decontamination Zone, with disposable equipment such as coveralls, gloves, and boot covers being deposited in an OSHA-approved receptacle for appropriate disposal at a later time. All equipment used

in the Work Zone and any cultural remains recovered in sampling will be decontaminated by the use of a steam cleaner prior to being removed from the site. Gasoline brought on site for this purpose will be transported in an approved safety can and appropriate permits for the operation of the cleaner and generator will be obtained from SEAD authorities. It is a goal of this investigation that no contaminated material or objects will leave the ash landfill area with the exception of discarded personal protective equipment that has been placed in sealed OSHA-approved containers.

EMERGENCY RESOURCES AND CONTACTS

Seneca Army Depot Police - 869-0448
" " " Ambulance - 869-1436
" " " Fire - 869-1316

Seneca Army Depot Clinic - 869-1243

Geneva General Hospital - (315) 798-4222

Thomas Enroth, SEAD Environmental Services - 869-1450

HOSPITAL ROUTES

Seneca Army Depot Clinic - located near the main (south) gate on post

Geneva General Hospital

- exit north gate onto NYS 96A
- turn north on NYS 96A and continue to Geneva
- in Geneva turn right on NYS 5 / US 20 and continue to North Street
- turn left on North Street to hospital

APPENDIX

EXCERPTS FROM ESE 1991
SAFETY, HEALTH AND EMERGENCY RESPONSE PLAN
INCORPORATED INTO ARCHAEOLOGICAL SURVEY

3.0 HAZARD EVALUATION AND CONTROL

3.1 CHEMICAL CONTAMINANTS

The primary chemical contaminants of concern are:

trans-1,2-dichloroethene (T12DCE),
trichloroethene (TRCLE),
1,2-dichloroethane (12DCLE),
vinyl chloride (C2H3CL), and
chloroform (CHCL3).

3.1.1 T12DCE

T12DCE is a colorless liquid with an ether-like and slightly acid odor. It has a boiling point (BP) of 113 to 140 degrees Fahrenheit (°F) and a vapor pressure (VP) of 180 to 265 millimeters of mercury (mmHg). Symptoms of exposure include eye and respiratory system irritation and central nervous system depression. Target organs include the respiratory system, eyes, and central nervous system. First-aid procedures include immediate irrigation of eyes and prompt soap-and-water wash for skin contact. Exposure limit for T12DCE is 200 parts per million (ppm). NIOSH has set an immediately dangerous to life and health (IDLH) level of 4,000 ppm.

3.1.2 TRCLE

TRCLE is a colorless liquid with a sweet odor. It has a BP of 188°F and a VP of 58 mmHg. Symptoms of exposure include headache, vertigo, nausea, eye irritation, and dermatitis. First-aid procedures include flushing eyes immediately with water, using soap to wash the skin promptly, and seeking medical attention. Target organs include the respiratory system, heart, liver,

and kidneys. The exposure limit for TRCLE is 50 ppm. NIOSH recommends supplied air respiratory protection at any detectable concentration.

3.1.3 12DCLE

The compound 12DCLE is a volatile liquid that is harmful if swallowed or absorbed through the skin. Its vapors and mists are irritating to the skin, eyes, mucous membranes, and upper respiratory tract. Prolonged exposure can cause nausea; headache; vomiting; and damage to the liver, kidneys, and gastrointestinal system. Contact is minimized by wearing protective clothing and, when necessary, organic vapor cartridge or air-supplied respirator. If skin contact occurs, the affected area should be flushed with copious amounts of water for 15 minutes while contaminated clothing is removed. If 12DCLE is inhaled, the victim should be moved to fresh air, with artificial respiration provided if not breathing or oxygen if breathing is difficult.

The compound 12DCLE is considered a carcinogen. NIOSH recommends supplied air respiratory protection at any detectable concentration. The OSHA exposure limit is 1 ppm for an 8-hour time-weighted average (TWA), with a ceiling limit of 4 ppm. 12DCLE is flammable with a flash point of 60°F. Since water may be ineffective for fire fighting, extinguishing agents suitable for flammable liquids (Class B) should be used.

3.1.4 C2H3CL

The compound C2H3CL is a colorless liquid or gas (when inhibited) with a faintly sweet odor. Exposure to this chemical is usually through inhalation or contact with skin or eyes. Symptoms of exposure include severe irritation of

the skin, eyes, and mucous membranes. Target organs include the liver and central nervous system.

If eye contact occurs, flush the affected area immediately with water. If skin contact occurs, wash affected area with soap and water. If inhaled, move victim to fresh air and seek medical attention. Permissible exposure limit (PEL) is 1 part per million (ppm) TWA. C2H3CL is a known human carcinogen. NIOSH recommends supplied air respiratory protection at any detectable concentration. The compound is classified as flammable.

3.1.5 CHCL3

The compound CHCL3 is a clear, colorless liquid with a characteristic odor. It is not flammable, but it does decompose in the presence of flame to form hydrochloric acid, phosgene, and chlorine. It is a suspect carcinogen, and OSHA has set a PEL of 2 ppm. NIOSH recommends supplied air respiratory protection at any detectable concentration. When inhaled in large concentrations, CHCL3 can act as a potent anesthetic. The primary entry route of CHCL3 into the body is through inhalation. It may also be harmful to the skin, producing burns on prolonged contact. Preventive measures include using supplied air respirators and wearing protective clothing, eye and face protection, and gloves. If CHCL3 is inhaled, the individual should be removed to fresh air and seek medical attention. For skin contact, a soap-and-water wash is recommended; for eye contact, eyes should be rinsed with clear water for 15 minutes and medical attention should be sought.

3.2 PHYSICAL AND MECHANICAL HAZARDS

Activities onsite will include:

1. Site visits;
2. Monitor well installation and sampling; and
3. Monitoring and sampling of soils, groundwater, surface water, and sediments.

Hazards associated with these activities are varied and include vehicle/ pedestrian collisions; fire; contact or crushing injuries resulting from materials handling and equipment operations; abrasions, contusions, lacerations, etc. resulting from use of power tools; and elevated noise levels. The potential for such hazards necessitates that all onsite personnel wear personal protective clothing, including coveralls, gloves, eye and face protection, safety boots, and hard hats. Noise and air will also be monitored.

3.2.1 MOTOR VEHICLES AND MOTORIZED EQUIPMENT

All motor vehicles will be maintained in a safe operating condition and in accordance with local and state safety requirements. All vehicles and moving equipment will be operated on sites and en route to and from sites in accordance with state and local motor vehicle regulations for speed, lights and warnings, passenger carrying, and operation. If any equipment is left unattended at night adjacent to a highway in use, it will be provided with suitable barricading, lighting, reflectors, or other suitable visual warnings to identify its location.

Any mobile equipment, including drilling rigs, earth-moving machinery, or other similar types of equipment, will be operated in strict compliance with the

manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to assure that it is functioning properly and safely. This inspection will include all parts subject to faster than normal wear and all lubrication points.

Hand and audible (horn) signals to equipment operators will be the commonly accepted industry standard signals for the type of equipment being used. All signals will be reviewed by the operator and signaller before work begins. Only one person will signal the equipment operator at any given time.

When equipment with moving booms, arms, or masts is operated near overhead hazards, the operator, with assistance from the designated signaling person, will assure that the moving parts of the equipment maintain safe vertical and horizontal clearances to the hazards. Moving booms, arms, or masts will be lowered and secured prior to being moved from one location to another, even on the same site. Equipment will be kept at least 10 feet (ft) away from energized electrical lines rated up to 50 kilovolts (kV) and 16 ft away from lines rated over 50 and up to 750 kV.

Drill rigs and other equipment not specifically designed to move with the boom, mast, or arm elevated will be returned to traveling position and condition before being moved.

3.2.2 PORTABLE EQUIPMENT AND TOOLS

All equipment and tools will be inspected prior to each day's use and as often as necessary to ensure that they are in safe operating condition. Defective equipment and tools will be removed from service immediately. Examples of

defective tools include: hooks and chains stretched beyond allowable deformations; cables and ropes with more than the allowable number of broken strands; missing grounding prongs on power tools; defective on/off switches; mushroomed heads of impact tools; sprung wrench jaws; missing or broken handles or guards; and wooden handles that are cracked, splintered, or loose. All equipment and tools will be used within their rated capacities and capabilities.

Whenever possible, equipment should not be driven into the ground, but should be placed into an augured hole. All onsite personnel will exercise due care when working with drilling equipment to not become entangled, crushed, or otherwise injured. No loose clothing or unconfined long hair will be permitted in the immediate area of any operating drilling tools or equipment. Probes and other pieces of equipment that are driven into the ground will be placed using a slide hammer to minimize potential for crushing injury.

3.2.3 UNEXPLODED ORDNANCE (UXO)

The incinerator ash landfill was not used for the disposal of ammunition and/or explosive materials. Therefore, UXO is not expected to be in the area. However, this does not preclude the possibility that some UXO may exist at this site. If explosive contamination or UXO is discovered at any time during site activities, the location will be marked, operations halted, and the commanding officer (CO) notified. The government will make appropriate arrangements with the regional Explosive Ordnance Disposal Command Center for disposal of the explosive material.

3.3 PERSONAL PROTECTIVE EQUIPMENT

Drilling, well development, and sampling will be performed initially in Level B personal protective equipment. Level B protective equipment includes the following:

LEVEL B

1. Positive-pressure, self-contained breathing apparatus (SCBA) with full face mask,
2. Chemical protective Tyvek® coveralls,
3. Inner chemical resistant latex gloves,
4. Outer chemical resistant Solvex® gloves,
5. Chemical-protective Nitrile or NBR steel-toe and shank boots,
6. Chemical protective latex boot covers,
7. Hard hat, and
8. Sealed tape over joints between coveralls and boot covers or gloves.

Modifications

1. Air line respirator with escape SCBA may be used in lieu of SCBA.
2. Work gloves over chemical-resistant gloves must be used for specific activities that require such protection. Specific activities include drill rig operation, in-trench work, and other similar manual labor.

A gas chromatograph, portable infrared spectrophotometer, or other laboratory analysis may be used to determine positively the absence of TRCLE, 1,2-dichloroethane, vinyl chloride, and chloroform. Following the demonstrated absence of these chemicals, Level C personal protective equipment will be permitted. Level C protective equipment includes the following:

LEVEL C

1. Air-purifying respirator with full face mask and organic vapor/high efficiency cartridges;
2. Chemical protective Tyvek® coveralls;
3. Inner chemical resistant latex gloves;
4. Outer chemical resistant Solvex® gloves;
5. Chemical-protective, steel-toe and shank, Nitrile or NBR boots;
6. Chemical protective latex boot covers;
7. Hard hat; and
8. Sealed tape over joints between coveralls and boot covers or gloves.

Modification

1. Work gloves are to be worn over chemical-resistant gloves as necessary for the particular activity.

Other onsite work outside the Exclusion Zone (EZ) (described in section 3.4) where ionization detector measurements verify that total organic vapor (TOV) levels do not exceed background may be performed in Level D personal protective equipment. Level D protective equipment includes the following:

LEVEL D

1. Coveralls;
2. Chemical-resistant, steel toe and shank, Nitrile or NBR boots;
3. Eye and face protection;
4. Hard hat, and;
5. Work gloves.

The contractor will maintain two sets of Level C personal protective equipment onsite for official visitors and government personnel. Visitors will not be allowed in areas requiring Level B protection. The site safety officer will assure that all personal protective equipment, regardless of ownership, is in proper working order and is maintained in accordance with the manufacturer's instructions. All respiratory equipment will be used in accordance with its NIOSH/Mine Safety and Health Administration (MSHA) approval conditions, and with OSHA (29 CFR 1910.134) requirements.

3.4 SITE ACCESS, PERIMETER, AND WORK ZONES

The site is on an access-controlled military installation. Site access will be through public access points onto the installation. The field team leader will coordinate with the client contact for field personnel access.

As this site is on an access-controlled military installation, perimeters around the EZ and Contamination Reduction Zone (CRZ) may be established using barriers consisting of barrier tape and/or A-frame barricades for the duration of site work.

Site work zones will be established and suitably marked in accordance with site conditions and needs, using Attachment C for guidance. The extent of the EZs will be established in accordance with the proposed trench location. Separate EZs will be permitted for trenching and drilling operations as site conditions may indicate. Only personnel properly dressed in Level B equipment will be permitted within the EZ(s). The CRZ will be established and enlarged as necessary so that ionization detector measurements taken at multiple

representative points along the upwind, downwind, and crosswind sides of the CRZ do not exceed background TOV levels.

3.5 PERSONNEL DECONTAMINATION

Personnel decontamination stations will be established and supplied in accordance with the procedures listed in Attachment D.

3.6 EQUIPMENT DECONTAMINATION

Equipment decontamination will be performed as necessary in accordance with procedures set forth in the Quality Assurance Project Plan (QAPP).

hazardous vapors. At a minimum, all laboratory personnel having direct contact with the hazardous samples will be equipped with the following equipment:

1. Safety glasses or face shield to protect from splashes,
2. Inner latex and outer Solvex® gloves, and
3. Rubberized apron or other chemical protective garment.

Respiratory protection in the form of organic vapor cartridge respirators may be required by the laboratory safety manager if exposure to hazardous vapors is likely. All operations conducted with the raw hazardous waste samples will be performed in an adequate fume hood. Once the samples have been extracted or processed and are present in sealed bottles and vials, respiratory protection may be discontinued; however, the following safety precautions should continue to be observed:

1. Use of safety glasses, and
2. Use of latex and/or rubber gloves.

4.5 ACCIDENT PREVENTION PLAN/ACCIDENT REPORTING

The purpose of the SHERP is to prevent accidents and minimize the impact of an accident if one should occur (i.e., the SHERP is the accident prevention plan).

4.5.1 ACCIDENT PREVENTION

The site safety officer will conduct periodic inspections of the work areas to ensure that safe working practices are being followed. These inspections will be made prior to the start of any new activity and during the performance of activities as necessary. The purpose of these inspections will be to determine if

site conditions and operations are in accordance with this SHERP and safe working conditions and practices. Site personnel will, under the direction of the site safety officer, immediately correct any deficiencies, stopping all work if necessary to do so. The site safety officer will prepare a report for the project file indicating the date, time, location of each inspection, unsafe conditions and practices, and remedial action taken.

4.5.2 ACCIDENT REPORTING

All accidents must be reported to the site safety officer immediately. Prompt reporting is essential to the prevention of future incidents in addition to the well-being of the affected individual or individuals. The site safety officer will notify the project manager and the client contact of any serious accidents. The site safety officer or other key members of the field team will be trained in first aid and cardiopulmonary resuscitation (CPR). First aid will be administered to affected personnel under the direction of the site safety officer. For serious accidents, the nearest ambulance service will be contacted for transport of injured personnel to the nearest medical facility (Section 5.0). The site safety officer will have established contact and liaison with medical authorities (Section 5.0) who will be knowledgeable of the activities of the field team. Telephone numbers and addresses of ambulance and medical services will be posted onsite.

A formal report of all accidents and any OSHA-recordable accident will be filed with the contractor corporate health and safety officer and with the client contact on ENG Form 3394 in accordance with Army requirements. All reports must be received within 2 working days.

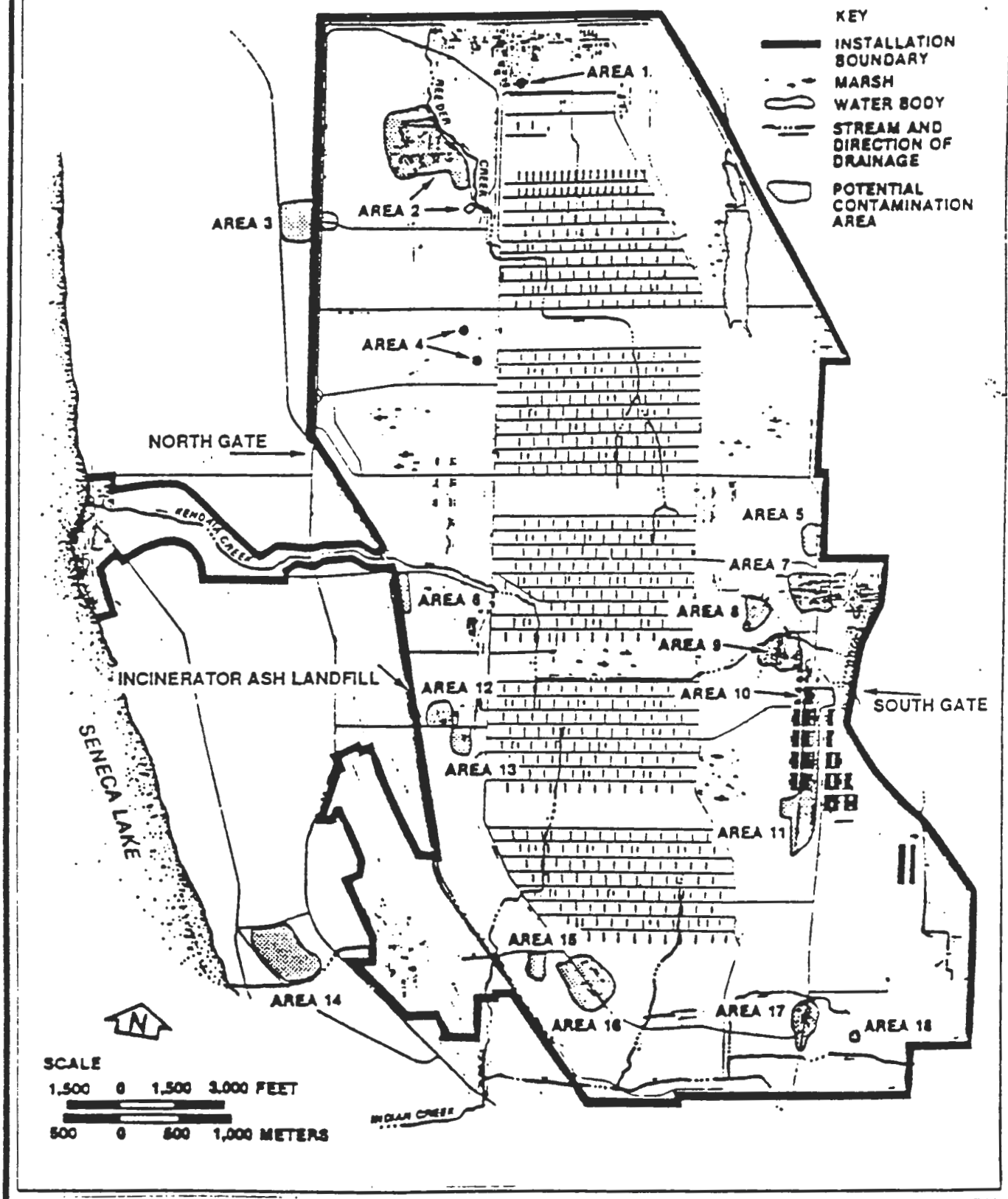

Figure 5-1
SITE MAP

SOURCE: ESE

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

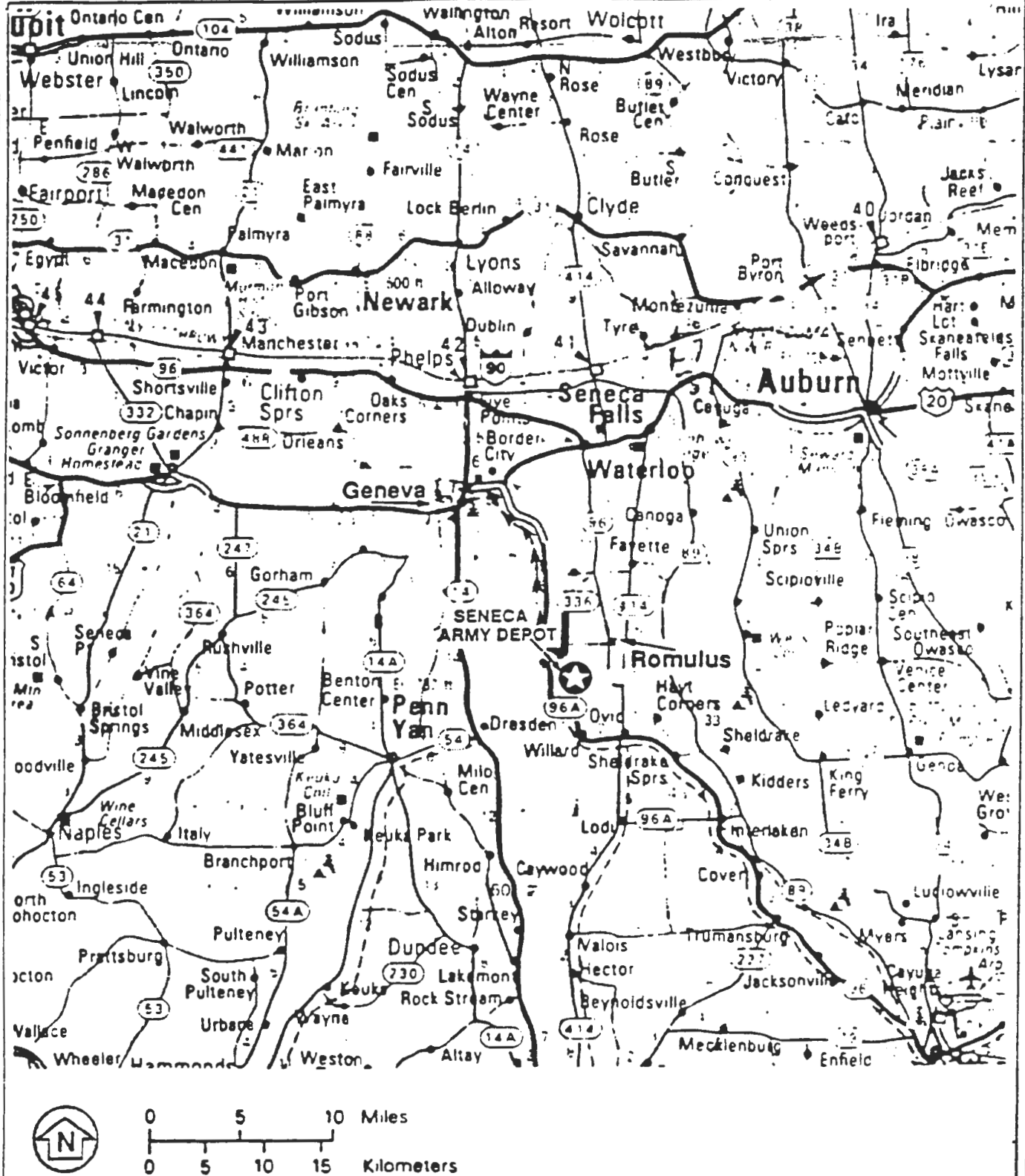

Figure 5-2
HOSPITAL ROUTE TO
GENEVA GENERAL HOSPITAL

SOURCE: ESE

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

9A.3 Level C Decontamination

Equipment Worn

The full decontamination procedure outlined is for workers wearing Level C protection (with taped joints between gloves, boots, and suit). Such protection consists of

1. One-piece, hooded, chemical-resistant splash suit
2. Canister-equipped full-face mask
3. Hard hat
4. Chemical-resistant boots with steel toe and shank
5. Boot covers
6. Inner and outer gloves

Procedure for Full Decontamination

Station 1: Segregated Equipment Drop

Deposit equipment used on the site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment necessary is

1. Containers of various sizes
2. Plastic liners
3. Plastic drop cloths

Station 2: Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent/water solution.

Equipment necessary is

1. Container (20 to 30 gal)
2. Decon solution
3. Detergent/water solution
4. Two or three long-handle, soft-bristle scrub brushes

Station 3: Boot Cover and Glove Rinse

Rinse off decon solution from Station 2 using copious amounts of water. Repeat as many times as necessary.

Figure D-2
LEVEL C DECONTAMINATION PROCEDURES
(PAGE 1 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

Equipment necessary is

1. Container (30 to 50 gal)
2. High-pressure spray unit
3. Water
4. Two or three long-handle, soft-bristle scrub brushes

Station 4: Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Equipment necessary is

1. Container (20 to 30 gal)
2. Plastic liners

Station 5: Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Equipment necessary is

1. Container (30 to 50 gal)
2. Plastic liners
3. Bench or stool

Station 6: Outer-Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Equipment necessary is

1. Container (20 to 30 gal)
2. Plastic liners

Station 7: Suit/Safety Boot Wash

Thoroughly wash splash suit and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water solution. Repeat as many times as necessary.

Equipment necessary is

1. Container (30 to 50 gal)
2. Decon solution
3. Detergent/water solution
4. Two or three long-handle, soft-bristle scrub brushes

Figure D-2
LEVEL C DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 2 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

Station 8: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water solution using copious amounts of water. Repeat as many times as necessary.

Equipment necessary is

1. Container (30 to 50 gal)
2. High-pressure spray unit
3. Water
4. Two or three long-handle, soft-bristle scrub brushes

Station 9: Canister or Mask Change

If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer glove and boot covers donned, and joints taped. Worker returns to duty.

Equipment necessary is

1. Canister (or mask)
2. Tape
3. Boot covers
4. Gloves

Station 10: Safety Boot Removal

Remove safety boots and deposit in container with plastic liner.

Equipment necessary is

1. Container (30 to 50 gal)
2. Plastic liners
3. Bench or stool
4. Boot jack

Station 11: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment necessary is

1. Container (30 to 50 gal)
2. Bench or stool
3. Plastic liner

Figure D-2
LEVEL C DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 3 OF 5)
SOURCES: NUS, 1982; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

Station 12: Inner-Glove Wash

Wash inner gloves with decon solution or detergent/water solution that will not harm skin. Repeat as many times as necessary.

Equipment necessary is

1. Decon solution
2. Detergent/water solution
3. Basin or bucket

Station 13: Inner-Glove Rinse

Rinse inner gloves with water. Repeat as many times as necessary.

Equipment necessary is

1. Water
2. Basin or bucket
3. Small table

Station 14: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner.

Equipment necessary is

1. Container (30 to 50 gal)
2. Plastic liners

Station 15: Inner-Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment necessary is

1. Container (20 to 30 gal)
2. Plastic liners

Station 16: Inner-Clothing Removal

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing off the site since there is a possibility small amounts of contaminants have been transferred in removing fully encapsulating suit.

Figure D-2
LEVEL C DECONTAMINATION PROCEDURES
(Continued, Page 4 of 5)

SOURCES: NUS, 1983; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

Equipment necessary is

1. Container (30 to 50 gal)
2. Plastic liners

Station 17: Field Wash

Shower if highly toxic, skin-corrosive, or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment necessary is

1. Water
2. Soap
3. Tables
4. Wash basins or buckets
5. Field showers

Station 18: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment necessary is

1. Tables
2. Chairs
3. Lockers
4. Clothes

Full Decontamination (Situation 1) and Three Modifications

The preceding description outlines each station that is included in a complete worst-case decontamination protocol. It is obvious that different sites will present different hazard levels and thus that site-specific modifications of this protocol will be required. The following table illustrates the modifications that can be made in response to a variety of conditions.

STATION NUMBER

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X										
3	X						X	X		X	X				X	X	X		
4	X						X	X	X										

Figure D-2
LEVEL C DECONTAMINATION PROCEDURES
(Continued, Page 5 of 5)

SOURCES NUS, 1982; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

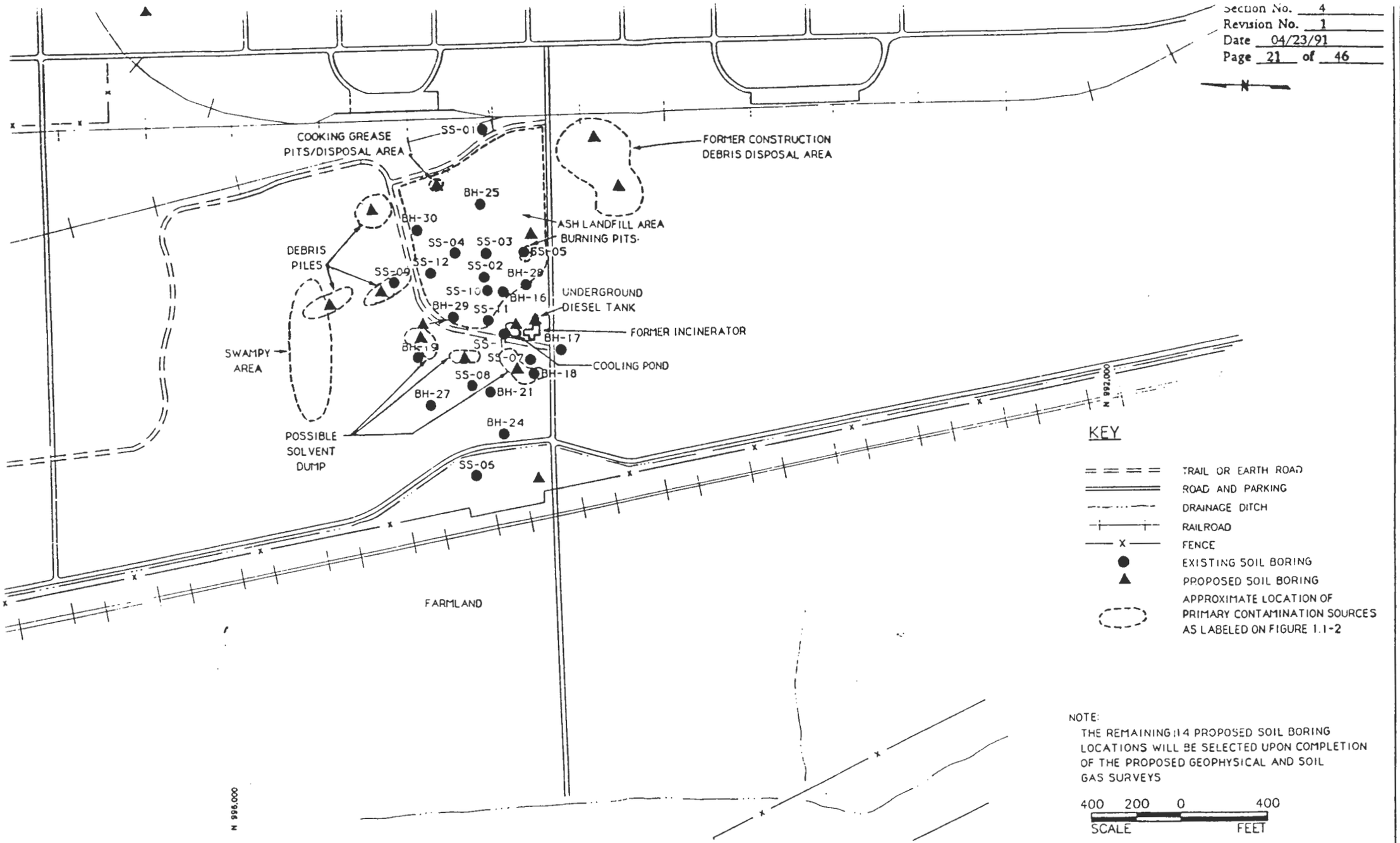

Figure 4.7-1
PROPOSED SOIL BORING LOCATIONS IN SEAD ASH LANDFILL AREA

SOURCE: ESE

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

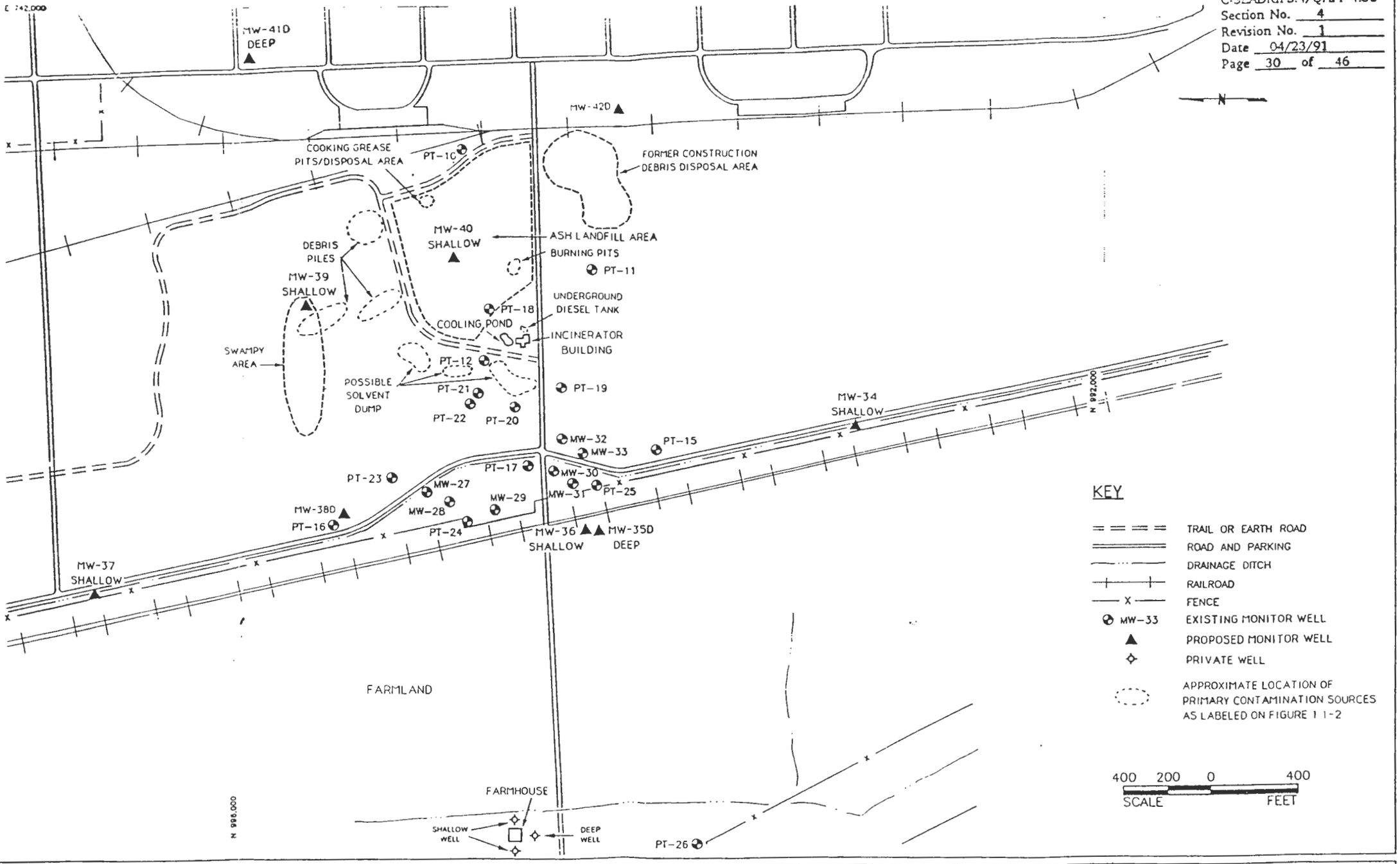

Figure 4.7-3
PROPOSED MONITOR WELL LOCATIONS SEAD
ASH LANDFILL AREA

SOURCE: ESE.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA