FINAL REPORT

ARCHAEOLOGICAL INVESTIGATIONS
ASH LANDFILL SITE
SENECA ARMY DEPOT ACTIVITIES
TOWN OF ROMULUS, SENECA COUNTY, NEW YORK

Prepared for:

NEW YORK DISTRICT
U.S. ARMY CORPS OF ENGINEERS
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ABSTRACT

During the autumn of 1994, a Phase I cultural resources survey was carried out for the portion of the Seneca Army Depot Activities (SEDA) known as the Ash Landfill Site, in conjunction with a program of hazardous waste remediation at this former refuse incineration and disposal site. A comprehensive literature search was undertaken to as fully as possible document the land use history of the parcel in question, identify known Native and European-American era archaeological resources on or adjacent to the site, and assess the potential for impact to cultural resources as a result of planned soil decontamination activities. Based on documented information and models for settlement in the region by indigenous populations, a moderate to high potential was identified for the occurrence of as-yet-undocumented Native American cultural remains in this area. Historical records indicated a low to moderate potential for the presence of European-American era structures, focused activity areas or burials.

A strategy for archaeological field sampling was developed that avoided exposure to the two most contaminated zones while investigating the periphery of these subareas along with locations of proposed interceptor trenches. One site of Native American cultural activity was identified, along the proposed interceptor trench route. It appears to represent remains of a small camp, occupied at least during the Middle Archaic and the Early Woodland periods, based on diagnostic projectile points recovered. After appropriate regulatory personnel were consulted, construction of a temporary earth and gravel access road over the site was permitted as a part of soil remediation efforts, though measures were taken to protect the archaeological site and a buffer area around it from impact during and after the remediation program. Once soil remediation has been completed, additional archaeological investigation is recommended to determine whether the site is likely to yield significant cultural information.

The remains of three or possibly four 20th century structures were identified in the portion of the site nearest West Smith Farm Road. One of these appears to date from the military installation phase of land use during the second half of the 20th century. The others seem likely to have been built during the early 20th century and to represent the remains of outbuildings related to the fruit growing and processing operation of Winfield Smith. None of these structural remains lies within the area of remediation impact or is considered likely to meet National Register of Historic Places eligiblity criteria, though they should be re-evaluated if future study should identify an eligible district taking in the entire Smith Farm.

INTRODUCTION

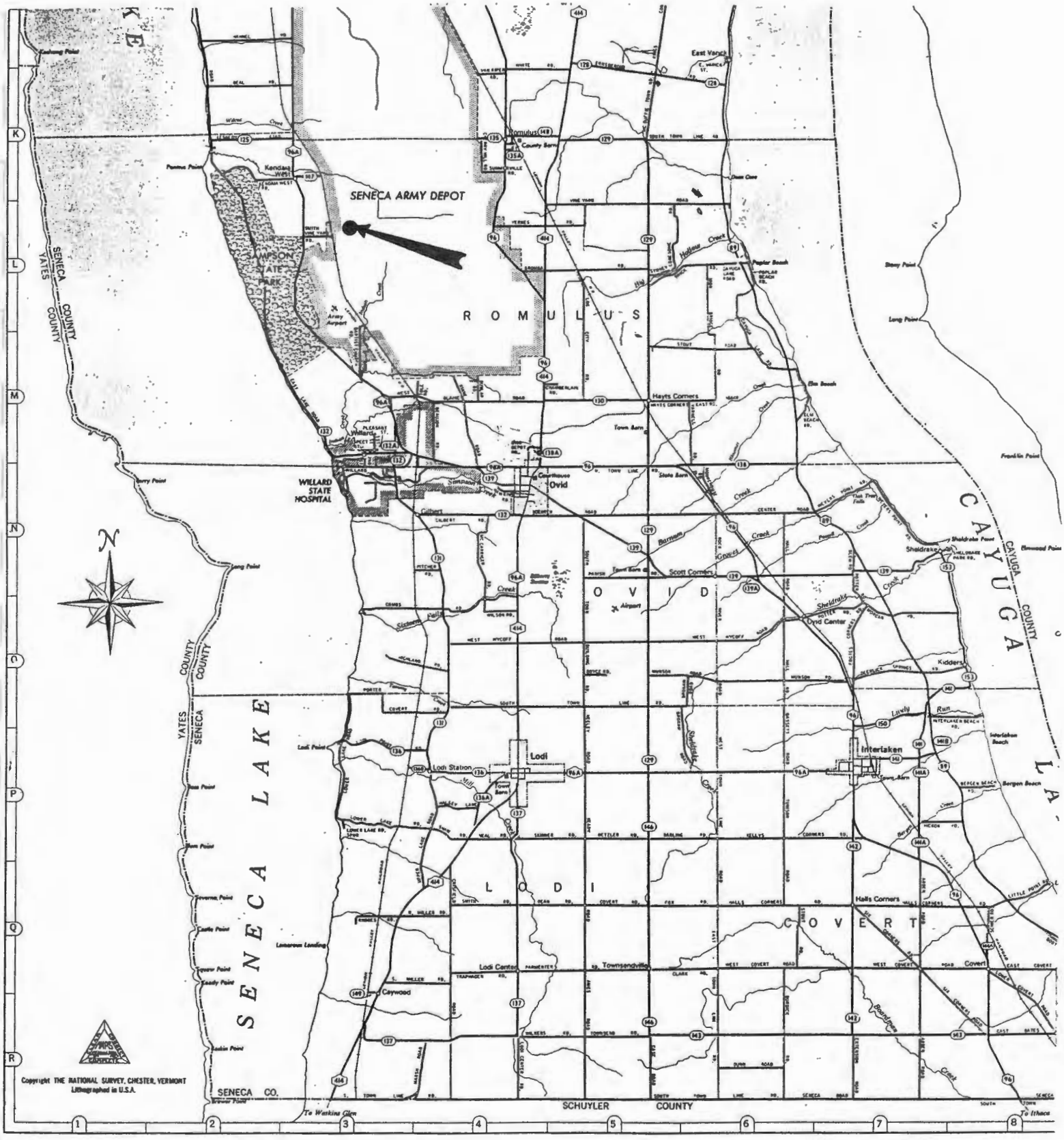
Located on 10,660 acres (4314 hectares) of federally-owned land in the western portion of Seneca County, in the Finger Lakes region of central New York, this installation lies in the towns of Romulus and Varick, between Seneca Lake and Cayuga Lake (Figures 1 and 2), on what was formerly private land used primarily for subsistance and market agricultural production. Because of the composition and relative sparseness of its population and its relation to the Atlantic Coast, this site was chosen in 1941 for the construction of a World War II munitions facility. The initial conversion of the area to military use, the lay-out and the construction of the installation took place during 1942-43. A second major construction phase occurred during the mid-1950s when the north troop area was added. SEDA today consists of a main storage area of underground igloo-type magazines, above-ground magazines, a headquarters area, operative maintenance and services facilies, a housing area, rail facilities, and an airstrip. The SEDA mission includes the operation of the depot for the receipt, storage, issue, maintenance, demilitarization, and disposition of weapons. SEDA also provides administrative, handling and warehousing services for the General Services Administration (GSA) and Defense Logistics Agency (DLA) materials.

As mentioned, several studies have been carried out to determine the locations, extent and nature of contamination on SEDA property. The two most comprehensive and most recent were undertaken by Environmental Science and Engineering of Gainsville, Florida (ESE 1991) and Engineering-Science, Inc. of Boston, Massachusetts (ESI 1994). One of the locations at which they identified contamination is an area known as the Ash Landfill Site, situated in the west-central portion of the installation, along the north side of West Smith Farm Road (Figure 3). This site lies adjacent to a former incinerator and was used for the deposition of ash along with unburned waste prior to its being closed in 1979. As a result of documented contamination, the Ash Landfill was included on the Federal Facilities National Priorities List (NPL) on 13 July 1989.

An archaeological overview for the SEDA property was completed in 1986 by the Envirosphere Company of Lyndhurst, New Jersey (Klein 1986). This study provided a general overview of the culture history of the region, a review of historical maps at the SEDA, an outline of "Potentially Identifiable But Not Presently Recorded Archaeological Resources on SEAD," and recommendations for future archaeological work at that facility. One of the longer-range

FIGURE 1 - LOCATION OF SEDA
IN NEW YORK STATE

FIGURE 2 - LOCATION OF ASH LANDFILL SITE IN SOUTH-CENTRAL SENECA COUNTY



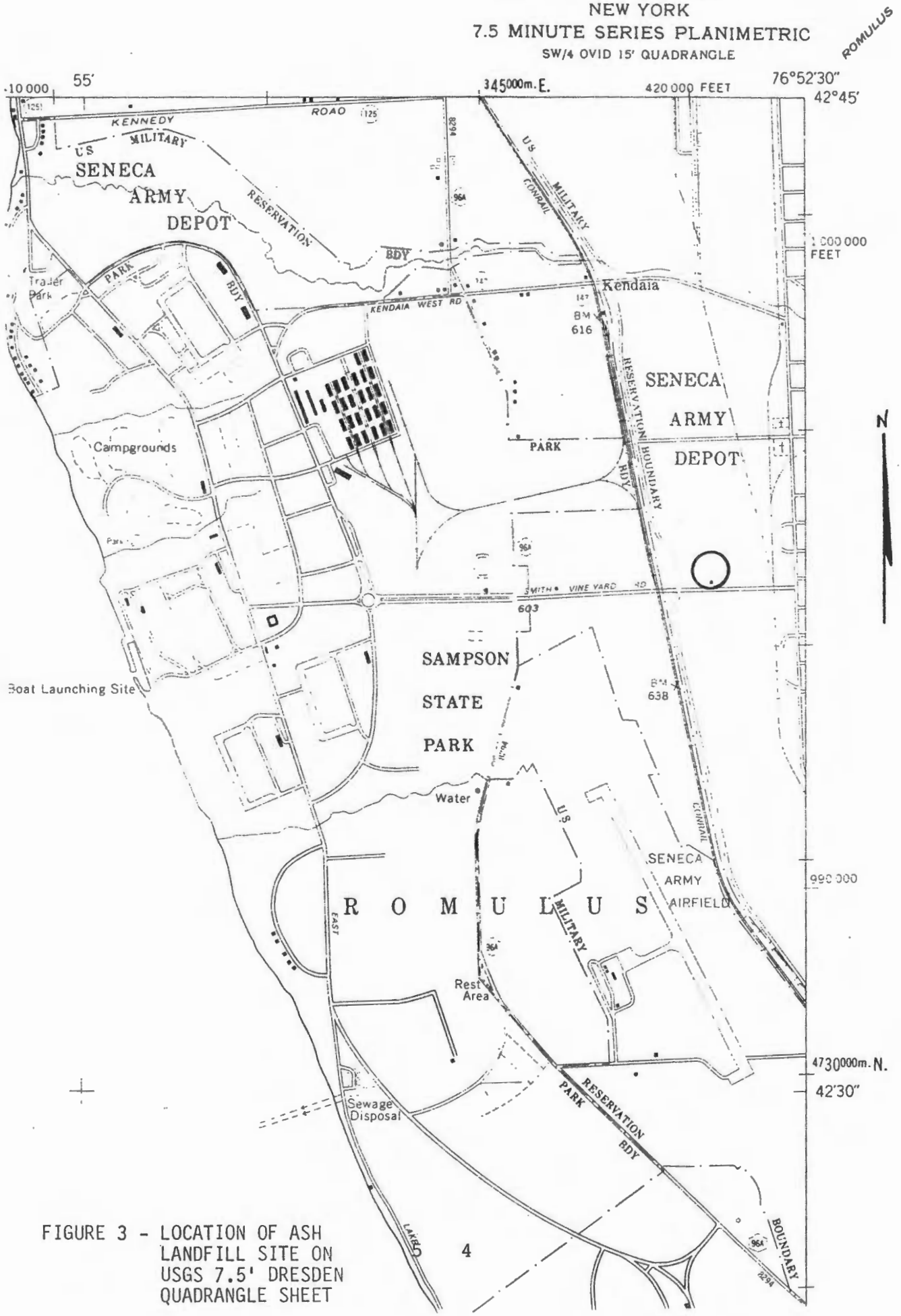


FIGURE 3 - LOCATION OF ASH LANDFILL SITE ON USGS 7.5' DRESDEN QUADRANGLE SHEET

purposes of the present study is to carry this base-line survey forward, refining the picture of potential and actual cultural resources in one small portion of the installation, and at the same time identifying documents and individuals that can bring additional information to light in investigating the culture history and archaeological resources of this part of Seneca County.

The scope of the present cultural resources investigation, as developed by the U.S. Army Corps of Engineers, New York District (USACOE-NYD), called for an archaeological study of the Ash Landfill Site in conjunction with a remediation program through which contaminated soil will be removed for treatment and two interceptor trenches will be constructed. This investigation was carried out by HeritageAmerica Ltd. of Middletown, New York and Boston Affiliates, Inc. of Boston, Massachusetts, on behalf of SEDA, as part of the responsibilities of that installation as an agency of the federal government concerning the protection and preservation of cultural resources on its property, as outlined in the National Historic Preservation Act of 1966, as amended, Executive Order 11593, and the Advisory Council on Historic Preservation "Procedures for the Protection of Historic and Cultural Properties" (36 CFR 800).

The archaeological and historical components of this study were carried out by David A. Dawley and Terry J. Longleway under the direction of Stephen J. Oberon, who served as Principal Investigator. Monroe Monitoring, Inc. of Rochester, New York provided ongoing field monitoring of contamination levels during the site identification survey. A report of their findings is included here as Appendix C.

In addition to USACOE-NYD archaeologist Nancy Brighton, under whose supervision the planning and execution of this project was carried out, the following personnel were consulted during preparation and operational phases of this investigation: Dr. Robert D. Kuhn of the N.Y. State Historic Preservation Office (SHPO); Randall Battaglia, Thomas R. Enroth, and Janet Fallo, of the SEDA Directorate of Engineering and Housing (DEH); Carla M. Struble, P.E. of the U.S. Environmental Protection Agency Region II Office in New York City; Lieutenant Colonel Roy E. Johnson, Commander SEDA; Kevin Healy, USACOE Huntsville (Alabama) District; and Michael Duchesneau, P.E. of Engineering-Science, Inc., Boston, Massachusetts. We are also grateful to the Seneca County Historical Society in Waterloo, the Geneva Historical Society in Geneva, the Seneca Falls Historical Society in Seneca Falls, the Town of Romulus Historian, and the SEDA Directorate of Engineering and Housing for use of archival documents, records and air photos.

ENVIRONMENTAL SETTING

The Seneca Army Depot Activities (SEDA) is located on federal property in west-central Seneca County, in the Finger Lakes district of central New York, between Seneca Lake on the west and Cayuga Lake to the east (Figures 1,2,3). The installation lies on a low ridge between these two lakes of Pleistocene glacial origin. Several streams cross SEDA property on their way to Seneca Lake, including Indian Creek, Wilson (Wilcox) Creek, Reeder Creek and Kendaia Creek, nearest the Ash Landfill Site. Numerous springs are present on the military lands and a large swampy feature known as Cranberry Marsh is situated to the northeast.

This portion of Seneca County is characterized by generally flat to gently sloping terrain. It lies in the Finger Lakes Hills subdivision of the Appalachian Uplands region of New York which is underlain with Palaeozoic sedimentary rocks, mostly shales and shaly sandstones, and covered by glacial till extending to varying depths. The local shale bedrock is soft, grey and fissile, being extensively weathered at the point of contact with overlying Wisconsin age glacial till deposited approximately 20,000 years ago (ESI 1994:1-9). Soils in upland areas of the SEDA are of the Darien-Angola association, generally limy silt loam with considerable clay content and often not very well drained. These are derived from glacial till containing broken and ground-up limestone. Heavy silt loams of the Honeoye-Lima association, also rich in lime but exhibiting better drainage properties, are present in portions of the installation located nearer the Seneca lakeshore (Thompson 1966:106-08; Hutton 1972:135-36). Elevation ranges from 760 feet (231.6 meters) above sea level at the eastern limits of the military reservation, situated near the highest point of the interlacustrine ridge, to 450 feet (137.1 meters) on the shore of Seneca Lake.

This area lies within the Oak-Northern Hardwood Zone, whose native vegetation was characterized by the intermingling of oak and northern hardwood species such as beech, sugar maple and yellow birch, along with evergreens such as hemlock, white pine and white cedar. In more steeply-sloping portions of this zone, stands of oaks and northern hardwoods often occur separately, in alternating patterns (Thompson 1966:95-96). As former agricultural and pasture land, most of the SEDA including the Ash Landfill Site, is relatively open, populated by grasses, scrub/shrub vegetation and young trees.

The Ash Landfill is composed of dark brown to black ash that was spread over an area approximately 300 by 500 feet (91.4 by 152.4 meters) during the operation of the incinerator and is up to 4 feet (1.2 meters) thick. A non-combustible land fill is located southeast of the ash landfill.

DOCUMENTARY AND BACKGROUND RESEARCH

The present investigation into the cultural history of the area now part of the Seneca Army Depot Activities (SEDA) builds upon the information collected by a previous effort carried out for the U.S. Army Materiel Development and Readiness Command by the Envirosphere Company of Lyndhurst, New Jersey, entitled "An Archaeological Overview and Management Plan for Seneca Army Depot" (Klein 1986). The purpose of that study was to "assist the U.S. Army Materiel Development and Readiness Command (DARCOM) in its efforts to comply with laws and regulations concerning the management of archeological resources at the Seneca Army Depot" (Klein 1986:1-1). These efforts became more active after the National Historic Preservation Act Ammendments were passed in 1980 to amplify the 1966 National Historic Preservation Act, as a commandwide program of historic cultural resource management was begun (Klein 1986:1-1,1-2).

The 1986 study summarizes the environmental setting and cultural historical development of Seneca County and the Finger Lakes region of central New York, and lists known Native and European American era cultural resources located on and adjacent to installation property. The present investigation will not repeat in detail what has been presented in the 1986 study. Rather, it will summarize key portions of that overview and, as part of the ongoing effort to implement the cultural resources management plan developed previously, it will focus on that portion of the Seneca Army Depot Activities where the Ash Landfill is located, in keeping with its purpose to assess and then test possible impact to cultural resources related of a program to remediate contaminated soils at that site.

Native American occupation of this portion of the Finger Lakes region dates from the retreat of the last glaciation some 11,500 years ago. Isolated finds of projectile points associated with this stage of human occupation have been reported from areas surrounding Seneca County, notably along the former southern shore of Lake Ontario to the northeast and northwest, and more elaborate remains of occupation documented at the Potts Site in Oswego County and near Lockport, Niagara County. Not many archaeological sites have been reported in this part of New York State for the Early and Middle Archaic, encompassing the period between roughly 7000 and 3500BC in this area. These cultural stages appear to have been characterized by low population, and by small and briefly occupied sites focused on the seasonal availability of plant and animal resources (Ritchie and Funk 1973). Relatively few sites datable to the Early or Middle Archaic have been reported in Central New York and far less is known regarding diversity of culture, settlement patterns, or intrasite activity distribution during these periods in comparison to the Late Archaic (3500-1000BC), which saw an apparent increase in

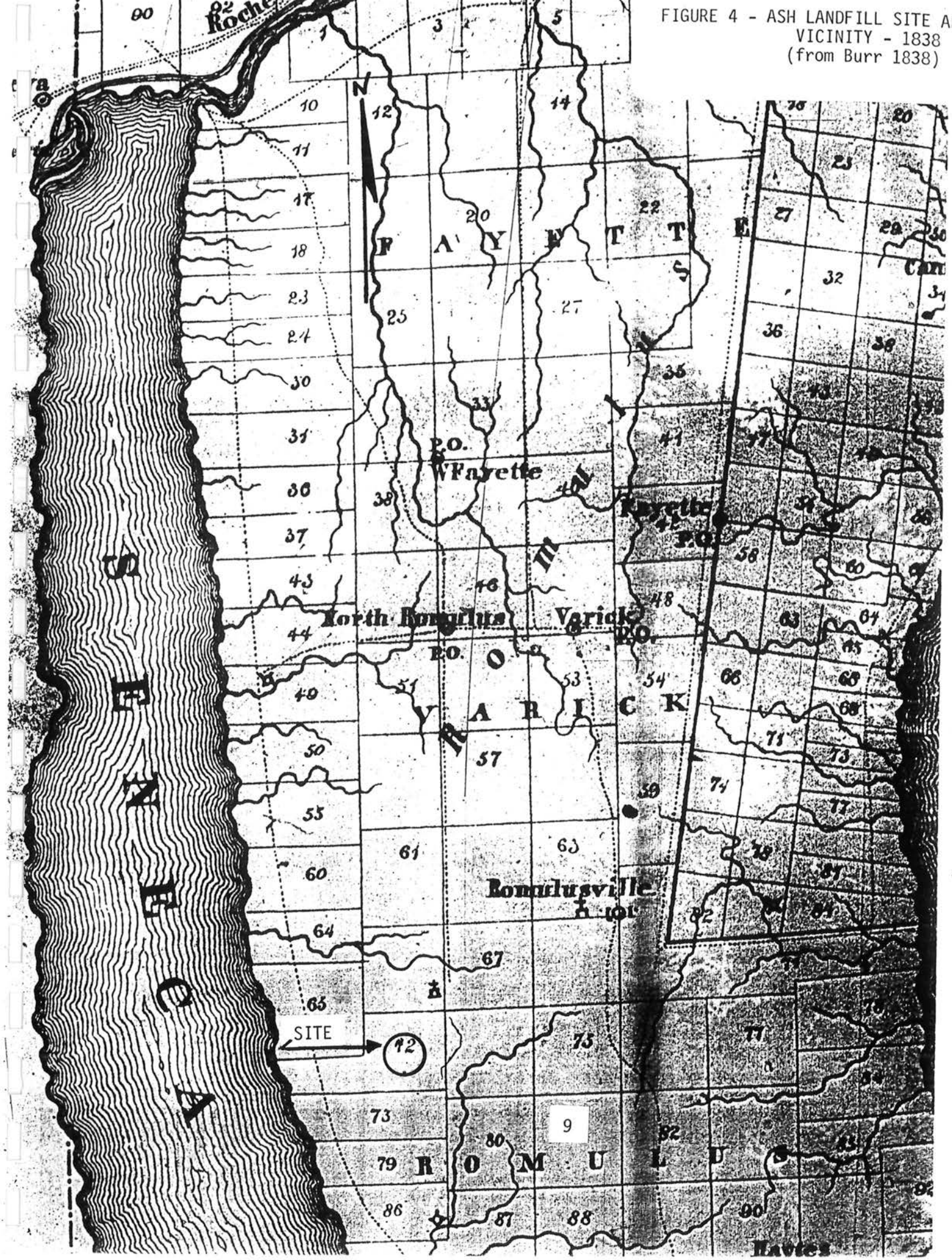
population and rise in the number of occupation sites. This has been attributed to favorable climate changes and the consequent increase in exploitable plant and animal species (Ritchie and Funk 1973:337). Several of the most significant Late Archaic archaeological sites are situated in the general vicinity of the SEDA: at Geneva in Seneca County, Lamoka Lake in Schuyler County, Frontenac Island in Cayuga Lake and Brewerton in Onondaga and Oswego County. More spatially limited seasonal movement by somewhat larger groups that manifest a greater diversity in artifact types appears to have characterized the Late Archaic (Ritchie and Funk 1973).

The succeeding Early Woodland (1000-100BC) appears to have seen a greater population stability and longer-term settlement, along with the beginning of the manufacture of ceramics and possibly horticulture. This period saw an apparent increase in inter-regional contact and exchange, an elaboration of funerary traditions and a complexity of cultural influences that is as yet poorly understood. A less elaborate and fairly stable culture appears to have characterized the Middle Woodland period (100BC-AD1000), with continued influences from other regons and a growing importance of horticulture. The Late Woodland (AD1000-1550) in Central New York saw a great change in almost every aspect of culture, with growth in settlement size and complexity and elaboration of political organization and ritual materials, often based on locally antecedent forms. A considerable number of Late Woodland sites are known from the Finger Lakes region, whose physiographic character favored the needs of larger population centers using slash-and-burn farming.

The Ash Landfill, as previously stated, lies in the south-west quadrant of the Seneca Army Depot Activities, north of West Smith Farm Road and east of West Patrol Road. The area affected by remediation and related efforts, encompassing some 10 acres (4.0 hectares), is located within what was known as Tract 119 when it was purchased by the United States government in 1943 as a 318.5-acre (128.9-hectare) parcel from Winfield A. Smith. This, along with another piece of land owned by Mr. Smith and known as Tract 95, was acquired for a sum of $26,000.00 as part of the process of establishing the military installation between 1941 and 1943 (Seneca Ordnance Report 1954). Prior to this era, during the approximately 150 years since the State of New York had begun organized European American settlement of Seneca County after the Revolutionary War, the Ash Landfill site had been located in the east-central portion of Military Lot 72 (Figure 4).

This lot was part of the Military Tract, encompassing eight counties in Central New York; it was established in an effort to encourage European-American migration into former Iroquois lands and to compensate war veterans. The Military Tract was divided into Military Lots. A military lot was a parcel

FIGURE 4 - ASH LANDFILL SITE AND VICINITY - 1838
(from Burr 1838)



about 600 acres in size; 50-acre adjoining corner lots were set aside for sale in order to cover surveying costs. Seneca County contained a total of 900 Military Lots, laid out in the townships of Junius, Ovid, and Romulus. These lands were officially distributed to war veterans in 1791.

However, the settlement of the area by both deeded landowners and squatters had already begun by 1789, and as a result of the activity of land speculators, few veterans in fact settled the lands they had been alotted. Land continued to be sold and resold over the next decade, as many initial and subsequent settlers and squatters moved on within a brief time. Though its population was not very stable, this portion of Seneca County was generally settled by 1795. Most residents lived on dispersed farms averaging 100 acres (40.4 hectares) in size and in several small rural centers, such as Varick, Romulusville and North Romulus, that developed at crossroads and around mill locations (Watrous 1982; Everts et al. 1876).

John Sayre appears to have been the first Euro-American settler of Military Lot 72 in the Town of Romulus, which saw its first post-Revolutionary War settlers in 1788 (Spafford 1813:12). A carpenter who arrived around 1795 from Orange County, New York via Elmira, Mr. Sayre settled with his wife and child on one fourth of Lot 72 and subsequently opened a store and tavern. A prominent area resident of his time, he was elected to the State Legislature in 1804, appointed Postmaster in 1806, and also served as a judge. Other residents on the parcel during this period were Stephen Miller, who arrived at roughly the same time as John Sayre and built a cabin "on the northeast corner" of what became known as Smith Farm Road and Baptist Church Road (Everts et al. 1876:150), William W. Folwell, who settled the southwestern portion of the Military Lot in 1807, and Peter and Mahlon Bainbridge, who became established in the area during the 1790s.

Peter Bainbridge was the founding minister of the First Romulus Baptist Church, established in 1795 as the first congregation of this denomination in Seneca County. This church was housed until 1941 in a frame structure, erected in 1808 and rebuilt in 1849, that stood on the west side of Baptist Church Road, roughly one-half mile (0.8 kilometers) northeast from the Ash Landfill site. The land upon which the church was constructed had been donated by William Folwell from his portion of Lot 72. A parsonage was erected across the road from the church in 1856 on land donated by Mrs. Joseph Hunt. In 1941, the church, by then known as the Kendaia Baptist Church, was purchased, dismantled and removed, to be reassembled at Irelandville, near Ithaca (McGrane 1975:116). The cemetery adjoining the church, on land also donated by William Folwell and his wife Jane, remains intact today, fenced in within the military installation grounds and accessible to visitors with special passes.

In its early years, this structure was also known as the Appletown Church (Seneca County Deeds 76:545), after the late eighteenth century settlement that stood to the west, nearer the shore of Seneca Lake. This, in turn, took its name from a Native American Cayuga settlement, noted by Euro-American chroniclers for its orchards and reputed to contain at least 20 houses of "hewn logs" (McGrane 1975:2). The location of this earlier settlement is, however, somewhat unclear.

Destroyed in 1779 by the Sullivan and Clinton punitive expedition against the villages of the Iroquois nations that had remained loyal to the Crown, the Cayuga settlement is said to have been located in the vicinity of Kendaia hamlet (McGrane 1975:2) "on the Seneca shore, in the North West part" (Spafford 1813:13), though its exact location has never been established by historians and archaeologists. Everts, Ensign and Everts, in their later history of the county, refer to the existence of a settlement called Appletown in 1810 but note that it was "gone" by 1876 (Everts et al. 1876:57).

If both the indigenous and the post-Revolutionary War communities known as Appletown did in fact lie in the general area of the hamlet of Kendaia, they would have been located approximately one mile (1.6 kilometers) north-northwest of the Ash Landfill site.

The question becomes more unclear when it is noted that Gibson in his 1850 map of Seneca County (Figure 5) places "Appletown" along the lakeshore considerably south of Kendaia, in the vicinity of Freligh's Point between the mouth of Indian Creek and Simpson Creek, on Military Lot 79 and 83. The site of a nineteenth century shipping warehouse variously depicted as "Freligh's Point Ware House" (Gibson 1850) and "Appletown Warehouse" (Browne 1850; Gibson 1852; Figures 6 and 7), this location lies some 2 miles (3.2 kilometers) to the southwest of the Ash Landfill.

Gibson's depiction may at first glance be seen to imply that the Cayuga and Euro-American Appletowns were located in different places, which would contradict a source closer to the period during which both were inhabited. Spafford, writing within a few decades of the destruction of the Cayuga village and while the Euro-American settlement was probably still inhabited, states that "Appletown...was once the residence of a tribe of Indians, whose apple orchards still remaining, have given the name to a small village" (1813:13). However, the fact that Gibson chose to depict only one small segment of what he labels "Sullivan's Tr[ail]" and placed it immediately to the east of the area he designated as Appletown, argues that he believed the Cayuga settlement had in fact also been located near Freligh's Point. "Appletown" is one of very few attributions on this 1850 map not directly tied to land

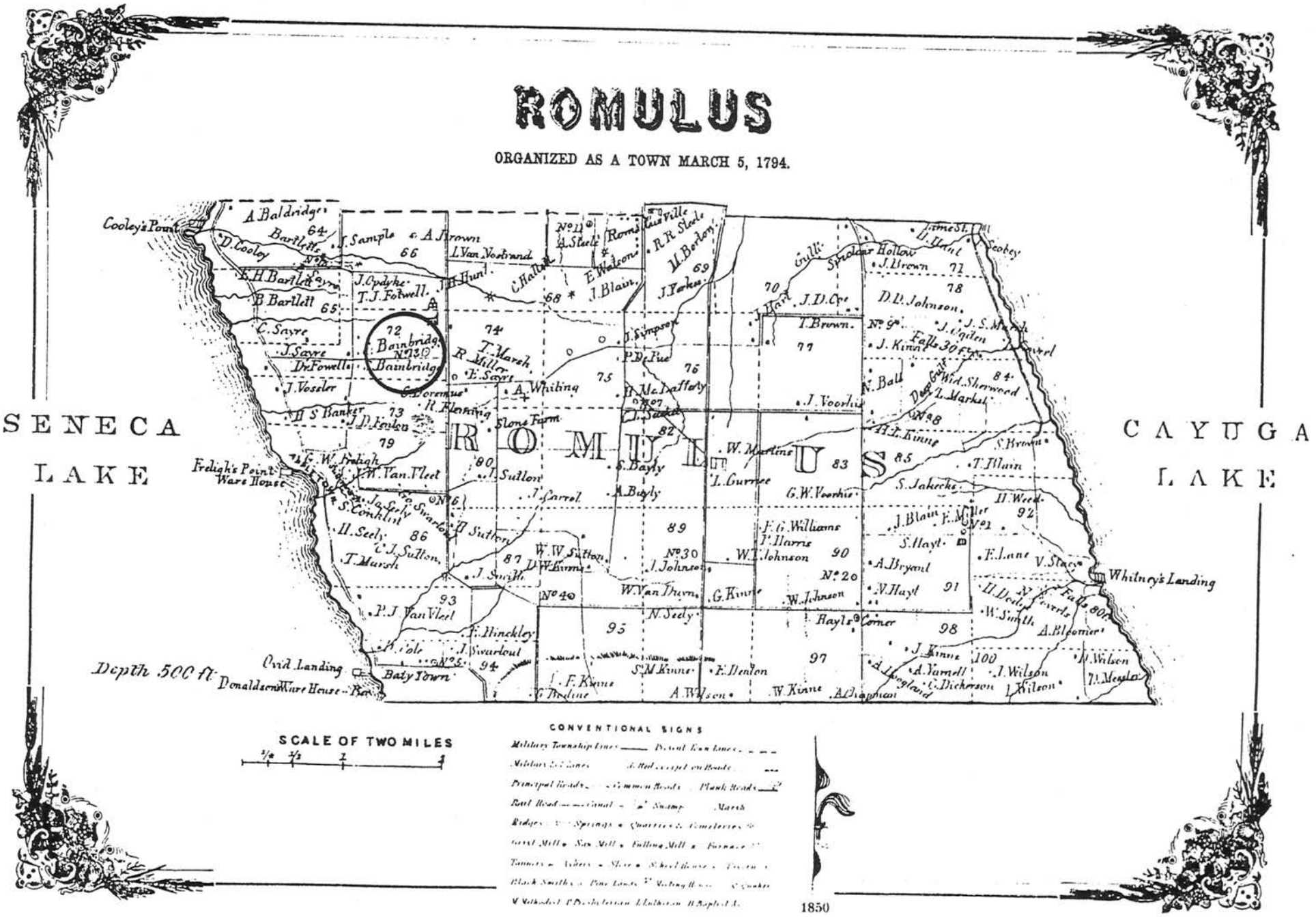


FIGURE 5 - ASH LANDFILL SITE
AND VICINITY 1850
(from Gibson 1850)

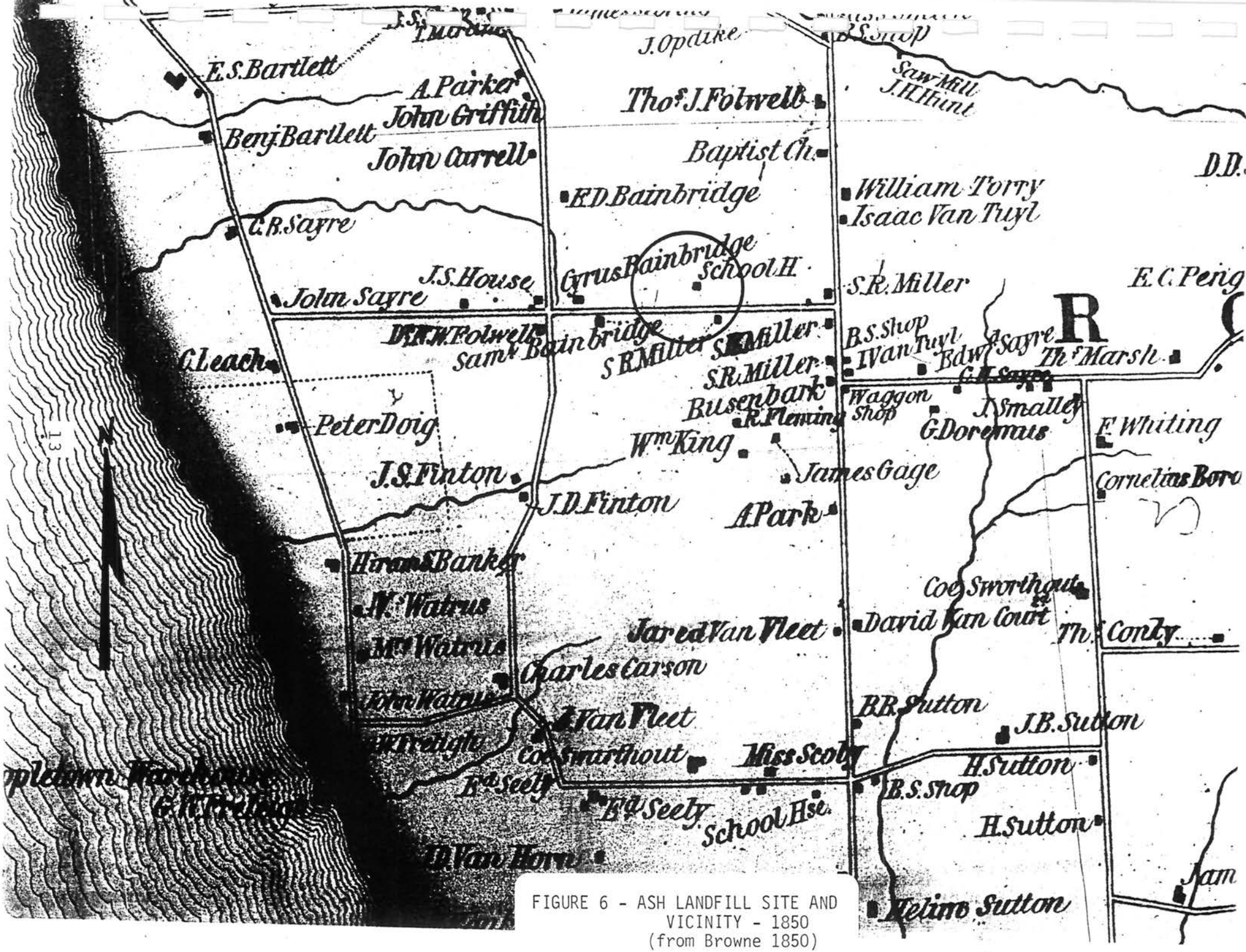
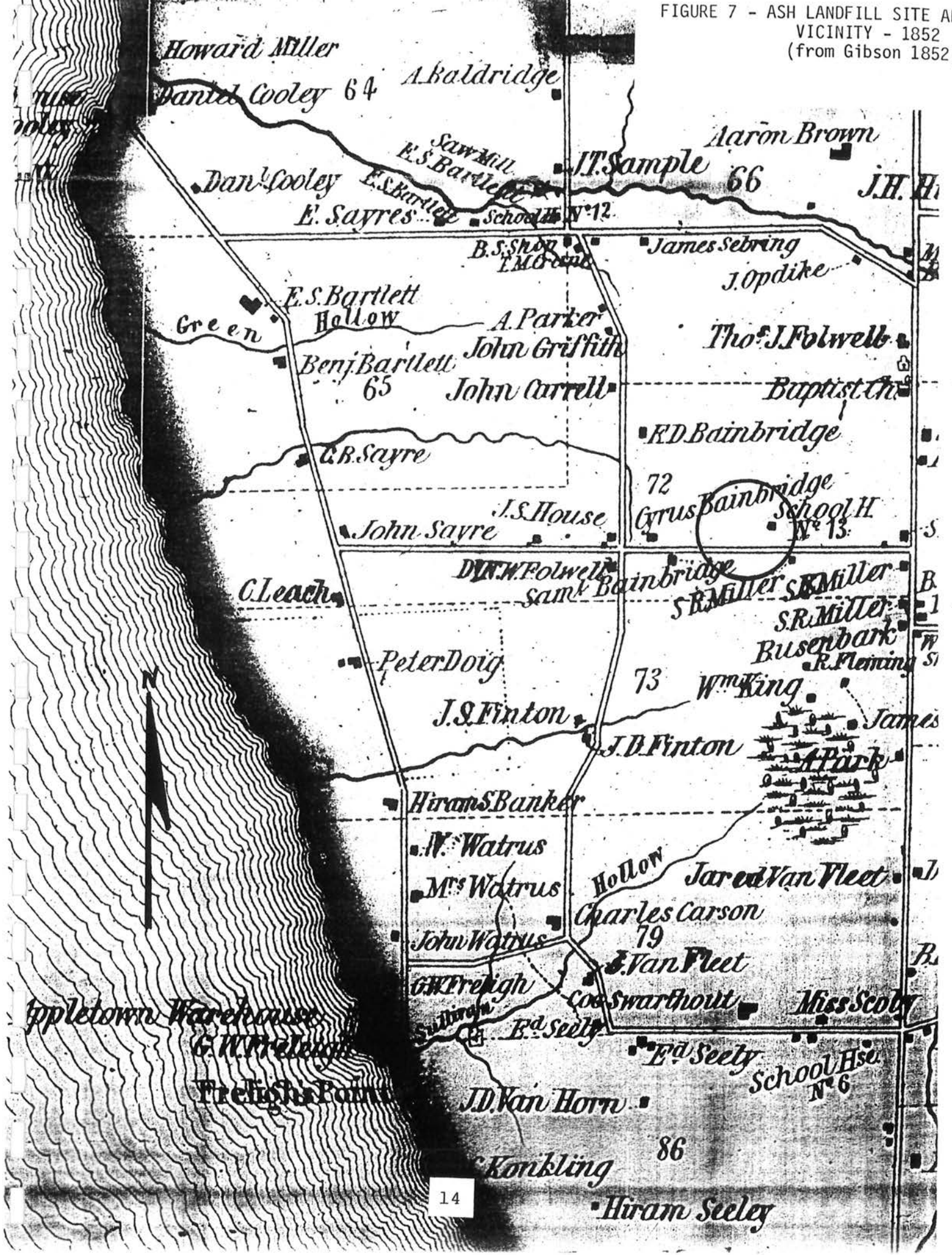


FIGURE 6 - ASH LANDFILL SITE AND VICINITY - 1850
(from Browne 1850)

FIGURE 7 - ASH LANDFILL SITE AND VICINITY - 1852
(from Gibson 1852)



ownership or use, which may be seen to support the impression that Gibson considered this location noteworthy. If both settlements were situated near Freligh's Point, descriptions placing them "at Kendaia" must be considered to be of a most general nature, relating to that portion of the county and not directly to the later hamlet of that name.

Returning to Military Lot 72, we find the remainder of William Folwell's property was passed on to his son, Dr. N.W. Folwell, and remained in family hands through the remainder of the nineteenth and the early twentieth century. From published maps and texts, it also appears the Mahlon Bainbridge portion of Lot 72 straddled what became Smith Farm Road. Upon his death, it was divided between his sons, with the roadway serving as the dividing line. The north parcel belonged to Cyrus Bainbridge and his heirs for the remainder of the nineteenth century; the south parcel was owned during this period and into the early twentieth century by Samuel Bainbridge, his widow and heirs. By the early twentieth century, however, the parcel north of Smith Farm Road had passed to W.C. Carson; it had been incorporated with the Smith holdings to the west by 1914 (Gibson 1850(Figure 7); Gray 1859(Figure 8); Nichols 1874(Figure 9); Everts et al. 1876:150(Figure 10); Pratt 1909(Figure 11); American Agriculturist 1914).

Though definitive evidence could not be located, it appears that Winfield Smith was a decendent of Charles E. Smith, who owned 253 acres adjacent to the corner of Town of Romulus Road 23 and 36, the latter being Smith Farm Road (Child 1894:223). The property at this location is shown to have been owned by "T. Smith" in 1874, though the extent of the holding is not specified (Nichols 1874; Figure 9). By 1894, the property was known as the Seneca Lake Niagara Vineyard (Child 1894:223). Twenty years later, Winfield A. Smith is listed as owner of the American Fruit and Produce Company, whose holdings appear to have included some or all of the earlier fruit growing and processing operation (American Agriculturist 1914:390). The alternate designation "Smith Vineyard Road" appears to stem from this period. Pratt's 1909 county map (Figure 11) notes the American Fruit and Produce Company property extending west and south from the intersection of Smith Farm Road and Baptist Church Road. This map indicates several structures located adjacent to Smith Farm Road west of the railroad and at the Baptist Church Road intersection. Based on comparisons with earlier maps, these all appear to represent residences. The number and locations of outbuildings that might have been present on this property could not be established either from maps or written records. No government inventory of the Winfield Smith parcels was encountered in a search of installation records, though it is likely such a document was

FIGURE 8 - ASH LANDFILL SITE AND VICINITY - 1859 (from Gray 1859)

FIGURE 9 - ASH LANDFILL SITE AND VICINITY - 1874
(from Nichols 1874)

FIGURE 10 - ASH LANDFILL SITE AND VICINITY - 1876
(from Everts et al 1876

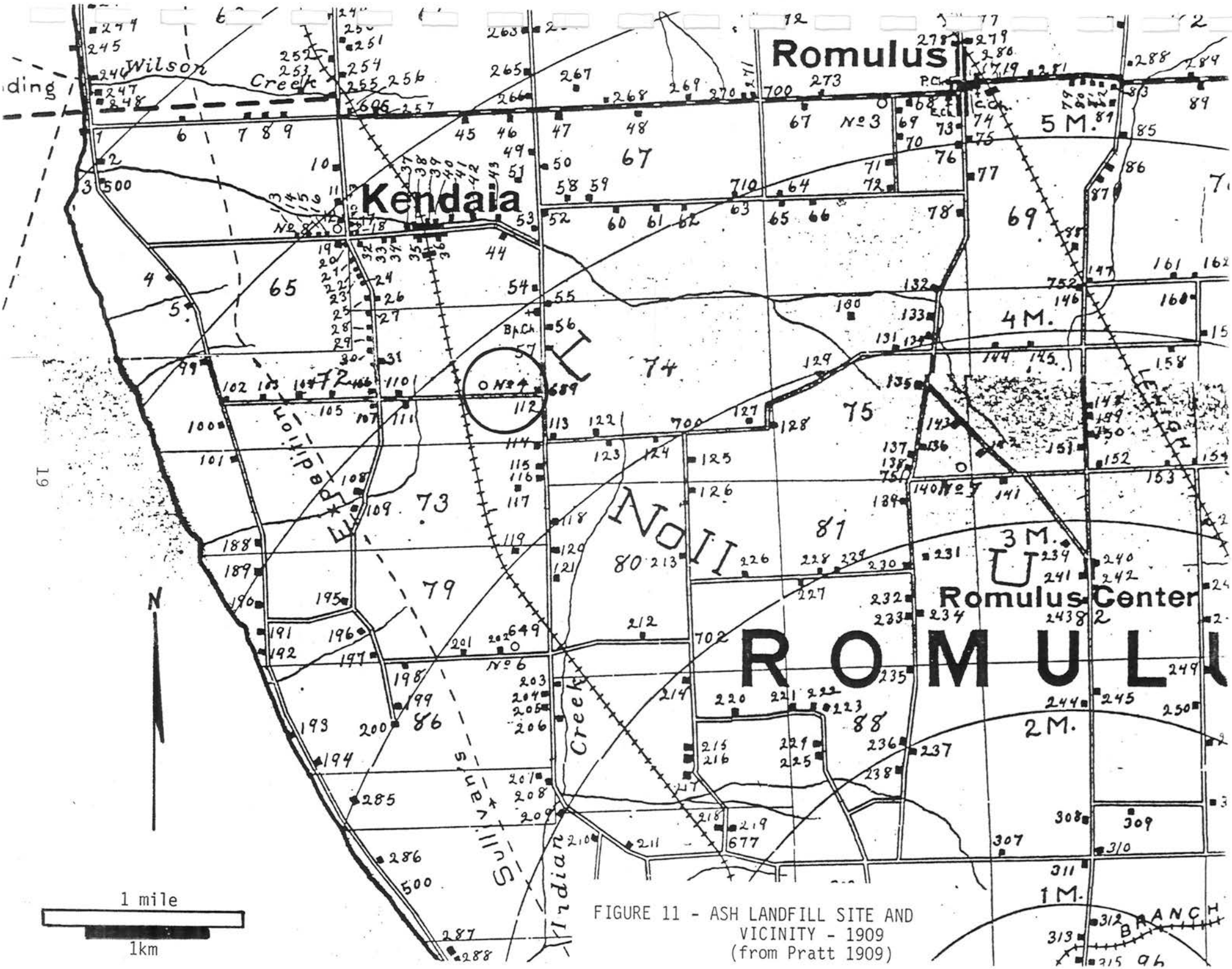


FIGURE 11 - ASH LANDFILL SITE AND VICINITY - 1909 (from Pratt 1909)

generated in conjunction with the land acquisition process. It may well be included with material relating to this effort contained in U.S. Army archives in the District of Columbia.

In the period during which the military installation was being constructed, existing structures were converted for temporary use by contractors and administrators. A photograph taken at this time (Figure 12) shows "The Winfield Smith Packing House" and notes this large building was "used as the headquarters by the U.S. Government during the building of the Seneca Army Depot and contained all the offices" (McGrane 1975:122). The structure appears to have been located west of the Ash Landfill along Smith Farm Road at the railroad or, more likely, to the northwest, along what is now known as the West Patrol Road. An undated photo of the Winfield Smith home (Figure 12) is also included in this volume (McGrane 1975:122). It depicts a residence dating from the latter half of the 19th century within 50 feet (15 meters) of what appears to be the north side of Smith Farm Road, and at least three outbuildings positioned close together and what would be east of the house at roughly the same distance from the roadway. Based on late 19th and early 20th century map information, this complex appears to have been located west of the railroad on Smith Farm Road, and would have stood west of the Ash Landfill.

The previous effort to identify possible archaeological resources within the installation noted two structures that formerly stood in the general vicinity of the Ash Landfill. These were designated Potential Archaeological Site 100 and 102 (Klein 1986:A-3;Figure 13) and are identified respectively as "School No. 13" and the "S.R. Miller Farmstead" later occupied by "T. Sebring" (1986:4-14). The report indicates that the school is noted on the Gibson, Browne, Gray and Nichols maps; the Miller farmstead is shown by Browne in 1850 and Gray (Figure 8) depicts it to have been acquired by Sebring by 1859.

A review of these maps (Figures 5,6,7,8,9) indicates three structures attributed to "S.R. Miller" are shown on Browne's 1850 map, two situated at the intersection of Baptist Church Road and Smith Farm Road and discussed earlier, and the third located along the south side of Smith Farm Road slightly less than half-way between Baptist Church Road and the approximate location of the present NYS 96A, west of the installation limits. The two structures located along the south side of Smith Farm Road are attributed by Gray to Sebring in 1859; none of the Miller/Sebring buildings are shown on later maps.

However, the third Miller structure, situated on the northeast corner of the Baptist Church Road intersection, is shown by Nichols to be owned by "B. Vannostrand" in 1874 (Figure 9). This may well refer to "Bergen VanNostrand" who died in 1907

FIGURE 12 - WINFIELD SMITH STRUCTURES PRIOR TO 1941 (from McGrane 1975:122)

The Winfield Smith Packing House
This building was used as the headquarters by the U. S. Government during the building of the Seneca Army Depot, and contained all the offices.

The home of Winfield Smith, owner of the packing house. Smith was one of the first to know of the take-over.

FIGURE 13 - POTENTIAL HISTORICAL ARCHAEOLOGICAL SITES IDENTIFIED BY KLEIN 1986 NEAR ASH LAND-FILL SITE

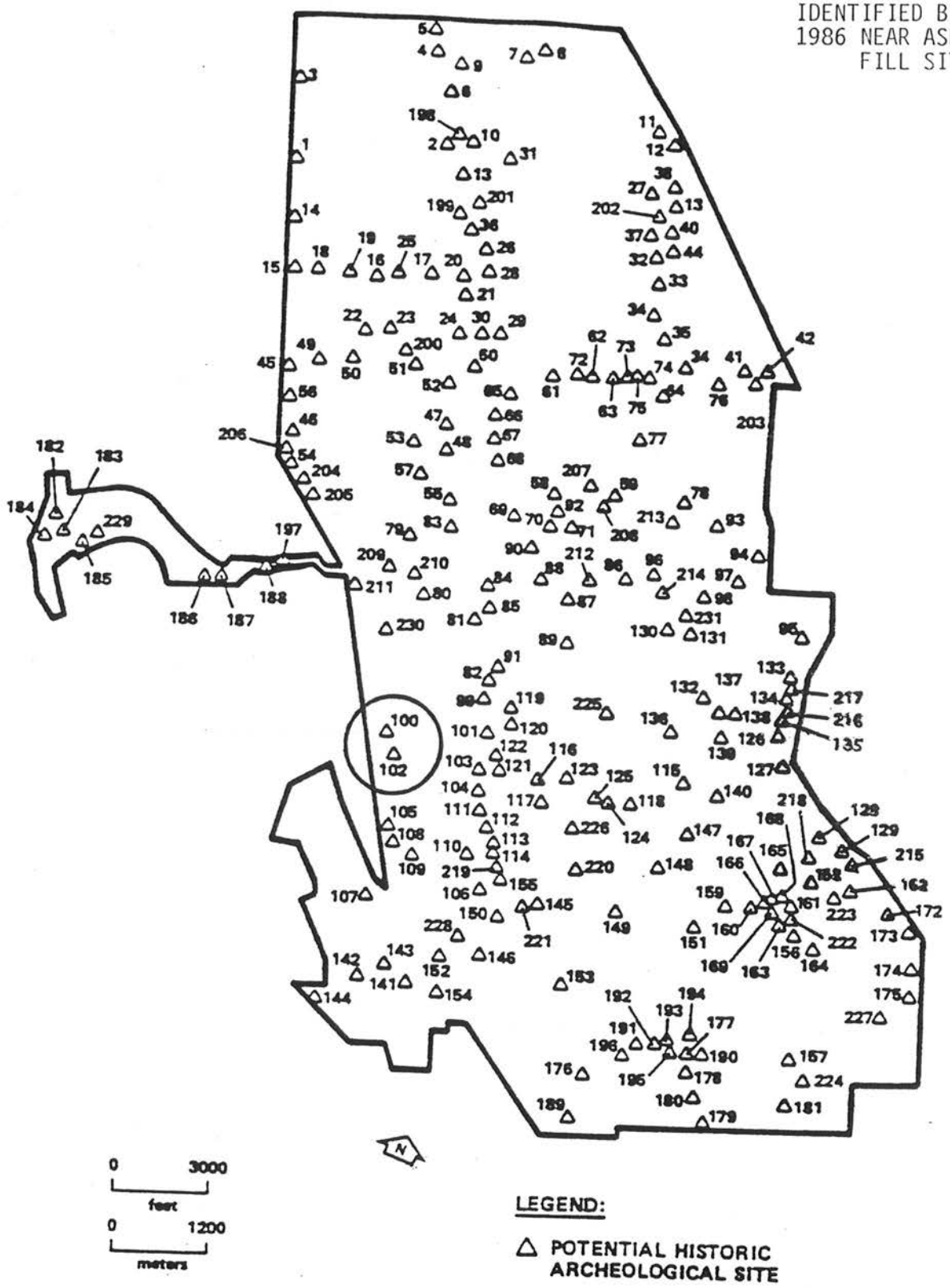


Figure A-2. A MAP OF POTENTIAL ARCHEOLOGICAL RESOURCES ON THE SENECA ARMY DEPOT

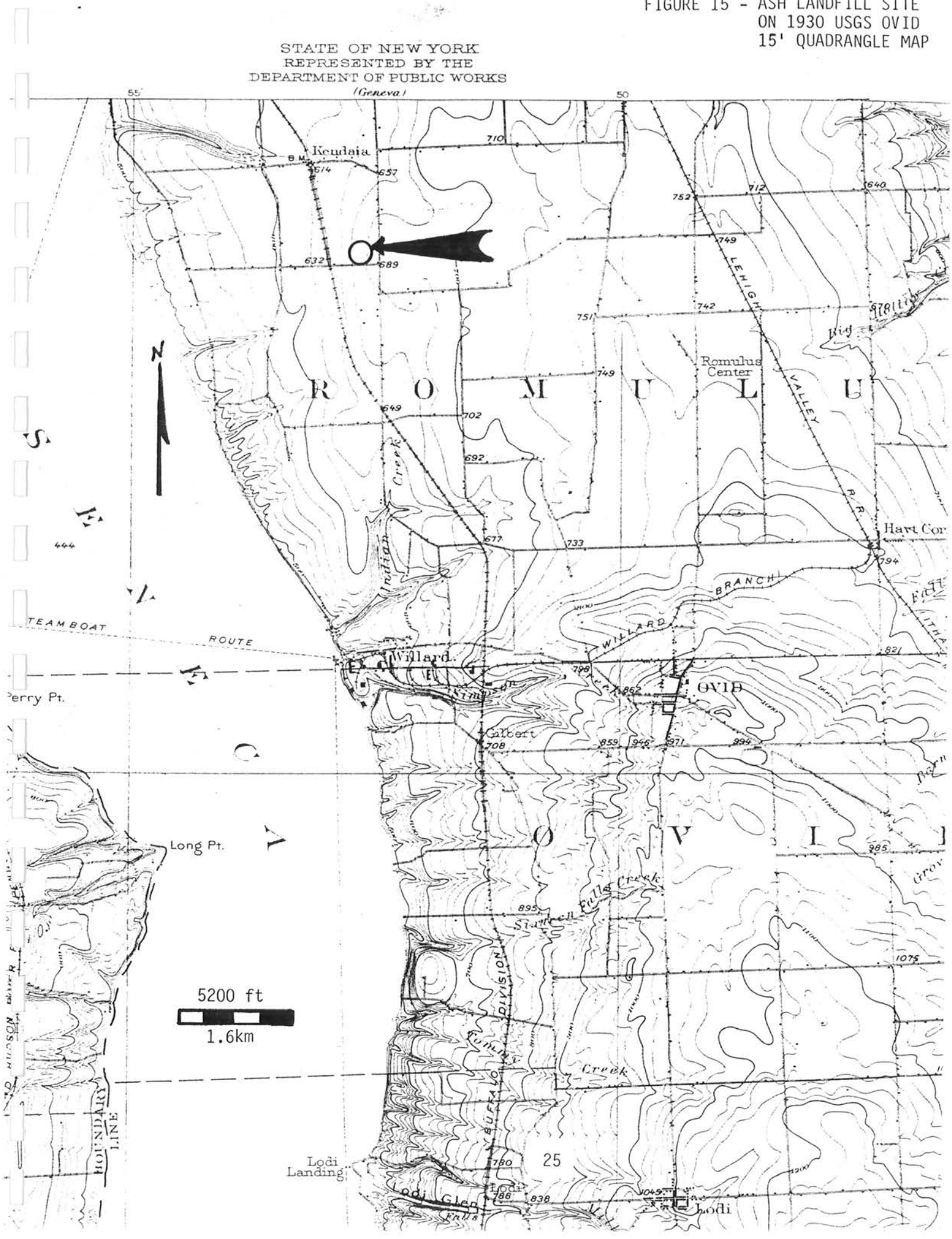
and whose heirs are mentioned in procedures relating to the government acquisition of Military Lot 72 in 1942 (Seneca County Deeds 184:437-8). Only the more westerly of the Miller/Sebring buildings appears to have stood in the vicinity of the Ash Landfill Site. It would have been located south and a short distance east of the Ash Landfill, in what is today a brushy and wooded area.

The school building mentioned in the Klein report is shown on nineteenth century maps as "School No. 13" or "School" and on Pratt's 1909 map as "School No. 4". It is placed at various points along the north side of Smith Farm Road slightly to the west of the more westerly Miller/Sebring house discussed above. The structure is listed by Child as "Schoolhouse, district No. 10, p o Kendaia, r. 36" (1894:221), with "r. 36" referring to Town of Romulus Road 36 or Smith Farm Road. Though its depiction on maps varies. Though the school building may safely be said to have stood on the north side of Smith Farm Road west of Baptist Church Road and east of the present rail line. No surface evidence was noted in reconnaissance of the portion of the Ash Landfill Site nearest the roadway. A building that may represent the school is shown on 1902 and 1930 USGS maps of the area (Figures 14 and 15) as being situated just east of the railroad, in which case it would have stood well west of the Ash Landfill Site.

The building was a one-room school of the variety typically built in the area during the first half of the nineteenth century. This construction was spurred by an act of the State Legislature in 1803 setting aside 500,000 acres (202,350 hectares) of "waste and unapportioned" land whose income was to assist in the support of school districts. A series of lotteries also raised money for education during this period (McGrane 1975:69-70). No direct evidence of the construction, appearance or fate of this structure could be found in deeds, area histories or installation documents. The latter (e.g., Figure 16) may indicate that the school had been razed or moved prior to the acquisition of Lot 72 by the government, possibly in conjunction with the organization of the Centralized School in 1938.

FIGURE 14 - ASH LANDFILL SITE ON 1902 OVID USGS 15' QUADRANGLE MAP

FIGURE 15 - ASH LANDFILL SITE
ON 1930 USGS OVID
15' QUADRANGLE MAP



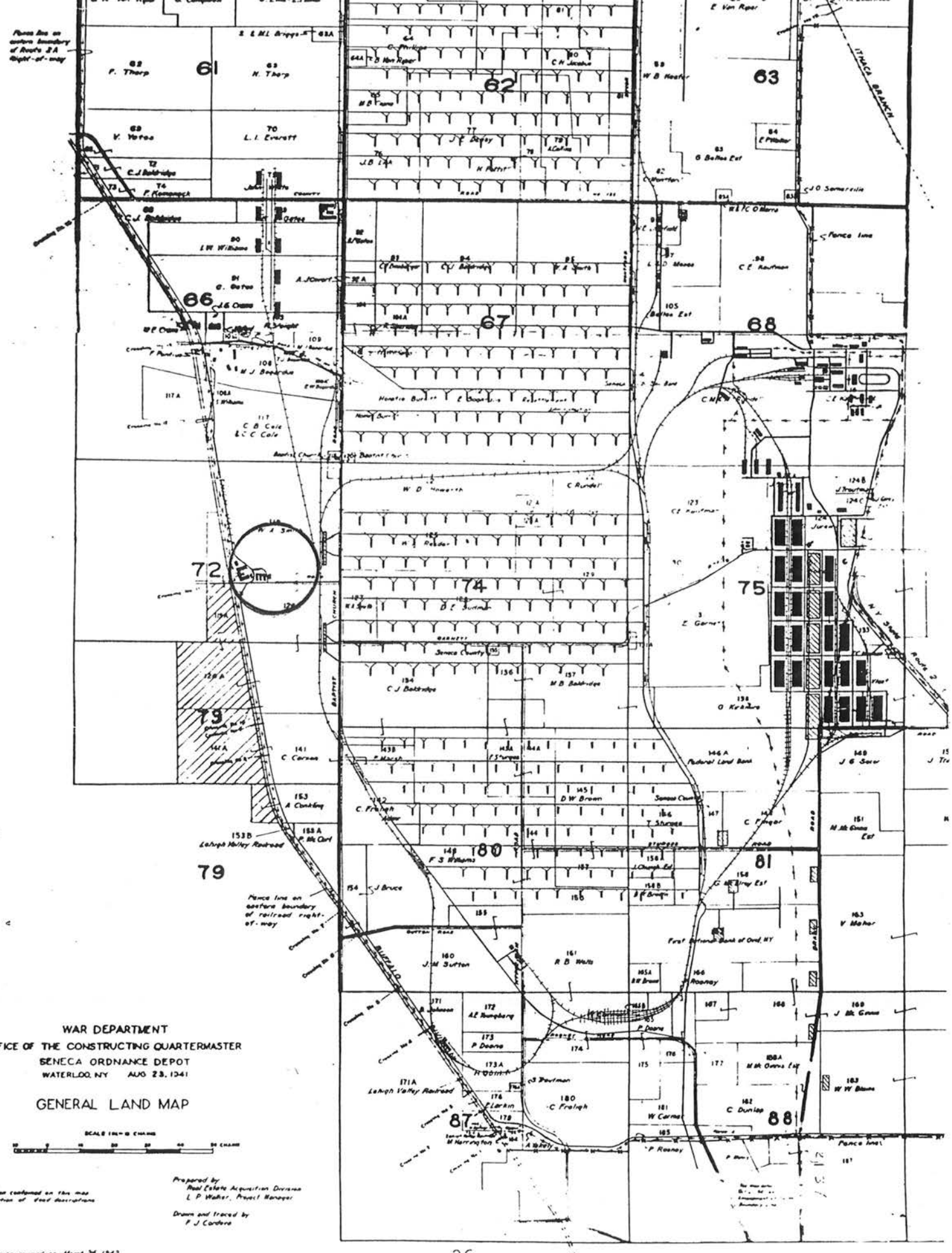


FIGURE 16 - DETAIL OF SENECA ORDNANCE DEPOT 1941

METHODOLOGY

Strategy

Based on the above reconstruction of the known Native and European-American era occupation of the vicinity of the Ash Landfill area, a moderate to high potential for the presence of buried cultural remains pertaining to the indigenous inhabitants of the region has been identified, along with a low to moderate potential for impact to major nineteenth or twentieth century cultural resources.

The physiographic character of this portion of the installation is flat to gently sloping, generally well drained, and provided with a view of Seneca Lake and its east shore. This character is consistent with the type of environments chosen by indigenous groups for the placement of camps associated with exploitation of local plant and animal resources, often on a seasonal basis. The absence of a nearby source of fresh water would make this a less attractive location for larger or more permanent occupations. No lithic deposits have been documented nor or were any observed in reconnaissance, and the potential that this immediate area contained sources of stone for the manufacture of tools is considered low.

As discussed in the previous section, a search of published sources, installation documents, deeds and aerial photos, along with initial reconnaissance in August of 1994, did not reveal any structures known to have been located within or adjacent to the landfill remediation impact area. The closest known building, the nineteenth century school house along the north side of Smith Farm Road, appears to have stood south, southeast or, most likely, southwest of the impact area. The more westerly Miller/Sebring structure was located on the south side of Smith Farm Road, and the Winfield Smith house would have stood farther west, beyond the rail line and West Patrol Road. The potential was recognized, however, that outbuildings not recorded on maps and atlases, particularly structures razed prior to the use of aerial photo-based USGS maps, might be present, particularly within a short distance of the roadway. The fact that no USGS maps were located for the period between 1902 and 1930 also creates a potential that structures, particularly outbuildings related to the expanding Smith fruit growing and processing business, might have been built and razed without having been recorded on maps.

The specific goal of the archaeological field testing was two-fold: first, to provide information to determine the presence or absence of as-yet-undocumented cultural resources in and around the remediation impact area, and second, if cultural resources were identified, to broadly assess the integrity of

each site as it would relate to eligibility for the National Register of Historic Places (NRHP). Therefore a strategy was developed to determine as accurately as possible within the limitations imposed by the nature of the impact area, whether cultural resources are present within the remediation impact area of the Ash Landfill Site.

Field Methods

The field component to establish whether proposed remediation would have an impact on cultural resources consisted of two parts: systematic reconnaissance and subsurface investigation.

The reconaissance emphasized the identification of microenvironments most likely to have been attractive to Native American inhabitants of the region, as well as any locations in which European-American era structural remains and/or cultural features were likely to occur, based on visual evidence and/or topographic anomalies. In addition, locations whose potential for containing buried cultural resources has been reduced by dislocation or removal of upper soils were identified.

The field investigation component was keyed to the findings of the reconnaissance, along with the more general assessment of cultural resources potential carried out earlier. Based on consideration of the physiographic character of the impact area provided by the site reconnaissance, a series of hand-dug square shovel holes were placed at intervals of 26 feet (8 meters) in subareas considered most likely to have been the sites of Native American occupation. This constituted some adjustment to the field testing methods proposed by the 1986 Enviroplan study, considered necessary in this case in view of the fact that the very portions of the Ash Landfill subject to the greatest impact through remediation efforts are also the areas which must be excluded from sampling becaused of contamination.

The placement of test holes at close intervals in moderate to high sensitivity subareas was seen as compensating as much as possible for these sampling limitations. This method is also seen as appropriate for investigating a physiographic environment whose indigenous settlment pattern most likely consisted of small, seasonally-occupied camps. The possibility was nonetheless recognized that traces of a small site whose spatial extent might happen to be confined to one of the zones highest contamination would not be detected by these methods.

Test holes extended below all cultural strata to reach bedrock or culturally sterile subsoil. The contents of all test holes were screened through ¼-inch (6.25 millimeter) hardware cloth

to facilitate the recovery of smaller cultural items. Locations from which Native American cultural material was recovered were more intensely sampled by means of additional shovel test holes placed 13 feet (4 meters) in each cardinal direction around the find spot, in order to gather information on the general spatial extent and integrity of the cultural deposit.

The provenience of all cultural materials recovered in natural soils was recorded; the locations of all sampling and any cultural deposits encountered were surveyed and recorded on a site map indicating datum and elevations; photodocumentation was performed for any structural remains or cultural features encountered; and all test units were refilled to the original surface contour upon completion of field work. Topographic anomalies and structural remains encountered were exposed, examined to determine their approximate extent, age, nature and function if possible; then they were photodocumented and their locations mapped.

As mentioned earlier, the project scope of work calls for the archaeological survey of the portion of the Ash Landfill Site nearest the Bend-In-The-Road Site of highest contamination, from which soils will be removed for treatment, and just west of two interception trenches will be constructed. These areas are shown in Figures 17 and 18 encompass some two acres (0.8 hectares) of soil removal and approximately 875 linear feet (267 meters) of interceptor trench construction.

Since subsurface disturbance will be restricted to these subareas, subsurface sampling was also limited to these impact zones. However, when it was learned that staging of remediation equipment and erection/installation of support structures would entail the introduction to the site and later the removal of quantities of gravel, soil and crushed stone, it was decided after consultation with the U.S. Army Corps of Engineers New York District (USACOE-NYD) to include these areas in the systematic reconnaissance component of the field study.

Protective Measures

The two locations for which soil removal, decontamination, and replacement of soils is planned have been determined to have been seriously contaminated as a result of previous waste disposal activities on the site. The primary contaminants identified by environmental investigations of the Ash Landfill Site are volatile organics tricholoroethene (TCE), 1,2-dichloroethene (1,2-DCE), and vinyl chloride (ESE 1991; ESI 1994). Removal and decontamination of soils will extend from the present ground surface to bedrock, as recommended by these studies.

FINAL REPORT

ARCHAEOLOGICAL INVESTIGATIONS
ASH LANDFILL SITE
SENECA ARMY DEPOT ACTIVITIES
TOWN OF ROMULUS, SENECA COUNTY, NEW YORK

Prepared for:

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

Under Contract Number
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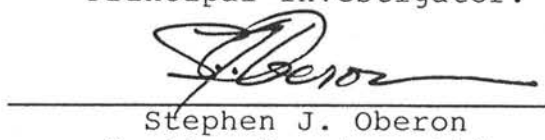
Principal Investigator:



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20 August 1995

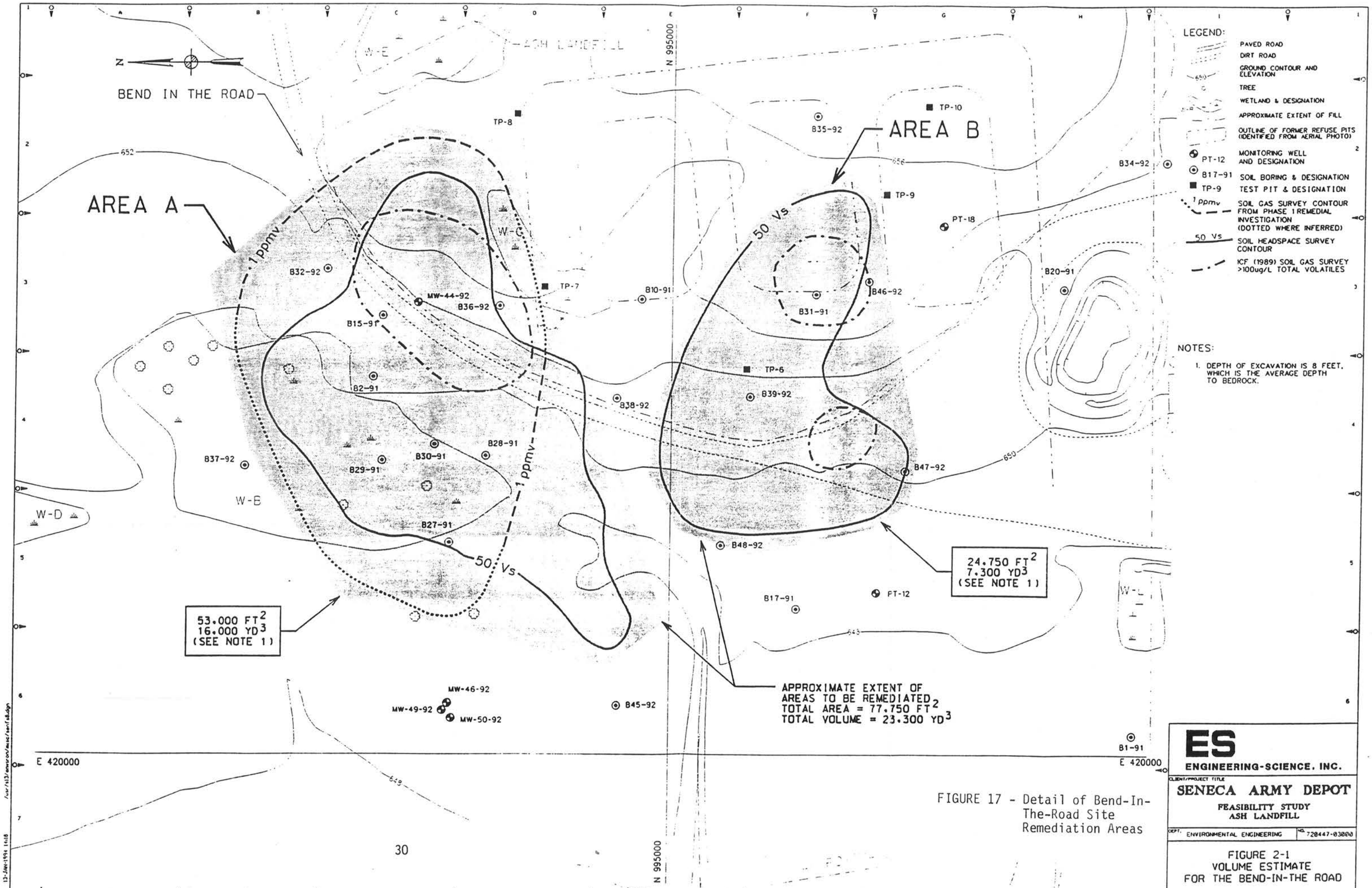

FIGURE 17 - Detail of Bend-In-The-Road Site Remediation Areas

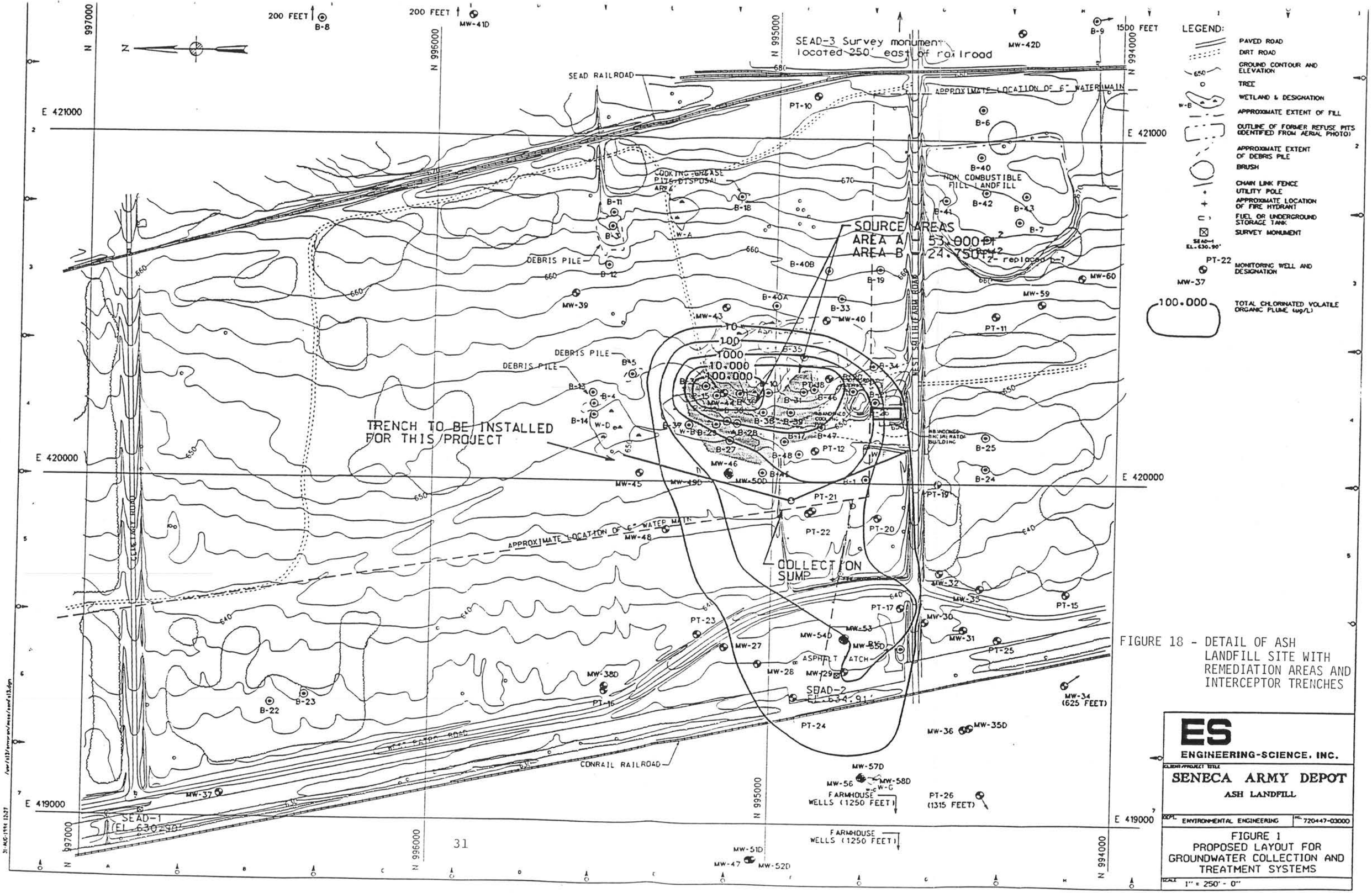

FIGURE 18 - DETAIL OF ASH LANDFILL SITE WITH REMEDIATION AREAS AND INTERCEPTOR TRENCHES

ES
ENGINEERING-SCIENCE, INC.

SENECA ARMY DEPOT
ASH LANDFILL

ENVIRONMENTAL ENGINEERING — 720447-03000

FIGURE 1
PROPOSED LAYOUT FOR GROUNDWATER COLLECTION AND TREATMENT SYSTEMS

1" = 250' - 0"

APPENDIX A

LOG OF PERSONS CONTACTED

LOG OF PERSONS AND ORGANIZATIONS CONTACTED

Betty Auten - Seneca County Historian (interview 10 December 1994)
Seneca County Office Building, Waterloo, New York

Randall Battaglia - SEDA Directorate of Engineering and Housing
Environmental Engineer
(various interviews, August-December 1994)

Charles C.W. Bauder - Executive Director, Geneva Historical Society
543 South Main Street, Geneva, New York
(interview 10 December 1994)

Michael Duchesneau P.E. - Engineering-Science, Inc.
Prudential Center, Boston, Massachusetts
(interview 17 August 1994)

Thomas R. Enroth - SEDA Directorate of Engineering and Housing
Environmental Engineer (various interviews and
telephone conversations August-December 1994)

Janet Fallo - SEDA Directorate of Engineering and Housing
Environmental Engineer
(various interviews August-December 1994)

Kevin Healy - USACOE-Huntsville (Alabama) District
Environmental Specialist
(telephone conversation 22 August 1994)

Lt. Col. Roy E. Johnson - Commander, SEDA
(interview 17 August 1994)

Peter Kootz - International Technologies Corporation (IT)
Rochester, New York
Remediation Project Coordinator
(various telephone conversations September 1994)

Robert D. Kuhn, PhD. - Field Services Bureau, New York State
Historic Preservation Office (SHPO)
NYS Office of Parks, Recreation and Historic
Preservation, Peebles Island, Waterford, New York
(various telephone conversations August-
December 1994)

Romulus Central School District, Route 96, Romulus, New York
(telephone conversation 9 December 1994)

Log of Persons and Organizations Contacted (continued)

Seneca County Clerk, Seneca County Office Building, Waterloo, New York (interviews 9 December 1994)

Seneca Falls Historical Society, Cayuga Street, Seneca Falls, New York (interviews 9 December 1994)

Carla M. Struble, P.E. - US Environmental Protection Agency, Region II Office, Jacob K. Javits Federal Building, New York City (interview 17 August 1994)

APPENDIX B

CATALOGUE OF FIELD TEST RESULTS

CATALOGUE OF FIELD TEST RESULTS

UNIT	STRATUM	DEPTH(inches)	SOIL PROFILE	CULTURAL
TRANSECT 1				
TP-1 (STU-1)	1	0-7"	dark brown silt (fill) with cobbles and coarse gravel	none
	2	7-14"	tar, glass, asphalt paving (fill) with cobbles, cmf gravel	glass, tar, asphalt
	3	14-28"	olive brown silty clay	none
	4	28-31"+	light brown silty clay	none
TP-2	1	0-2"	(concrete slab - not dug)	
TP-3	1	0-7"	dark brown silt (terminated at bedrock)	glass
TP-4	-	---	(surface bedrock - not dug)	
TP-5	1	0-2"+	dark brown silt (terminated at bedrock)	none
TP-6	1	0-5"	dark brown silt, ash (terminated at bedrock)	ash
TP-7	1	0-10"	dark brown silt	none
	2	10-17"	brown silt with cobbles cmf gravel	none
	3	17-20"+	light brown silt	none

TP-8	1	0-9"	dark brown silt with cobbles and cmf gravel	none
	2	9-15"+	mottled gray/brown clay	none
TP-9	1	0-4"	dark brown silt	none
	2	4-13"	brown silty clay with cobbles and cmf gravel	none
	3	13-16"+	gray/brown clay	none
TP-10	1	0-11"	dark brown silt with cmf gravel	none
	2	11-18"	gray/brown silt (terminated at bedrock)	none
TP-11	1	0-12"	dark brown silt with cmf gravel	scraper, flake
	2	12-18"	brown silty clay	none
	3	18-20"+	gray/brown clay	none
TP-11A	1	0-10"	dark brown silt	none
	2	10-15"+	brown silty clay with cobbles, cmf gravel	none
TP-11B	1	0-10"	dark brown silt	fragments
	2	10-14"+	(same as above)	none
TP-11C	1	0-9"	(same as above)	nail
	2	9-15"+	(same as above)	none
TP-11D	1	0-11"	(same as above)	none
	2	11-15"+	(same as above)	none
TP-12	1	0-11"	(same as above)	none
	2	11-16"+	(same as above)	none
TP-13	1	0-7"	(same as above)	none
	2	7-10"+	(same as above)	none

TP-14	1	0-7"	(same as above)	fragments
	2	10-14"+	(same as above)	none
TP-15	1	0-5"	(same as above)	none
	2	5-9"+	(same as above)	none
TP-16	1	0-10"	dark brown silt, cobbles cmf gravel	none
	2	10-14"+	brown clayey silt, cobbles, cmf gravel	none
TP-17 (STU-2)	1	0-14"	dark brown silt, cobbles cmf gravel, shale fragments	none
	2	14-22"	brown clayey silt, cmf gravel, cobbles	none
	3	22-25"+	gray brown silty clay, cmf gravel	none
TP-18	1	0-3"	(same as above)	none
	2	3-15"	(same as above)	none
	3	15-18"+	(same as above)	none
TP-19	1	0-9"	(same as above)	none
	2	9-14"+	(same as above)	none
TP-20	1	0-7"	(same as above)	none
	2	7-12"+	(same as above)	none
TP-21	1	0-9"	(same as above)	none
	2	9-13"	(same as above)	none
	3	13-16"+	gray/brown silty clay, cmf gravel	none
TP-22	1	0-12"	(same as Stratum 2 above)	none
	2	12-15"+	gray/brown silty clay with cmf gravel	none

As a consequence of the nature of the contaminants, it was specified in the Final Scope of Work that

> all excavations will be undertaken around the periphery of the areas that are highly contaminated with the majority of the units located in the areas adjacent to the contaminated soils (USACOE-NYD 1994:4).

Carrying out this aspect of the investigation entailed first defining the subareas of highest contamination levels in the field, designing a sampling strategy around their periphery but at sufficient proximity so that the testing results would be valid for the affected areas, and taking appropriate precautions to protect field personnel from the hazardous volatiles.

Since the spatial extents of the two high contamination zones had not been marked in the field prior to reconnaissance, the first task of this component of the field study was to define the limits of these two so-called 'hot zones' along with the proposed locations of the two interceptor trenches, based on maps produced by the most recent environmental study carried out in 1994 by Engineering-Science, Inc. of Boston, Massachusetts (ESI 1994).

Because of the hazardous nature of the contaminants, all field personnel were required to have completed an OSHA-approved 40-hour Hazardous Waste/Matierals Site Investigations Training Course within the previous year or an additional annual OSHA-approved 8-hour refresher course. In addition, due to the potential for variable concentrations in the soil of hazardous vapors even outside the designated limits of the 'hot zones,' a certified technician using a gas chromograph or portable infrared spectrophotometer was present throughout the archaeological survey and sampled each subarea to be archaeologically sampled for presence in the air of the organics listed above. If any locations were noted where such substances were found to be present in the air, they would be excluded from sampling in favor of less contaminated subareas.

Environmental studies indicate that relative contamination in any given portion of the Ash Landfill can be expected to be highest in the upper stratum of deposited waste ash. The sampling plan called for this stratum to be removed by shovel and placed directly into an OSHA-approved receptacle as each shovel test hole was being dug. The potential culture-bearing soils beneath would then be passed through the screen as outlined and returned to the excavated hole. The test hole would then be capped with the fill from the receptacle and the upper soil moistened with water to minimize airborne particle

movement. Any cultural material recovered would be placed in plastic bags and retained at the site until all archaeological sampling had been completed.

Level C personal protective equipment would be worn in all work areas except if ionization detector measurements verified that background total organic vapor (TOV) levels were not exceeded, in which case, Level D personal protective equipment would be worn. The components of these levels of personal protective equipment are outlined in the appended Health and Safety Plan (Appendix A). Spare personal protective equipment would be maintained on site to serve as replacements if needed and an appropriately-supplied first-aid kit would be maintained on site at all times. Once the two zones of greatest contamination had been delineated, a 26-foot (8-meter) buffer would be maintained at all times around these subareas, which would constitute an Exclusion Zone and be off-limits to all personnel engaged in the cultural resources survey. A Work Zone of reduced contamination around the periphery of the Exclusion zone would 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 would be adjusted accordingly to exclude such subareas. No food or drink would be consumed in the Work Zone.

Another goal of this investigation was that no contaminated material or objects leave the Ash Landfill Site, with the exception of discarded personal protective equipment that had been placed in sealed OSHA-approved containers. In keeping with OSHA and USACOE regulations, all site personnel would undergo decontamination prior to leaving the site for lunch, at the end of the work day, or at any other time. Tools used in archaeological sampling and any other Work Zone activity would be deposited in a designated receptacle just prior to leaving the Work Zone. Decontamination procedures for archaeological field personnel would 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 would be discarded prior to removal of coveralls, head- and face-gear. All protective equipment worn in the Work Zone would be left in the Decontamination Zone, with disposable equipment such as coveralls, boot covers and gloves 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 would be decontaminated by the use of a steam cleaner prior to being removed from the site unless the contamination levels were demonstrated to be consistently low in the Work Zone, in which case these items would also be decontaminated using an appropriate detergent solution.

Due to the possible presence of live ordnance in this and other portions of the SEDA through which field personnel must pass, any gasoline required on site would be transported in an approved safety can and appropriate permits for the operation of any internal combustion engine at the Ash Landfill would be obtained from SEDA authorities. As required by SEDA regulations, all vehicles entering the restricted area of which the Ash Landfill is a part would be equipped with fire extinguishers, all cigarette lighters and any other spark-producing items would be removed, and personnel would not smoke within the restricted area. A list of emergency resources and contacts was compiled and routes to local and regional hospitals prepared and distributed to field personnel.

ARCHAEOLOGICAL FIELD INVESTIGATION

Prior to the commencement of the systematic reconnaissance in October 1994, the areas from which contaminated soils would be excavated, soil treatment would be carried out, and support equipment staged, were cleared of scrub and grassy overburden by means of a brush-hog so that minor variations in topography not visible in a more casual walk over undertaken two months prior could be noted. The impact area and its immediate vicinity were then systematically observed on foot, by means of a series of close-interval east/west transects running generally parallel to West Smith Farm Road and moving from south to north. The locations of the proposed interceptor trenches and the limits of the exclusion zone were identified in the field from project maps, along with subareas most likely to have been occupied by Native American inhabitants of the area. Reconnaissance also noted European-American era structural remains in five locations within and adjacent to the impact area.

Based on these and earlier assessments of the relative potential for the occurrence of buried cultural remains, several subareas were selected for archaeological sampling. The proposed route along which the interceptor trenches were to be installed was established by triangulation from the project map supplied by the DEH and the location of a water line that had been marked by SEDA utilities personnel. The route was found to pass through a physiographic setting among the most likely to have seen indigenous occupation, as it is located on almost flat terrain, just east of a pronounced downslope toward Seneca Lake, and with a commanding view to the west, north and south. Two staggered shovel test hole transects offset 13 feet (4 meters) from one another were laid out 26 feet (8 meters) apart along the proposed trench locations to sample what DEH and USACOE planners considered an ample construction impact corridor. Monitoring indicated no variation in background readings for volatile organics in this area.

The buffer area on the periphery of the two exclusion zones at the Bend-in-the-Road Site was tested by laying out a transect of shovel test holes at 26-foot (8-meter) intervals after similarly low instrument readings were recorded here. In addition, the five subareas where early twentieth century structural remains had been noted in reconnaissance were marked for further investigation after monitoring volatile organic content of each area.

Shovel testing of the test hole transects was carried out as outlined in the previous section. No traces of Native American cultural activity were encountered in the buffer zone and most of this area was characterized by refuse and ash to

a depth of one to two feet (40-60 centimeters), high bedrock and/or prior stripping and grading (see Appendix D). Fewer test holes were dug in the eastern portion of the exclusion zone periphery because prior stripping of upper soils was documented. This had apparently been carried out in conjunction with the excavation for, the deposition, and the capping of unburned domestic refuse at some time in the relatively recent past, judging from its state of decay.

The sampling of the proposed interceptor trenches produced evidence of one site of Native American occupation (Figure 19, 19A). Based on the occurrence of cultural material in test holes, the site is estimated to extend approximately 100 feet (30.5 meters) north/south and some 60 feet (18 meters) east/west. Recovered cultural material consisted of 3 chert cores, 2 chert projectile points, and 46 chert flakes and culturally modified fragments. Four of these flakes were classified as finishing flakes, associated with the final stage of stone tool manufacture and/or stone tool repair. The remainder were classified as secondary reduction flakes. The uncompleted projectile points appear to represent the Vosburg phase of the Laurentian Archaic (c.3400-2400BC) and the Meadowood phase of the Early Woodland period (c.1000-500BC)(see Artifact Inventory). Unlike much of the area sampled on the exclusion zone buffer periphery and the southernmost portion of the interceptor trench transects, where stripping, soil dislocation and filling were noted, the subarea from which the Native American cultural material was recovered seems to have been subjected only to clearing and cultivation and contained little intrusive material.

Further visual and subsurface investigation was performed at the five sites where early twentieth century structural remains had been identified. Structure 1, located farthest west and on the edge of a staging area for equipment and portable structures related to the remediation effort, was found to consist of what appears to have been the northwest corner of a concrete support foundation or enclosure. An active water line has been installed adjacent to these structural remains; it connects to a hydrant located on the east side of West Patrol Road. Only approximately 15 feet (4.5 meters) of the former north wall and less than 4 feet (1.2 meters) of the former west wall were found to be extant. A concrete floor was identified in place on grade in this former corner, 6 inches (15 centimeters) below the top of the concrete wall remains (Figures 20 and 21). The remainder of both the walls and the floor have been removed. The concrete is characterized by large aggregate still quite solidly held in place. The wall remnants of this structure contain no bolts nor do they show any evidence of frame or brick superstructure. This, along with the thinness of the walls, supports a conclusion that they were not meant to support a building but rather defined an interior or exterior activity area.

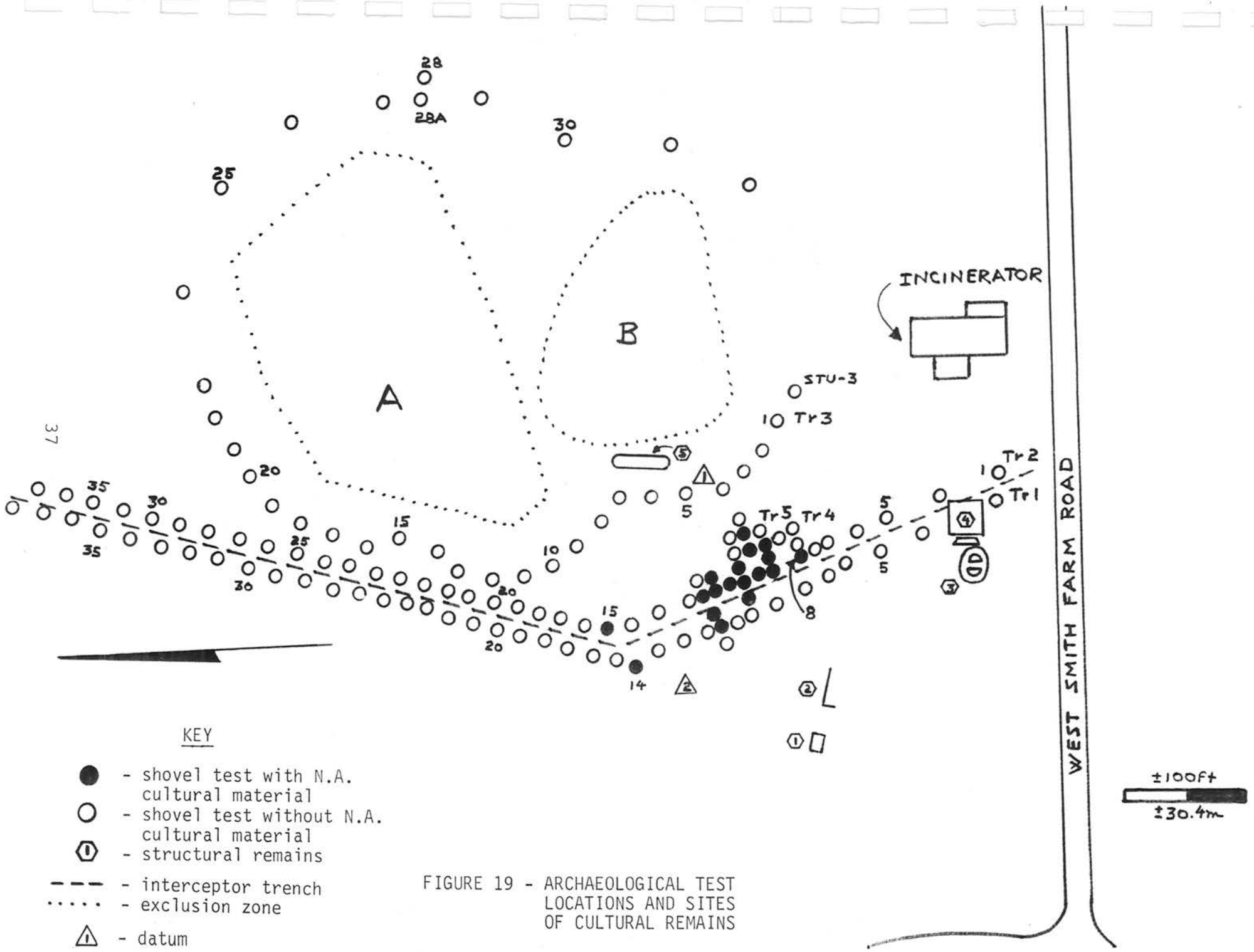

FIGURE 19 - ARCHAEOLOGICAL TEST LOCATIONS AND SITES OF CULTURAL REMAINS

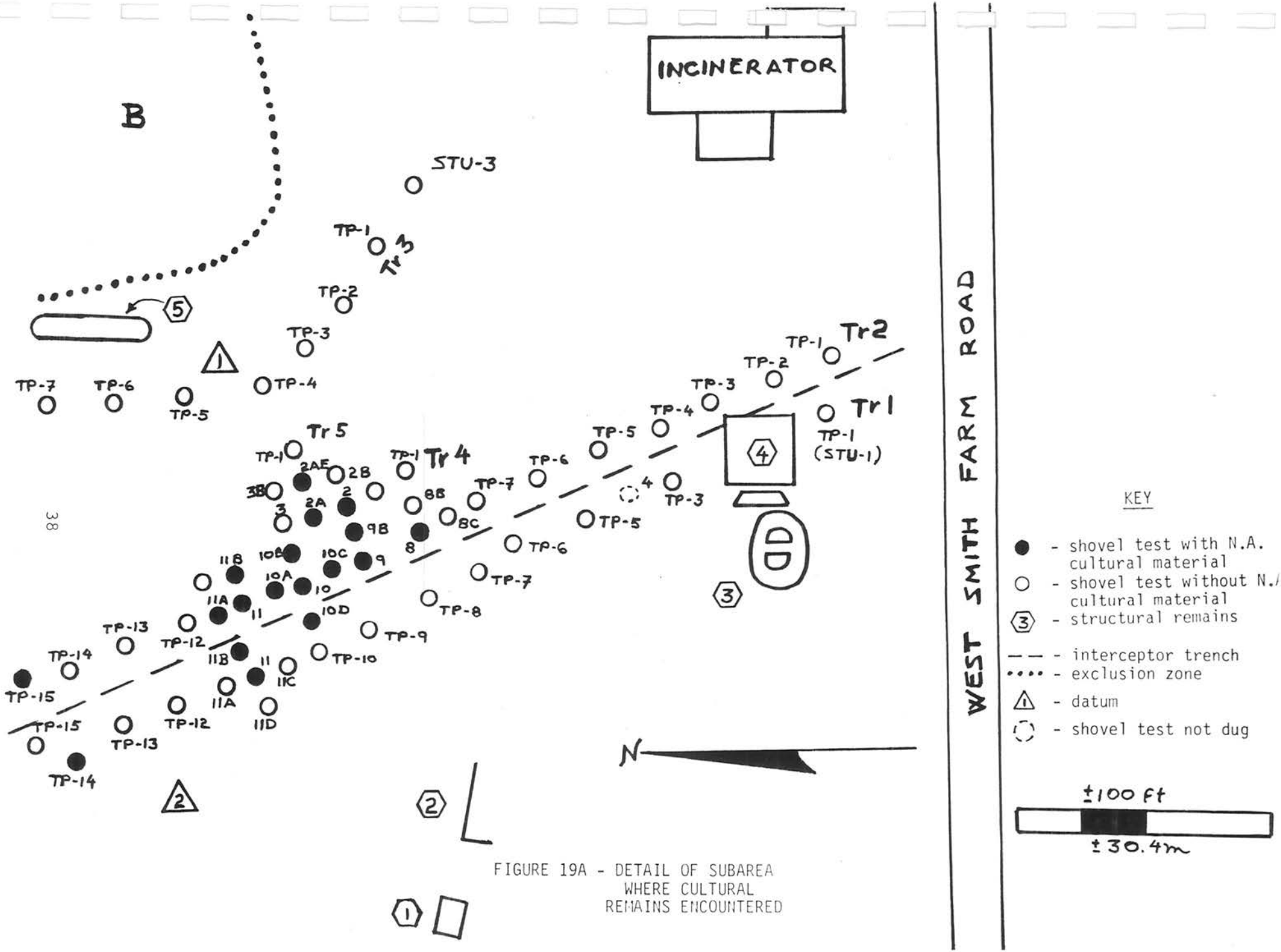

FIGURE 19A - DETAIL OF SUBAREA WHERE CULTURAL REMAINS ENCOUNTERED

TABLE 1 - APPROXIMATE DISTANCES TO IDENTIFIED CULTURAL REMAINS

Datum 1 = Percolation Test 12
Datum 2 = Percolation Test 22

Datum 1 to Datum 2 = 109ft (33.2m)
Datum 1 to Pole MB-91 = 135ft (41.1m)
Datum 2 to Pole MB-91 = 84.5ft (25.7m)

Datum 1 to Tr2 TP-8 = 107ft (32.6m)
Datum 2 to Tr2 TP-8 = 132ft (40.2m)
Datum 1 to Trl TP-11 = 132ft (40.2m)
Datum 2 to Trl TP-11 = 55ft (16.7m)
Datum 1 to Tr4 TP-2AE = 58ft (17.6m)
Datum 2 to Tr4 TP-2AE = 148ft (45.1m)
Datum 1 to Tr2 TP-11A = 96ft (29.2m)
Datum 2 to Tr2 TP-11A = 76ft (23.1m)

Datum 1 to NE edge Structure 2 = 199ft (60.6m)
Datum 2 to NE edge Structure 2 = 126ft (38.4m)
Datum 1 to NW edge Structure 2 = 211.5ft (64.4m)
Datum 2 to NW edge Structure 2 = 120ft (36.5m)
Datum 1 to NE edge Structure 1 = 231ft (70.4m)
Datum 2 to NE edge Structure 1 = 120ft (36.5m)
Datum 1 to NW edge Structure 1 = 242.5ft (73.9m)
Datum 2 to NW edge Structure 1 = 122ft (37.1m)
Datum 1 to NE edge Structure 4 = 190ft (57.9m)
Datum 2 to NE edge Structure 4 = 259ft (78.8m)
Datum 1 to NW edge Structure 4 = 196.5ft (59.8m)
Datum 2 to NW edge Structure 4 = 243ft (74m)

FIGURE 20 - Structure 1, with water line at right, incinerator at rear (view to

FIGURE 21 - Structure 1 (view to ESE)

Structure 2, located just south and slightly east of Structure 1, consists of a concrete slab extending 8 feet (2.4 meters) north/south and 20 feet (6 meters) east/west, inclined upward from south to north (Figures 22 and 23). The concrete is very similar in appearance to that in Structure 1. Structure 2 appears to have been associated with an entrance to a building through which wheeled vehicles passed. No traces of the structure itself were encountered in the immediate vicinity of the slab, but another portion of that building may be represented by what has been designated Structure 1. No other structural remains or items indicating the types of activities that took place here were encountered in testing around Structure 1 or 2.

Structure 3 was identified to the east of the structural remains just described. It consists of an earthen berm in the shape of a rounded rectangle divided roughly in half by another berm (Figures 24,25,26). The berm is composed of sand covered by grasses. Based on its configuration and the fact that it is built of sand, this structure was identified as a probable tank containment area. Its proximity to the incinerator and the requirement on the military installation that gasoline and other flammables be stored in such locations supports a conclusion that Structure 3 dates from the period during which the property was under government ownership, and probably to the operation of the incinerator. The tanks this structure would have contained would have been relatively small and probably associated with powering vehicles such as backhoes or bulldozers used at the landfill rather than fueling the incinerator itself.

Structure 4 consists of a roughly square concrete slab extending 31 feet (9.4 meters) north/south and 29 feet (8.8 meters) east/west with another trapazoidal slab similar to Structure 2 located 1 foot (30 centimeters) from the west end. The second slab measures 22 feet (6.7 meters) on its narrower eastern side and 25 feet (7.6 meters) on its west side; it is 2 feet (60 centimeters) wide and its west side ends 3 feet (90 centimeters) from the northwest and southwest corners of the larger slab (Figures 27,28,29,30). The concrete that is found in Structure 4 exhibits the same characteristics of aggregate size and stability as noted in Structure 1 and 2. This appears to represent the remains of another outbuilding with an entrance on the west side through which wheeled vehicles passed. No other cultural remains or cultural material diagnostic of function were encountered in testing around this structure. The visual character and condition of the concrete implies that it was roughly contemporary with Structure 1 and 2. Based on the lack of map evidence, these outbuildings appear likely to date from the period between 1902 and 1930 and may have been associated with the Smith fruit

FIGURE 22 - Structure 2 (view to NNW)

FIGURE 23 - Structure 2 (view to SW)

FIGURE 24 - Structure 3, West Smith Farm Road in rear (view to SSE)

FIGURE 25 - Structure 3, former incinerator rear left, West Smith Farm Road right (view to ESE)

FIGURE 26 - Structure 3 with staging area rear (view to NW)

FIGURE 27 - Structure 4, extent marked by red flags (view to SSW)

FIGURE 28 - Structure 4, extent marked by red flags, former incinerator left rear (view to SE)

FIGURE 29 - Structure 4, detail of southeast corner (view to NNW)

FIGURE 30 - Structure 4, detail of possible ramp and displaced concrete fragments (view to SE)

growing and processing business centered less than one-half mile (134 meters) to the west during this time.

Structure 5 is located to the northwest of the former incinerator and just beyond the western edge of Exclusion Zone B, an area characterized by ash fill. It consists of 2 amorphous small concrete patches, each less than 3 feet (90 centimeters) in diameter. Testing showed the concrete to be less than 3 inches (7.5 centimeters) thick and to be associated with no other structural remains. This appears to represent deposition of concrete related to some other construction elsewhere and is not seen to constitute structural remains associated with the Ash Landfill area.

CONCLUSIONS AND RECOMMENDATIONS

Two classes of cultural resources were identified by a program of intensive reconnaissance and subsurface archaeological sampling carried out around the areas of the Ash Landfill Site in which soil remediation is planned. Remains associated with three, possibly four structures were identified just north of West Smith Farm Road, west of the standing former incinerator building. Evidence of Native American cultural activity was identified along the more southerly of two planned interceptor trenches.

Structure 1 consists of a fragment of a concrete wall or sill and a small section of the adjacent floor. Based on its location and the documentary evidence assembled relating to this portion of Military Lot 72, it appears the structure represented by these remains functioned as an outbuilding, probably related to the Smith fruit growing and processing enterprise and most likely constructed during the first decades of the twentieth century. It appears to have been razed prior to 1930. All but the northwest corner of this building was apparently removed from the site during or after demolition activities. This small portion was preserved possibly in conjunction with construction of the water line that adjoins it today or because it had already taken on such a protective function after the superstructure was razed at some previous time.

Structure 2 is represented by a concrete slab likely to have served as a ramp over which wheeled vehicles would have been driven or pulled as they entered and exited a building that abutted the ramp to the north. The proximity of these remains to the architectural fragments designated Structure 1 makes it quite possible that both represent remains of the same building. They are not located within the proposed remediation impact zone and neither is expected to be affected by equipment staging or other decontamination activities.

These remains were shown to represent small vestiges of the structures of which they were once a part and not to be associated with other structural features. As such they appear to offer little potential for yielding additional cultural information and no further archaeological study is recommended for Structure 1 and 2.

Structure 3, as discussed in the preceding section, appears to have been associated with the military installation phase of land use, probably dating from the period during which the site

served as a landfill and possibly while the incinerator itself was in operation. The remains noted seem to represent the earthen support on which most likely two tanks containing a liquid were mounted. The earthen support designated Structure 3 is not likely to contain significant cultural information and appears to be less than fifty years old. It does not appear to satisfy any of the criteria listed under National Register "Criteria Consideration G: Properties That Have Achieved Significance Within the Part Fifty Years" and is therefore unlikely to meet eligibility requirments for being listed on the National Register of Historic Places. Therefore, no further archaeological investigation of these cultural remains is recommended.

Structure 4 appears to represent the concrete floor and doorway ramp of another outbuilding dating from the early twentieth century and most likely associated with the Smith fruit growing and processing operation. Once again, no additional potentially related structural remains were encountered in its vicinity and no impact is anticipated from planned remediation efforts. The potential for the remains designated Structure 4 to yield additional cultural information may be considered low and no further archaeological study is recommended.

The Smith Farm outbuildings (Structures 1, 2, and 4) were assessed by this project as not eligible for listing in the National Register of Historic Places at this time. However, parts of the Smith Farm lie outside the limits of this study. Should further study at some future date identify a large Smith Farm district as eligible, these structures should be re-evaluated for eligibility as contributing elements to that district.

What appears to represent the remains of a small Native American occupation site was identified along the route of the more southerly of the two proposed interceptor trenches to be constructed west of the remediation area. Recovered cultural material consists of chert projectile points, cores, reduction and finishing flakes and culturally modified chert fragments and was found to be spatially restricted to an area appoximately 100 by 60 feet (30.5 by 18 meters). Based on the projectile points recovered, identified as of the Vosburg and Meadowood variety, the site is likely to have been occupied at least during the Middle Archaic Vosburg Phase of the Laurentian Tradition (3400-2400BC) and Meadowood Phase of the Early Woodland period (1000-500BC). The lithic material recovered implies that the secondary and tertiary stages of stone tool manufacturing took place here, possibly along with stone tool repair.

The archaeological site occurs in a portion of the Ash Landfill located outside the actual remediation zone but within an area through which the interceptor trenches will pass and across which an equipment staging area and roadway are to be built in conjunction with remediation efforts. Upper soil disturbance to date appears to have been limited to initial clearing and agricultural cultivation. This subarea has thus been spared the stripping and dislocation related to burial of refuse and deposition of ash found elsewhere in the Ash Landfill Site.

The subsoil beneath the former plow zone seems to be virtually intact in the subarea from which Native American cultural remains were recovered. Its potential for yielding additional cultural information in the form of structural remains and/or cultural features that extended into this undistrubed subsoil may therefore be seen to remain largely intact.

Cultural information produced in this Stage I survey indicates the site was occupied during at least the Middle Archaic and Early Woodland periods. The concentration of cultural material implies the occupation was focused rather than casual, increasing the likelihood that the remains of cultural features and/or structures would be present beneath the plow zone. Structural remains in the form of post molds would have the potential to contribute significant information to the current knowledge of human settlement and habitation patterns during one or both of these periods. Very few remains of structures have been encountered for either period, and the character and internal dynamics of small sites are not well understood. The relation of both traditions to the intervening Late Archaic is also an ongoing topic of research, to which a site with potential structural data could contribute. The Ash Landfill Archaeological Site could therefore meet National Register eligibility Criterion D: Information Potential.

This research potential can only be assessed once it has been determined whether sub-plow zone cultural features or structural remains are present. A number of shovel tests have already been dug in identifying and defining the spatial extent of the archaeological site. However, the probability of locating and identifying structural remains and cultural features would be greatly increased by exposing larger areas of the subsoil using excavation units.

Further archaeological investigation of this site in the form of a Stage II Site Evaluation Study is recommended to determine whether any sub-plow zone structural remains and/or cultural features are present. This study should expose larger areas of

subsoil by means of excavation units and should take place prior to the disturbance of soils associated with interceptor trench construction.

Steps were taken to ensure that the identified Native American material would be protected from disturbance during and after the conclusion of the present remediation effort. Most of the subarea in which the cultural remains were encountered was found to lie within a planned equipment staging and access road area. Gravel and soil brought from outside the installation limits were to be introduced to this area, serve as a surface for the staging and movement of heavy equipment, and then be removed once the remediation has been completed. After consultation with SEDA environmental authorities and the supervising archaeologist at the USACOE New York District as well as appropriate International Technologies (IT) personnel involved in the actual remediation operation, a buffer of 50 feet (15.2 meters) was laid out around the archaeological site and stipulations were made in the project plans that the soil and gravel that had been deposited in this area would not be removed upon completion of remediation work. When contaminated soils in the two exclusion zones have been processed and the temporary structures and equipment removed, the limits of the archaeological site, having been clearly marked in the field, would be avoided by crews removing introduced soil and gravel from the Ash Landfill Site. These materials will be removed from the identified archaeological site prior to but in conjunction with Stage II archaeological site evaluation.

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SEDA ASH LANDFILL SITE
ARTIFACT CATALOG

CATALOG NUMBER	DESCRIPTION	LOCATION
001	Scraper	Tr1, TP-11
002	Reduction Flake	Tr1, TP-11
003	Reduction Flake	Tr1, TP-11B
004	Fragment	Tr1, TP-11B
005-006	Reduction Flakes	Tr1, TP-14
007	Fragment	Tr1, TP-14
008	Reduction Flake	Tr2, TP-8
009	Fragment	Tr2, TP-8
010-011	Reduction Flakes	Tr2, TP-9
012	Reduction Flake	Tr2, TP-9B
013	Reduction Flake	Tr2, TP-10
014-018	Reduction Flakes	Tr2, TP-10A
019	Fragment	Tr2, TP-10A
020-023	Finishing Flakes	Tr2, TP-10A
024	Core	Tr2, TP-10A
025-028	Reduction Flakes	Tr2, TP-10B
029*	Reduction Flake	Tr2, TP-10B
030-034	Fragments	Tr2, TP-10B
035-037	Fragments	Tr2, TP-10C
038	Reduction Flake	Tr2, TP-10D
039	Fragment	Tr2, TP-10D
040	Projectile Point (Vosburg)	Tr2, TP-10D
041	Reduction Flake	Tr2, TP-11
042	Fragment	Tr2, TP-11
043	Core	Tr2, TP-11B
044	Projectile Point (Meadwood)	Tr2, TP-19
045	Fragment	Tr4, TP-2
046-047	Reduction Flakes	Tr4, TP-2A
048-049	Reduction Flakes	Tr2, TP-2AE
050	Reduction Flake	Tr2, TP-15
051	Core	Tr2, TP-15

NOTE: All cultural material listed above is made from chert.

*Misplaced in laboratory

TP-23	1	0-11"	dark brown silt	none
	2	11-14"+	gray silty clay	none
TP-24	1	0-11"	dark brown silt	none
	2	11-14"+	gray silty clay	none
TP-25	1	0-12"	(same as above)	none
	2	12-16"+	(same as above)	none
TP-26	1	0-15"	(same as above)	none
	2	15-18"+	(same as above)	none
TP-27	1	0-12"	(same as above)	none
	2	12-15"+	(same as above)	none
TP-28	1	0-12"	(same as above)	none
	2	12-14"+	(same as above)	none
TP-29	1	0-6"	(same as above)	none
	2	6-10"+	(same as above)	none
TP-30	1	0-8"	dark brown silt	none
	2	8-10"+	gray/brown silty clay	none
TP-31	1	0-11"	(same as above)	none
	2	11-15"+	(same as above)	none
TP-32	1	0-11"	(same as above)	none
	2	11-14"+	(same as above)	none
TP-33	1	0-11"	(same as above)	none
	2	11-14"+	(same as above)	none
TP-34	1	0-6"	(same as above)	none
	2	6-10"+	(same as above)	none
TP-35	1	0-8"	(same as above)	none
	2	8-14"+	(same as above)	none

TP-36	1	0-11"	(same as above)	none
	2	11-15"+	(same as above)	none
TP-37	1	0-11"	(same as above)	none
	2	11-15"+	(same as above)	none
TP-38	1	0-10"	(same as above)	none
	2	10-15"+	(same as above)	none

TRANSECT 2

TP-1	1	0-4"	dark clayey silt	none
	2	4-9"	brown clayey silt, cmf gravel	nails, rusted metal (not saved)
	3	9-13"	slate fragments (terminated at bedrock)	none
TP-2	1	0-3"	slate fragments (terminated at bedrock)	none
TP-3	1	0-3"	slate fragments (terminated at bedrock)	none
TP-4	1	0-4"	slate fragments, ash (terminated at bedrock)	ash
TP-5	1	0-7"	dark brown clayey silt, cobbles, cmf gravel	none
	2	7-14"+	brown silty clayey, cmf gravel, cobbles	none
TP-6	1	0-7"	(same as above)	none
	2	7-13"+	(same as above)	none
TP-7	1	0-9"	(same as above)	none
	2	9-13"+	(same as above)	none

TP-8	1	0-9"	dark brown silt, cmf gravel, cobbles	fragments
	2	9-13"+	brown clayey silt, cmf gravel, cobbles	none
TP-8B	1	0-10"	dark brown clayey silt with cmf gravel	glass, coal (not saved)
	2	10-12"+	brown silty clay	none
TP-8C	1	0-10"	(same as above)	nail (not saved)
	2	10-13"+	(same as above)	none
TP-9	1	0-8"	(same as above)	flakes
	2	8-11"+	(same as above)	none
TP-9B	1	0-7"	(same as above)	1 flake
	2	7-11"+	(same as above)	none
TP-10	1	0-10"	dark brown silt, cobbles	flake
	2	10-14"+	brown clayey silt, cobbles	none
TP-10A	1	0-8"	dark brown silt, cobbles	flake, cores, fragments
	2	8-12"+	brown clayey silt, gravel, cobbles	none
TP-10B	1	0-10"	(same as above)	flakes, fragments
	2	10-14"+	(same as above)	none
TP-10C	1	0-8"	(same as above)	flakes, fragments
	2	8-12"+	(same as above)	none

TP-10D	1	0-8"	(same as above)	fragments flake, projectile point
	2	8-12"+	(same as above)	none
TP-11	1	0-5"	dark brown silt, cobbles	fragments
	2	5-12"+	brown clayey silt, cobbles	none
TP-11B	1	0-10"	(same as above)	1 fragment
	2	10-12"+	(same as above)	none
TP-12	1	0-9"	(same as above)	none
	2	9-13"+	(same as above)	none
TP-13	1	0-7"	(same as above)	none
	2	7-14"+	(same as above)	none
TP-14	1	0-13"	(same as above)	none
	2	13-16"+	(same as above)	none
TP-15	1	0-9"	(same as above)	flake, fragments
	2	9-14"+	(same as above)	none
TP-16	1	0-12"	(same as above)	none
	2	12-15"+	(same as above)	none
TP-17	1	0-9"	(same as above)	none
	2	9-12"+	(same as above)	none
TP-18	1	0-13"	dark brown silt, cobbles, cmf gravel	none
	2	13-16"+	brown clayey silt, cobbles	none
TP-19	1	0-10"	(same as above)	projectile point
	2	10-14"+	(same as above)	none
TP-20	1	0-14"	(same as above)	none
	2	14-19"+	(same as above)	none

TP-21	1	0-13"	(same as above)	none
	2	13-16"+	(same as above)	none
TP-22	1	0-8"	dark brown silt	none
	2	8-14"	brown silt	none
	3	14-16"+	gray silty clay	none
TP-23	1	0-13"	(same as above)	none
	2	13-17"+	(same as above)	none
TP-24	1	0-13"	(same as above)	none
	2	13-17"+	(same as above)	none
TP-25	1	0-11"	(same as above)	none
	2	11-18"+	(same as above)	none
TP-26	1	0-12"	(same as above)	none
	2	12-15"+	(same as above)	none
TP-27	1	0-12"	(same as above)	none
	2	12-14"+	(same as above)	none
TP-28	1	0-10"+	(same as above)	none
	2	10-14"+	(same as above)	none
TP-29	1	0-10"	dark brown silt	none
	2	10-14"+	brown silty clay	none
TP-30	1	0-8"	(same as above)	none
	2	8-14"+	(same as above)	none
TP-31	1	0-7"	(same as above)	none
	2	7-10"+	(same as above)	none
TP-32	1	0-11"	(same as above)	none
	2	11-14"+	(same as above)	none
TP-33	1	0-10"	(same as above)	none
	2	10-14"+	(same as above)	none

TP-34	1	0-10"	(same as above)	none
	2	10-15"+	(same as above)	none
TP-35	1	0-13"	(same as above)	none
	2	13-18"+	(same as above)	none
TP-36	1	0-8"	(same as above)	none
	2	8-11"+	(same as above)	none
TP-37	1	0-9"	dark brown silt	none
	2	9-12"+	gray/brown silty clay	none
TP-38	1	0-9"	(same as above)	none
	2	9-12"+	(same as above)	none

TRANSECT 3

STU-3	1	0-12"	dark brown clayey silt slate fragments, cmf gravel, cobbles, ash, charcoal	metal, unburned wood (not saved)
	2	12-22"	brown silty clay, cmf gravel, cobbles (terminated at bedrock)	metal, unburned wood
TP-1	1	0-7"	dark brown silt, cmf gravel, slate fragments (ended at bedrock)	none
TP-2	1	0-12"	dark brown silt with cmf gravel, slate fragments	nails, glass (not saved)
	2	12-15"	brown/black silt with slate fragments	nails, glass (not saved)
	3	15-20"+	brown silty clay	none
TP-3	1	0-8"	dark brown silt	none
	2	8-16"	brown clayey silt	none
	3	16-19"+	gray/brown clay	none

TP-4	1	0-11"	dark brown silt with cmf gravel, ash	ash, nails (not saved)
	2	11-15"+	brown clay	none
TP-5 (STU-4)	1	0-12"	dark brown silt, cmf gravel	none
	2	12-21"	brown silty clay, cmf gravel, cobbles	none
	3	21-24"	gray brown clay to bedrock	none
TP-6	1	0-12"	dark brown silt, gravel	none
	2	12-14"+	brown clayey silt	none
TP-7	1	0-6"	dark brown clayey silt	none
	2	6-14"	brown silty clay	none
	3	14-20"	gray clay (ended at bedrock)	none
TP-8	1	0-12"	dark brown clayey silt	none
	2	12-16"+	gray/brown silty clay cmf gravel, cobbles	none
TP-9	1	0-6"	(same as above)	none
	2	6-10"+	(same as above)	none
TP-10	1	0-6"	(same as above)	none
	2	6-14"+	(same as above)	none
TP-11	1	0-8"	(same as above)	none
	2	8-14"+	(same as above)	none
TP-12	1	0-6"	(same as above)	none
	2	6-11"	brown clayey silt	none
	3	11-14"+	gray brown silty clay	none
TP-13	1	0-8"	(same as above)	none
	2	8-12"+	(same as above)	none

TP-14	1	0-6"	(same as above)	none
	2	6-12"	(same as above)	none
	3	12-14"+	(same as above)	none
TP-15	1	0-14"	dark brown silt, cmf gravel	none
	2	14-18"+	brown silty clay	none
TP-16	1	0-13"	dark brown silt, cmf gravel	nails (not saved)
	2	13-20"	brown silty clay	none
	3	20-23"+	gray brown clay, cmf gravel	none
TP-17	1	0-18"	(same as above)	none
	2	18-22"+	(same as above)	none
TP-18	1	0-16"	(same as above)	none
	2	16-18"+	(same as above)	none
TP-19	1	0-14"	(same as above)	none
	2	14-17"+	(same as above)	none
TP-20	1	0-15"	(same as above)	none
	2	15-18"+	(same as above)	none
TP-21	1	0-13"	(same as above)	none
	2	13-16"+	(same as above)	none
TP-22	1	0-16"	(same as above)	none
	2	16-20"+	(same as above)	none
TP-23 (STU-5)	1	0-15"	(same as above)	none
	2	15-24"+	(same as above)	none
	3	24-28"+	gray/brown clay	none
TP-24	1	0-3"	dark brown silt	none
	2	3-12"+	gray/brown clay	none

TP-25	1	0-10"	dark brown silt with cobbles	none
	2	10-16"+	brown silt	none
TP-26	1	0-8"	brown/black silt mixed with ash, soot	nails, glass, metal(not saved)
	2	8-16"+	gray/brown silt mixed with ash, soot (terminated at bedrock)	nails, glass (not saved) shell casing
TP-27 (STU-6)	1	0-9"	dark brown silt, cmf gravel	none
	2	9-18"	olive brown mottled silty sand, cmf gravel	none
	3	18-23"	gray/brown clay to bedrock	none
TP-28	1	0-8"	(same as above)	metal, glass
	2	8-18"	(same as above) (terminated at large piece aluminum siding)	metal, glass, aluminum
TP-28A	1	0-12"	dark brown silt, cobbles, cmf gravel	metal (not saved)
	2	12-21"+	brown silty clay, cobbles	none
TP-29	1	0-8"	same (ended at unsorted compact refuse)	paper, plastic, bags, magazines, nail, metal (not saved)
TP-30	1	0-7"	dark brown silt, slate fragments, ash, charcoal	ash, charcoal (not saved)
	2	7-12"+	brown silty clay, ash (terminated at bedrock)	none
TP-31	1	0-10"	brown silty clay, ash (terminated at bedrock)	ash

TP-32	1	0-6"	(same as above)	ash
	2	6-10"+	(same as above) (terminated at bedrock)	ash

TRANSECT 4

TP-1	1	0-8"	dark brown silt, gravel	none
	2	8-12"+	brown clayey silt	none
TP-2	1	0-9"	(same as above)	flake
	2	9-13"+	(same as above)	none
TP-3	1	0-11"	(same as above)	none
	2	11-14"+	(same as above)	none
TP-2A	1	0-8"	(same as above)	flakes
	2	8-12"+	(same as above)	none
TP-2AE	1	0-10"	(same as above)	none
	2	10-12"+	(same as above)	none
TP-2B	1	0-11"	(same as above)	none
	2	11-14"+	(same as above)	none
TP-3B	1	0-16"	dark brown silty clay	none
	2	16-19"+	brown silty clay	none

TRANSECT 5

TP-1	1	0-10"	dark brown silt with cmf gravel	none
	2	10-14"+	brown silty clay	none

APPENDIX C

HEALTH AND SAFETY MONITORING REPORT

Monroe
Monitoring
& Analysis, Inc.

HEALTH & SAFETY AIR MONITORING
FINAL REPORT

SENECA ARMY DEPOT
CAYUGA COUNTY
ROMULUS, NEW YORK

PREPARED FOR

HERITAGE AMERICA LTD.
MIDDLETOWN, NEW YORK

MM&A PROJECT # 949-8

OCTOBER 11, 1994

Monroe Monitoring & Analysis, Inc.
1425 Mt. Read Blvd.
Rochester, New York 14606

HEALTH & SAFETY AIR MONITORING
FINAL REPORT

SENECA ARMY DEPOT
CAYUGA COUNTY
ROMULUS, NEW YORK

PREPARED FOR

HERITAGE AMERICA LTD.
MIDDLETOWN, NEW YORK

MM&A PROJECT # 949-8

OCTOBER 11, 1994

Prepared by

Richard J. Bianchi

Richard J. Bianchi
Health & Safety Officer

Approved by

William A. Sandvik
Project Manager

Monroe Monitoring & Analysis, Inc.
1425 Mt. Read Blvd.
Rochester, New York 14606

Monroe
Monitoring
& Analysis, Inc.

HEALTH & SAFETY MONITORING

Client: Heritage America

Contact: Steve Oberon

Project: Organic Vapor Monitoring During Excavation Work

Location: Seneca Army Depot, Cayuga County, New York

Project No.: 949-8

Personnel: Richard J. Bianchi, HSO
William A. Sandvik, Project Manager

Author: Richard J. Bianchi

Purpose

Monroe Monitoring & Analysis, Inc. was contracted to provide Health & Safety monitoring in support of Heritage America Ltd. staff during archaeological investigations in potentially contaminated soil. The work site is located within the confines of the Seneca Army Depot, Cayuga County, New York. The area is currently occupied by a hazardous waste ash landfill and an old incinerator building that were reported to be inactive since the 1970's. The nearest body of water is Seneca Lake located approximately 1 mile west of the excavation site.

The services requested included real-time monitoring for volatile organic vapors. Draeger colorimetric indicator tubes for specific volatile organics including Vinyl Chloride and Trichloroethylene, were also available on-site in the event that high levels of organic vapors were detected during excavation.

Methods

Air Monitoring

Total Organic Vapor Monitoring was conducted during excavation of all test pit areas during a Stage I-B archaeological investigation. Heritage America staff excavated test pits by hand with a spade shovel to a depth of approximately two (2) to three (3) feet and then screened all removed material through a one quarter inch mesh. Measurements of organic vapors were recorded in the following sequence:

1. Background ambient air readings up-wind and down-wind prior to excavation.

2. Organic vapor readings in the proposed excavation zone.

3. Continuous monitoring during excavation at each test pit, both at the soil level and in the breathing areas of Heritage staff members.

The instrument used for monitoring was a Thermo-Environmental Instruments Model 580B OVM Photoionization Detector (P.I.D.) with 10.2 electron volt ultra-violet lamp. The instrument was pre- and post calibrated on a daily basis as recommended by the manufacturer's protocol, using calibration gases of known concentrations.

Data from the Thermo-Environmental P.I.D. was recorded periodically on the Direct Reading Instrument Data Sheets (see appendix).

Draeger colorimetric indicator tubes were available in the event that questionable results were obtained through real-time monitoring, or to further identify organic vapor readings. The use of Draeger tubes was not found to be necessary during the course of the project.

Personal Protective Measures

All personnel wore USEPA level D personal protective equipment consisting of steel toe work boots with latex booties, work gloves, eye protection and hard hats. Respiratory protection and full body, chemically resistant suits, gloves and boots were available to all personnel in the event conditions warranted their use.

The monitoring personnel and Heritage America staff had all received a minimum of 40 hours of health & safety training as required by OSHA 29 CFR 1910.120, for work at designated hazardous waste sites, and as specified by the U.S. Army Corp of Engineers for this project. In addition, all monitoring

personnel had also received 8 hours of supervisory training as required by OSHA for personnel responsible for worker Health & Safety. Credentials of monitoring personnel are attached as an appendix to this report.

Results

All air monitoring data and corresponding field observations appear in Appendix 1. A momentary peak reading (21.6ppm) of volatile organics was detected during the excavation at transect 2, test pit 11b (TR-2,TP-11b). This reading was collected near the surface during initial turf removal. The material was placed into a plastic container and transferred to an area where it was allowed to volatilize. At the end of the work shift, this material was again tested and showed no organic vapors to be present. No other significant organic vapors were detected during the excavation project.

Allwash Of Syracuse, Inc.

Certificate of Training

This is to certify that

Richard Bianchi 052-44-0055

by virtue of classroom instruction and on the job training is hereby qualified as a/an

HAZARDOUS MATERIALS INCIDENT RESPONDER (OSHA, 40 hour course)

10/28/90
Date

Paul D. Watson
Director; Safety, Environmental and Occupational Health

MONROE MONITORING & ANALYSIS, INC.

1425 Mount Read Blvd., Rochester, New York 14606
(716)458-8920

HEREBY CERTIFIES THAT

RICHARD J. BIANCHI

052-44-0055
SS#

Has attended 8 hours of classroom instruction.

HAZARDOUS WASTE WORKER ANNUAL REFRESHER

INCLUDING CLASSROOM LECTURES AND HANDS-ON INSTRUCTION

052440055HWR
Certificate

August 1995
Expiration Date

MMA

Course Director

August 1, 1994
Course Date(s)

CERTIFICATE OF COMPLETION

TRAINING PROGRAM:

SUPERVISOR OF HAZARDOUS WASTE OPERATIONS

in compliance with 29CFR 1910.120

AWARDED TO:

Richard Bianchi

Having successfully completed 8 Hrs of instruction.

Presented By :
Monroe Monitoring & Analysis, Inc.
1425 Mt. Read Blvd., Rochester, New York 14606

MMA

052-44-0055-HW-S
Certificate No.

Course Director

March 18, 1992
Date(s)

New Jersey / New York Hazardous Waste Worker Training Center

(Partially supported by the National Institute of Environmental Health Sciences)

This is to certify that

William A. Sandvik

has successfully completed the course entitled

Supervisors of Hazardous Waste Operations

conducted by
University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School
Hunter College • Empire State College

November 3 1988
Date

Center Director

Course Directors

New Jersey / New York Hazardous Waste Worker Training Center

(Partially supported by the National Institute of Environmental Health Sciences)

This is to certify that

William A. Sandvik

has successfully completed the course entitled

HEALTH AND SAFETY FOR HAZARDOUS WASTE SITE INVESTIGATION PERSONNEL

conducted by the
University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School
Division of Consumer Health Education
Department of Environmental and Community Medicine
Piscataway, New Jersey

UMD
NEW JERSEY

JUNE 24, 1988
Date

Paul Landsbergis
Course Director

CERTIFICATE OF COMPLETION

TRAINING PROGRAM:

HAZARDOUS WASTE WORKER ANNUAL REFRESHER

in compliance with 29CFR 1910.120

AWARDED TO:

William A. Sandvik

Having successfully completed 8 Hrs of instruction.

Presented By :
Monroe Monitoring & Analysis, Inc.
1425 Mt. Read Blvd., Rochester, New York 14606

MMA

113-50-9312-HW-R 93
Certificate No.

Course Director

December 2-3, 1993
Date(s)

Monroe Monitoring & Analysis, Inc.

DIRECT READING INSTRUMENT DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Romulus, N.Y.
DATE: 9-20-94

TIME	LOCATION	HNU	OVM (ppm)	H2S	~~GAS~~ Wiff	LEL	DETECTOR TUBES	~~OTHER~~ Peak
0950	Background- South		.1 - .8					1.5
0955	" "		0					0
0959	Surface Water - South.		0					.1
1024	Background - North		.5 - .8					.8
1110	Hydrant Ditch		.5 - .8		3.2			1.5
1304	TR-1, TP-1 - Before		0 - 2.2		2.2			0
1325	TR-1, TP-1 - during Exc.		0					0
1340	" " "		0					0
1403	" " "		0					0
1420	TR-1, TP-3 Before		0					0
1425	" " during.		.1					.1
1430	" " "		0					0
1440	TR-1, TP-5 Before		0					0
1441	" " during		.1		.			.8

WEATHER A.M. Sunny, Clear - 63°F, dry, wind from the South 3-7 mph
P.M. Sunny, Clear - 72°F, dry, light winds 1-3 mph from the South.

COMMENTS:
OVM Catches a whiff of something from the South once in a while in general background air. Doesn't go beyond 1.5. We will use this 1.5 Reading as background. If the 1.5 reading remains consistent during excavation, it will be assumed measurement is from excavation.

lunch at 1200 - 1300

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Base.
DATE: 9-20-94

TIME	LOCATION	HNU	ppm ~~DATA~~ OVM	H2S	O2	LEL	DETECTOR TUBES	~~OTHER~~ Peak
1445	TR-1, TP-7 Before		0					0
1449	" " during		0					0
1505	" " "		0					0
1511	TR-1, TP-8 - Before		0					0
1515	" " during		0					0
1530	" " "		0					0
1535	TR-1, TP-10 - Before		0					0
1542	TR-1, TP-10 - during		0					0
1600	TR-1, TP-9 - Before		0					0
1608	" " - during		0					0
1617	" TP-11 - Before		0					0
1628	" " - during		0					0
1645	" " "		0					0
1700	TR-1, TP-12 - Before		0					0

WEATHER A.M.
P.M.

COMMENTS:

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Base
DATE: 9-20-94

TIME	LOCATION	HNU	ppm OVM	H2S	O2	LEL	DETECTOR TUBES	CGI Peak	
1702	TR-1, TP-12 - during		0-.1					2.5	
1709	" " "		0					0	
1713	TR-1, TP-11A - before		0					0	
1715	" " - during		0					0	
1725	" " "		0					0	
1728	" TP-11B - Before		0					0	
1730	" " - during		1.5-5.9					8.3	Initial Removal of Sod
1734	" " "		0					0	
1743	TR-1, TP-11C - Before		0					0	
1745	" " - Initial		0					0	
1750	" " - during		0					0	
1755	" TP-11D - Before		0					0	
1757	" " - Initial		5-8					21.6	
1800	" " - during		5-8					8.3	
1804	" " "		0					0	

WEATHER A.M.
P.M.

COMMENTS: Elevated Readings upon initial Sod removal. (TR-1, TP-11B)

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) THERMO ENVIRONMENTAL OVM		4. RESULTS 106 ppm	34. CALIBRATION SOURCE 106 ppm Isobut.	36. RESULTS 106 ppm
	2. LOCATION/T&BP 1425 MT. READ BLVD	3. CALIBRATION SOURCE 106 ppm ISOBUTYLENE		37. LOCATION 175 Lake Breeze Pk. Rochester, N.Y.	
	5. INITIALS [signature]	6. DATE/TIME 9/16/94		38. INITIALS RJB	39. DATE/TIME 9-20-94 / 2030
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

BULB CLEANED PRIOR TO CALIBRATION.

Monroe
Monitoring
& Analysis, Inc.

DIRECT READING INSTRUMENT
DATA SHEET

CLIENT : Heritage America
LOCATION : Seneca Army Base
DATE : 9-21-94

TIME	LOCATION	HNu	OVM ppm	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
0835	Background		.5-.8					.8
0845	" " -		0					0
0851	Soil from TR-1, TP-10		0					0
0854	TR-2, TP-10 - Before		0					0
0856	" " - Initial		0					0
0858	" " - during		0					0
0906	TR-2, TP-11 - Before		0					0
910	" " - Initial		.1-.5					.8
0912	" " - during		0					0
0915	" " "		0					0
0924	TR-2, TP-10A - Before		0					0
0926	" " - Initial		.1-.5					1.5
0928	" " - during		0					.1
0940	" " - "		0					0

WEATHER A.M. Sunny - Clear - 61°F - light winds - 3-5mph from South - winds
P.M. increased -

COMMENTS:

Monroe
Monitoring
& Analysis, Inc.

DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Romulus, N.Y.
DATE: 9-21-94

TIME	LOCATION	HNU	ppm ~~O/A~~ OVM	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
0955	TR-2, TP-10B-Before		0					0
0956	" " -Intial		0					.8
1000	" " -during		2.2					10.1
1001	" " "		0					.1
1015	" " "		0					0
1020	Soil from waste can		0					0
1022	TR-2, TP-10C-Before		0					0
1024	" " -Intial		0					0
1026	" " -during		0					0
1041	" " - "		0					0
1044	TR-2, TP-10D-Before		0					0
1046	" " -Intial		.5					1.1
1047	" " -during		0					0
1107	TR-1, TP-13-Before		0					0

WEATHER A.M.
P.M.

COMMENTS:

All air breathing zone measurement were background only All Recorded Reading were taken from Soil level

Monroe
Monitoring
& Analysis, Inc.

DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot
DATE: 9-21-94

TIME	LOCATION	HNu	OVM ppm	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak.
1109	TR-1, TP-13 - Initial		.1					.5
1110	" " "		.5					1.5
1115	TR-1, TP-14 - Before		0					0
1117	" " - Intial		.1					1.1
1121	" " - during		.1					5.5
1126	" " "		.1					.5
1240	TR-1, TP-15 - Before		0					0
1246	" " - Intial		0					0
1247	" " - During		0					0
1253	" " - Before		0					0
1254	" " - Intial		0					0
1255	" " during		.1					.5
1304	TR-1, TP-16 - Before		0					.1
1306	" " - Intial		0					0

WEATHER A.M.
P.M.

COMMENTS:

All air samples in breathing area were background only. All Readings documented where from the soil.

Monroe
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& Analysis, Inc.

DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: HERITAGE AMERICA
LOCATION: SENECA ARMY DEPOT
DATE: 9-21-94

TIME	LOCATION	HNu	ppm ~~OVA~~ OVM	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
1310	TR-1, TP-16 - During		0					0
1320	" " "		0					0
1328	TR-1, TP-17 - Before		0					0
1330	" " Intial		0					0
1335	" " during		0					0
1415	TR-1, TP-18 - Before		0					0
1416	" " - Intial		0					.1
1420	" " - During		0					.5
1425	TR-1, TP-19 - Before		0					0
1427	" " - Intial		0					.1
1428	" " - During		0					0
1430	TR-1, TP-20 - Before		0					0
1433	" " - Intal		0					0
1437	" " - During		0					0

WEATHER A.M.
P.M.

COMMENTS:

All Samples taken in breathing zone were background only. All Recorded samples were from inside soil area.

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT : Heritage America
LOCATION : Seneca Army Depot
DATE : 7-21-94

TIME	LOCATION	HNu	ppm ~~OVM~~ OVM	H2S	O2	LEL	DETECTOR TUBES	~~OTHER~~ Peak
1441	TR-1, TP-21 - Before		0					0
1444	" " - Initial							
1452	" " - during							

WEATHER A.M.
P.M.

COMMENTS:

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) Thermo Environmental Instr. Inc OVM model 580B SN: 27196-228		4. RESULTS 106 ppm	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP 175 Lake Breeze Roch., N.Y.	3. CALIBRATION SOURCE 106 ppm Isobutylene		37. LOCATION	
	5. INITIALS RTB	6. DATE/TIME 9-21-94 / 0640		38. INITIALS	39. DATE/TIME
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

Monroe
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& Analysis, Inc.

DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America.
LOCATION: Seneca Army Depot, Romulus, N.Y.
DATE: 9-22-94

TIME	LOCATION	HNU	ppm ~~OVA~~ OVM	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
0900	TR-2, TP-1 - Before		0					0
0901	" " - Initial		0					.1
906	" " during		0					0
0912	" " "		0					.5
0919	TR-2, TP-3 - Before		0					0
0921	" " - Initial		0					0
0924	TR-2, TP-5 - Before		0					.1
0926	" " - Initial		0					0
0936	" " - during		0					0
0941	TR-2, TP-6 - Before		0					.1
0943	" " - Initial		0					.1
0946	" " - during		0-.1					.5
0951	" TP7 - Before		0					0
0958	" " - Initial		6					.1

WEATHER A.M. 58° F, Partly Cloudy
P.M.

COMMENTS:
All Breathing zone samples were at background only.

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT : Heritage America
LOCATION : Seneca Army Depot, Romulus, N.Y.
DATE : 9-22-94

TIME	LOCATION	HNU	~~OVA~~ OVM (ppm)	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
1007	TR-2, TP-8 - Before		0					.1
1012	" , TP-8 - Initial		.1					.5
1017	" " - during		0					0
1024	TR-2, TP-9 - Before		0					0
1027	TR-2, TP-9 - Initial		.1					.1
1030	" " - during		0					0
1046	TR-2, TP-12 - Before		0					.1
1050	" " - Initial		0					.1
1057	" " - during		0					0
1105	" TP-13 - Before		0					.1
1107	" " - Initial		0					.5
1109	" " - during		0					0
1117	" " "		0					.5
1122	TR-2, TP-14 - Before		0-.1					.5

WEATHER A.M.
P.M.

COMMENTS:

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Romulus, N.Y
DATE: 9-22-94

TIME	LOCATION	HNu	ppm OVM	H2S	O2	LEL	DETECTOR TUBES	OTHER
1124	TR-2, TP-14-Initial		0					.1
1127	" " -during.		0					0
1132	" TP15-Before		0					0
1136	" " -Initial		.1					.1
~~1249~~	STP-3 / 50 ft. South of SB-125		Background →					
1249	Breackground		1.0-1.5					2.5
1228	STP-4 / 40 ft. of SB-126 (west)		Background →					
1231	" " " "		"	" →				
1345	" " " "		"	"				→
1359	STP-5 / 45 ft. North of SB-114		Background →					
1447	STP-6 / 50 ft. East of SB-101		"	" →				
1513	TR-2, TP-15-Before		"	" →				
1515	" " -During		"	" →				
1540	TR-2, TP-16-Before		Background →					

stopped work for lunch.

WEATHER A.M.
P.M. 75°F - hazy sunshine - 5-15 mph winds from SE switch to Easterly.

COMMENTS:

All readings taken at breathing zones were background only. All recorded readings are from soil screening. Increased winds induced higher background readings.

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Romulus, N.Y.
DATE: 9-22-94

TIME	LOCATION	HNu	~~OVA~~ OVM (ppm)	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
1545	TR-2, TP-16 - During		Background	→	→	→	→	0
1551	TR-2, TP-17 - Before		Background	→	→	→	→	
1555	" " Initial		Background	→	→	→	→	
1557	" " During		Background	→	→	→	→	
1605	TR-2, TP-18 - Before		"	"	→	→	→	
1607	TR-2, TP-18 - Initial		"	"	→	→	→	
1624	TR-2 - TP-19 - Before		"	"	→	→	→	
1628	" " - Initial		"	"				
1635	" " - During.		"	"				
1638	TR-2, TP-20 - Before.		"	"				
1640	" " - Initial		"	"				
1645	" " - During.		"	"				
1654	TR-2, TP-21 - Before		"	"	→	→	→	
1656	" " - Initial		"	"	→	→	→	

WEATHER A.M.
P.M.

COMMENTS:

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America.
LOCATION: Seneca Army Depot., Romulus, N.Y.
DATE: 9-22-94

TIME	LOCATION	HNu	~~OVA~~ OVM (ppm)	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
1659	TR-2, TP-21 - during		Background	→	→	→	→	
1707	TR-1, TP-22 - Before		"	"				
1709	" " - Initial		"	"				
1714	" " - during		"	"				

WEATHER A.M.
P.M.

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) Thermo Environ. OVM Model 580B SN: 27196-228		4. RESULTS 105.3 ppm	35. CALIBRATION SOURCE 106 ppm Isobut.	36 RESULTS 109 ppm
	2. LOCATION/T&BP Seneca Army Depot Romulus, N.Y.	3. CALIBRATION SOURCE 106 ppm Isobutylene		37. LOCATION Seneca Army Depot Romulus, N.Y.	
	5. INITIALS RJB	6. DATE/TIME 9-22-94 / 0820		38. INITIALS RJB	39 DATE/TIME 9-22-94 / 1722
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36 RESULTS
	2. LOCATION/T&BP	3 CALIBRATION SOURCE		37 LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39 DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36 RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37 LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39 DATE/TIME

CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN): Thermo Environ. Model 580B OVM SN: 27196-228		4. RESULTS: 105.8 ppm	34. CALIBRATION SOURCE: 106 ppm Isobut.	36. RESULTS: 110 ppm
	2. LOCATION/T&BP: Seneca Army Depot Romulus, N.Y.	3. CALIBRATION SOURCE: 106 ppm Isobut.		37. LOCATION: Seneca Army Depot Romulus, N.Y.	
	5. INITIALS: RJB	6. DATE/TIME: 9-23-94 / 0830		38. INITIALS: RJB	39. DATE/TIME: 9-23-94 / 1230
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Ash Land fill.
DATE: 10-5-94

TIME	LOCATION	(ppm) OVM	OVA	H2S	O2	LEL	DETECTOR TUBES	~~OTHER~~ Peak
1545	TR-2, TP-25-initial	Background →					→	
1548	" " -during	"	"					
1600	TR-2, TP-26-initial	"	"					
1605	" " -during	"	"					
1610	TR-1, TP-27-initial	"	"					
1615	" " during	"	"					

WEATHER A.M.
P.M.

COMMENTS:

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) Thermo Environ. Inst. OVM model 580B SN: 27196-228		4. RESULTS 105.9 ppm	34. CALIBRATION SOURCE 106 ppm Isobut.	35. RESULTS 109 ppm
	2. LOCATION/T&BP Seneca Army Depot Romulus, N.Y.	3. CALIBRATION SOURCE 106 ppm Isobut.		37. LOCATION Seneca Army Depot Romulus, N.Y.	
	5. INITIALS RJB	6. DATE/TIME 10-3-94 / 0930		38. INITIALS RJB	39. DATE/TIME 10-3-94 / 1621
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	34. CALIBRATION SOURCE	35. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	34. CALIBRATION SOURCE	35. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: HERITAGE AMERICA
LOCATION: GENESEE ARMY DEPOT
DATE: 10/4/94

TIME	LOCATION	HNu	OVA	H2S	O2	LEL	DETECTOR TUBES	OTHER
9:15	BACKGROUND BEFORE EX. BEGINS	0.5						
9:40	BACKGROUND 0.8 TR 3-TP1	0.8						
9:45	TP2	0.8						
10:15	TP3	0.5						
10:30	TP4	0.5						
10:50	TP5	0.1						
11:05	TP6	0.1						
11:25	TP8	0.1						
	LUNCH							
1:00	TP9	0.1						
1:05	TP10	0.0						
1:15	TP11	0.1						
1:25	TP12	0.0						
1:35	TP13	0.0						

WEATHER A.M. OVERCAST 50's 10-15MPH
P.M. OVERCAST LOW 50's 10-15MPH

COMMENTS:

TR - Transection - 3

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: HERITAGE AMERICA
LOCATION: SENECA ARMY DEPOT
DATE: 10/4/94 PAGE 2

TIME	LOCATION TR-3	HNu	OVA	H2S	O2	LEL	DETECTOR TUBES	OTHER
1:55	TP 14	0.0						
2:10	TP 15	0.0						
2:15	TP 16	0.0						
2:45	TP 17	0.0						
3:00	TP 18	0.0						
3:15	TP 19	0.0						
3:30	TP 20	0.1						
3:45	TP 21	0.1						
4:10	TP 22	0.1						

WEATHER A.M. / (P.M.) OVERCAST

COMMENTS:

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) THERMO 580 B		4. RESULTS 109 PPM	34. CALIBRATION SOURCE 106 PPM	36. RESULTS 130 PPM
	2. LOCATION/T&BP SENECA ARMY DEPOT	3. CALIBRATION SOURCE 106 PPM ISOBUTYLENE		37. LOCATION 1425 MT. READ BLVD	
	5. INITIALS WAS	6. DATE/TIME 10/4/94 9 AM		38. INITIALS WAS	39. DATE/TIME 10/4/94 6:45 PM
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot, Romulus, N.Y.
DATE: 10-5-94

TIME	LOCATION	(ppm) OVM	OVA	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
0820	Background	0						.1
0835	TR-2, TP-8C	Background						
0850	" " 8B	"	"					
1000	" " - 9B	"	"					
1025	" " - 11B	"	"					
1041	TR-4, TP-1	"	"					
1052	" TP-2	"	"					
1115	" TP-3	"	"					
	Lunch	-						
1252	TR-4, TP-2a	"	"					
1306	" TP-2b	"	"					
1316	TR-4, TP-2a East	"	"					
1331	TR-5, TP-1	"	"					
1351	TR-4, TP-3B	"	"					

WEATHER A.M. Overcast - high 40's °F - light winds from NW, misty rain
P.M.

COMMENTS:

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot.
DATE: 10-5-14

TIME	LOCATION	ppm ~~ppm~~ ovm	OVA	H2S	O2	LEL	DETECTOR TUBES	~~OTHER~~ Peak
1427	TR-3, TP-24	Background						0
1442	TR-3, TP-25	"	"					"
1510	TR-3, TP-26	"	"					"
1535	TR-3, TP-27	"	"					"
1600	TR-3, TP-28	"	"					"
1617	TR ~~3~~ TP-~~2~~	"	"					"
1635	TR-3 - TP-28a	"	"					"
1651	TR-3, TP-30	"	"					"
1707	TR-3, TP-31	"	"					"
1720	TR-3, TP-32	"	"					"

WEATHER A.M.
P.M. overcast - 52°F - dry - light winds from west - 2-3 mph.

COMMENTS:

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CALIBRATION

DIRECT READING INSTRUMENTS

	PRE-SAMPLING CALIBRATION			POST-SAMPLING CALIBRATION	
INSTRUMENT 1	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN) THERMO 580 B		4. RESULTS 105 ppm	34. CALIBRATION SOURCE 106 ppm	36. RESULTS 108 ppm
	2. LOCATION/T&BP 1475 MT ROAD ARCH.	3. CALIBRATION SOURCE 106 PPM ISOBUT.		37. LOCATION Seneca Army Depot Romulus, N.Y.	
	5. INITIALS WAS	6. DATE/TIME 10/4/94 7:00PM		38. INITIALS RTB	39. DATE/TIME 10-5-94
INSTRUMENT 2	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME
INSTRUMENT 3	1. INSTRUMENT (TYPE, MFG, MODEL NO., SN)		4. RESULTS	35. CALIBRATION SOURCE	36. RESULTS
	2. LOCATION/T&BP	3. CALIBRATION SOURCE		37. LOCATION	
	5. INITIALS	6. DATE/TIME		38. INITIALS	39. DATE/TIME

Bulb Cleaned prior to calibration. Unit Calibrated 10-4-94 in the evening.

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DIRECT READING INSTRUMENT DATA SHEET

CLIENT: Heritage America
LOCATION: Seneca Army Depot
DATE: 10-6-94

TIME	LOCATION	ppm OVM	OVA	H2S	O2	LEL	DETECTOR TUBES	OTHER Peak
0816	Calibration	110						
0820	Background.	.2-.5						1.0
0912	TR-2 - TP-27	Background	—	—	—	—	—	—
0925	TR-1, TP-28	"	"					"
0944	TR-2, TP-28	"	"					"
1000	TR-1, TP-29	"	"					"
1006	TR-2, TP-29	"	"					"
1013	TR-2, TP-30	"	"					"
1023	TR-1, TP-30	"	"					"
1030	TR-2, TP-31	"	"					"
1042	TR-1, TP-31	"	"					"
1050	TR-2, TP-32	"	"					
1115	Lunch.	—	—	—	—	—	—	—
1228	TR-1, TP-32							

WEATHER A.M. Partly Sunny ≈ 45°F - light Wind 1-3 mph from South
P.M.

COMMENTS:

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DIRECT READING INSTRUMENT
DATA SHEET

CLIENT: Heritage America.
LOCATION: Seneca Army Depot.
DATE: 10-6-94

TIME	LOCATION	ppm ~~PID~~ OVM	OVA	H2S	O2	LEL	DETECTOR TUBES	~~OTHER~~ Peak.
1245	TR-2, TP-33	Background -		-	—	—	—	0
1255	TR-1, TP-33	"	"					"
1304	TR-2, TP-34	"	"					"
1315	TR-1, TP-34	"	"					"
1324	TR-2, TP-35	"	"					"
1350	TR-1, TP-35	"	"					"
1400	TR-2, TP-36	"	"					"
1410	TR-2, TP-37	"	"					"
1425	TR-1, TP-36	"	"					"
1435	TR-1, TP-37	"	"					"
1447	TR-2, TP-38	"	"					"
1500	TR-1, TP-38	"	"					"
1545	Structure 4 (S-4)	Background						
1600								

WEATHER A.M.
P.M. 58°F - Partly cloudy - light winds SW - 1-3mph

COMMENTS:

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APPENDIX D

INTERIM REPORTS

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SECOND INTERIM REPORT
STAGE I-B ARCHAEOLOGICAL INVESTIGATIONS
ASH LANDFILL AREA
SENECA ARMY DEPOT
SENECA COUNTY, NEW YORK

Prepared by
Stephen J. Oberon
Principal Investigator
for
U.S. Army Corps of Engineers
New York District

November 1994

SUITE 144 • 521 ROUTE 211E • MIDDLETOWN, NEW YORK 10940
TEL 914-341-2353 • FAX 914-692-7177

INTRODUCTION

This constitutes the second interim report for 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, as prepared by the U.S. Army Corps of Engineers New York District Planning Division.

The purpose of this second interim report is to provide a brief summary of the work conducted since the preparation of the first interim report in September 1994. This document updates information gathered to date and presents the preliminary results of archaeological field testing, as well as detailing work yet to be completed.

SAMPLING RATIONALE AND METHODOLOGY

The goal of this effort, as outlined in Task 3 of the Scope of Work referenced above, was to gather archaeological data to determine whether any cultural resources are present within the Ash Landfill Remediation Impact Area and to provide a preliminary assessment as to their potential eligibility for inclusion on the National Register of Historic Places (NRHP).

This investigation was developed in conjunction with personnel of the Environmental Engineering Section of the Directorate of Housing, SEADA. It used as its bases (a) the findings of a series of environmental studies of the Ash Landfill Site that identified, localized and measured the contaminants present, (b) a remediation plan, to be implemented by IT Corporation, whereby the soils in the two most highly contaminated subareas will be excavated, processed, and returned to the ground, and (c) plans to install two water collection channels downslope from these subareas, which will intercept runoff and groundwater for monitoring purposes.

In addition, this investigation drew from recommendations of the cultural resources management plan for future archaeological work at SEADA, Section 6.3.1 (Archaeological Survey at Known Future Development Project Locations), page 6-5, prepared by Envirosphere Company for the National Parks Service in 1986. Appendix A of that document depicts the approximate location of 231 European-American era structures within the SEADA limits, culled from published sources. The scale of the depiction, approximately 1 inch = 5000 feet (1 cm = 800 m), provides only a most general idea of the actual location of these structures on the ground. Unfortunately, the potential of the various parts of the installation for containing buried Native American cultural remains is not systematically assessed in the Plan.

A strategy was developed to determine as accurately as possible whether cultural resources are present within the remediation impact area of the Ash Landfill Site within the limitations imposed by the nature of the sampling area. In meeting its archaeological goals, this investigation was required to restrict itself spatially to the periphery of the areas that are highly contaminated, as stated in Task 3 of the Scope of Work. Since these are the portions of the Ash Landfill Site subject to the greatest impact through remediation efforts, some adjustment to the methods proposed by the Management Plan were adopted to compensate for sampling limitations. Subsurface sampling would be preceded by careful walking reconnaissance of the impact area and its vicinity to identify microenvironments most likely to have been selected by Native American inhabitants of the region, as well as locations whose cultural resources potential has been reduced by dislocation or removal of upper soils. In order to maximize the probability of detecting traces of the small, seasonally-occupied Native American camps most likely to occur in this physiographic setting, the sampling interval was reduced to 26 feet (8 meters) between test holes, with all test hole contents being screened through ¼-inch hardware cloth to facilitate the recovery of smaller cultural items. Staggered transects of shovel tests were placed along the proposed interception trenches and another transect sampled around the periphery of the two subareas where contamination was highest, referred to as exclusion zones. The possiblity was recognized that traces of a small site whose location might happen to coincide with the center of the exclusion zone would not be detected. However, given the restriction on sampling this area, the method chosen was considered the most effective and appropriate for this situation.

Locations from which cultural material was recovered were sampled by means of similar screened test holes placed at intervals of 13 feet (4 meters) to determine the extent of the cultural deposit. The locations of cultural material were mapped in the field and the soil profile of each test hole was recorded.

ARCHAEOLOGICAL FIELD TESTING

An initial walking reconnaissance of the Ash Landfill and its vicinity was carried out in August of 1994 to assess the overall potential of this portion of the installation for the presence of buried Native American cultural remains. In mid-September, once the scrub vegetation that covered most of the site had been cleared, another reconnaissance was carried out and the proposed locations of the interceptor trenches and the limits of the exclusion zone were identified, along with subareas most likely to have been occupied by Native American inhabitants. At this time, the remains of five possible European-American era structures were also noted.

Further visual and subsurface investigation of the latter produced evidence to indicate that only three, possibly four, structures were involved. One of the structural remains noted in reconnaissance was found to consist of only one chunk of concrete rubble. This was apparently deposited at its present location on the western periphery of the exclusion zone after the establishment of the Ash Landfill, based on the presence of ash beneath the concrete.

One concrete foundation corner and an adjacent portion of a concrete floor were identified near the remediation effort staging area just north of West Smith Farm Road. Designated Structure 1, these remains appear to pertain to a small early 20th century outbuilding, possibly a barn or milkhouse, or a portion of a larger structure. A concrete slab encountered nearby, designated Structure 2, may well represent the entrance apron of the same outbuilding or one with close spatial and temporal associations. A rounded rectangular bermed area, designated Structure 3, was noted farther east and nearer West Smith Farm Road. It appears to represent the site of a tank containment area dating to the operation of the incinerator located approximately 150 feet (46 meters) to the east.

Another concrete floor, designated Structure 4, was identified just east of Structure 3; it contained what seems to have been a concrete entrance apron, implying that it too served as an outbuilding into which vehicles were driven and/or pulled. The composition of the concrete is very similar to that found in Structure 1 and 2, with Structure 4 probably dating from the early 20th century as well.

Screened shovel test holes placed around the periphery of the exclusion zone failed to yield any evidence of Native American presence. The two staggered test hole transects dug along the planned placement of the interceptor trenches produced evidence of one site of indigenous cultural activity. The site was found to extend approximately 100 feet (30.5 meters) north/south and some 60 feet (18 meters) east/west; it produced 3 chert cores, two chert projectile points, and 46 chert flakes and culturally modified fragments. Four of the flakes were classified as finishing flakes, associated with the final stage of stone tool manufacture and/or stone tool repair. Unlike much of the area tested around the landfill site, which was characterized by refuse and ash to a depth of one to two feet (40-60 centimeters) and/or stripping and grading, the location from which the Native American cultural material was recovered was only superficially disturbed by logging and plowing and contained little fill.

FURTHER INVESTIGATION

Because of the lateness of the season and the fact that the commencement of the remediation efforts was imminent, the documentary investigation phase of this study was postponed until after the field testing could be completed. Documentary research will be carried out before the end of November, and will consist of locating primary and secondary sources regarding the human occupation of the area now encompassed by the Seneca Army Depot Activity including the 1986 Management Plan, interviewing knowledgeable local residents and locally-active historians and archaeologists, and summarizing the distribution of known cultural resources on and adjacent to the Ash Landfill Site. This research will augment the information provided in the Management Plan and form a basis for further investigation of cultural resources present in other parts of the installation.

Special attention will be given to identifying the structures whose remains were documented in the field portion of this survey and to analyzing the potential for additional buried cultural remains being present in this portion of the SEADA. In addition, final analysis of recovered cultural material will be carried out, with a view toward placing the Native American site within the temporal and cultural context of the region. The likelihood that further investigation of this site will produce significant cultural information will be addressed as part of an effort to evaluate its potential significance.

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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 • 521 ROUTE 211E • MIDDLETOWN NEW YORK 10940
TEL 914-341-2353 • FAX 914-692-7177

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.

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

SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
AT SENECA ARMY DEPOT
Romulus, New York

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
Huntsville, Alabama

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
Gainesville, Florida

ESE No. 3-90-2034

May 1991

SAFETY, HEALTH, AND ENVIRONMENTAL RESPONSE PLAN

FOREWORD

This plan has been prepared to provide site-specific safety information related to activities to be performed at Seneca Army Depot (SEAD), Romulus, New York, for the U.S. Army Corps of Engineers (USACE). Any additional safety information developed during the project should be noted and used to revise the plan prior to future activities. The plan has been reviewed and approved for this project by the personnel indicated below.

Corporate Health and Safety Officer	Date
Project Safety Manager	Date
Project Manager	Date
Project Field Team Leader	Date

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LIST OF ACRONYMS AND ABBREVIATIONS

BP	boiling point
BUN	blood, urea, nitrogen
CFR	Code of Federal Regulations
C2H3CL	vinyl chloride
CHCL3	chloroform
CO	commanding officer
CPR	cardiopulmonary resuscitation
CRZ	contamination reduction zone
CSP	Certified Safety Professional
12DCLE	1,2-dichloroethane
EKG	electrocardiogram
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science & Engineering, Inc.
eV	electron volt
EZ	exclusion zone
°F	degrees Fahrenheit
ft	feet
gal	gallon
IDLH	immediately dangerous to life and health
kV	kilovolts
LEL	lower explosive limit
mmHg	millimeters of mercury
mph	miles per hour
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued, Page 2 of 2)

NPL	National Priority List
OSHA	Occupational Safety and Health Administration
oz	ounce
PEL	permissible exposure limit
PID	photoionization detector
ppm	parts per million
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
SARA	Superfund Amendment and Reauthorization Act
SCBA	self-contained breathing apparatus
SHERP	Safety, Health, and Emergency Response Plan
SWMU	solid waste management unit
T12DCE	trans-1,2-dichloroethene
TCE	trichloroethene
TOV	total organic vapor
TRCLE	trichloroethene
TWA	time-weighted average
USACE	U.S. Army Corps of Engineers
USAMC	U.S. Army Materiel Command
USCG	U.S. Coast Guard
UXO	unexploded ordnance
VOC	volatile organic compound
VP	vapor pressure
WP	work plan

1.0 GENERAL INFORMATION

Site:	Seneca Army Depot--Ash Landfill Area
Location:	Seneca Army Depot, Romulus, New York
Prepared:	December 1989 by Christopher J. Campbell, Certified Safety Professional (CSP), Environmental Science & Engineering, Inc. (ESE), from information obtained from a previous site visit provided by previous project manager James F. Zitnik.
Site objective:	Remedial investigation (RI) to determine possible contamination sources and extent of contamination at the ash landfill area.
Proposed dates of site activity:	Will be decided after approval of the WP.
Site history:	A previous site investigation of solid waste management units (SWMUs) located at the abandoned incinerator ash landfill area confirmed the existence of a plume of groundwater contaminated with chlorinated volatile organic compounds (VOCs). The site has been included on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL), July 13, 1989.

Regulatory requirements: Occupational Safety and Health Administration (OSHA) standards 29 Code of Federal Regulations (CFR) 1910 and 1926 apply to work performed under this Safety, Health, and Emergency Response Plan (SHERP). Specific sections of 29 CFR 1910 that apply include 1910.120, Final Rule for Hazardous Waste Site Operations and Emergency Response; 1910.134, Respiratory Protection; 1910.100, Air Contaminants; 1926.602, Material Handling Equipment; and 1926.652, Specific Trenching Requirements. Additional U.S. Army requirements governing this work are included in the U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual (EM 385-1-1) and the U.S. Army Material Command (USAMC) Safety Manual, AMC-R 385-100.

2.0 PERSONNEL

2.1 SAFETY AND HEALTH POLICY

The purpose of this SHERP is to protect workers and other onsite personnel, the public, and the environment from hazards associated with site activities and potential site contaminants. This SHERP includes preventive and protective measures against health, physical, fire, and explosion hazards that may exist or occur during field and laboratory activities.

It is a contract requirement that all work be performed according to this SHERP. All contractor personnel and subcontractors should be familiar with the SHERP and adhere to the SHERP at all times. Personnel associated with this project will sign the Declaration of Understanding (Attachment A) to document that this SHERP has been read and understood.

2.2 ORGANIZATION AND RESPONSIBILITIES

Overall typical project organization is shown in Figure 2-1. Responsibilities of the project manager, project safety manager, site safety officer, field team leader, and field team members will be in accordance with contractor standard practices. Subcontractors for this project are subject to the same requirements and responsibilities as field team members.

2.2.1 PROJECT MANAGER

The ultimate responsibility for health and safety on a project lies with the project manager. The project manager must ensure that:

1. An effective and comprehensive SHERP has been prepared for the project,

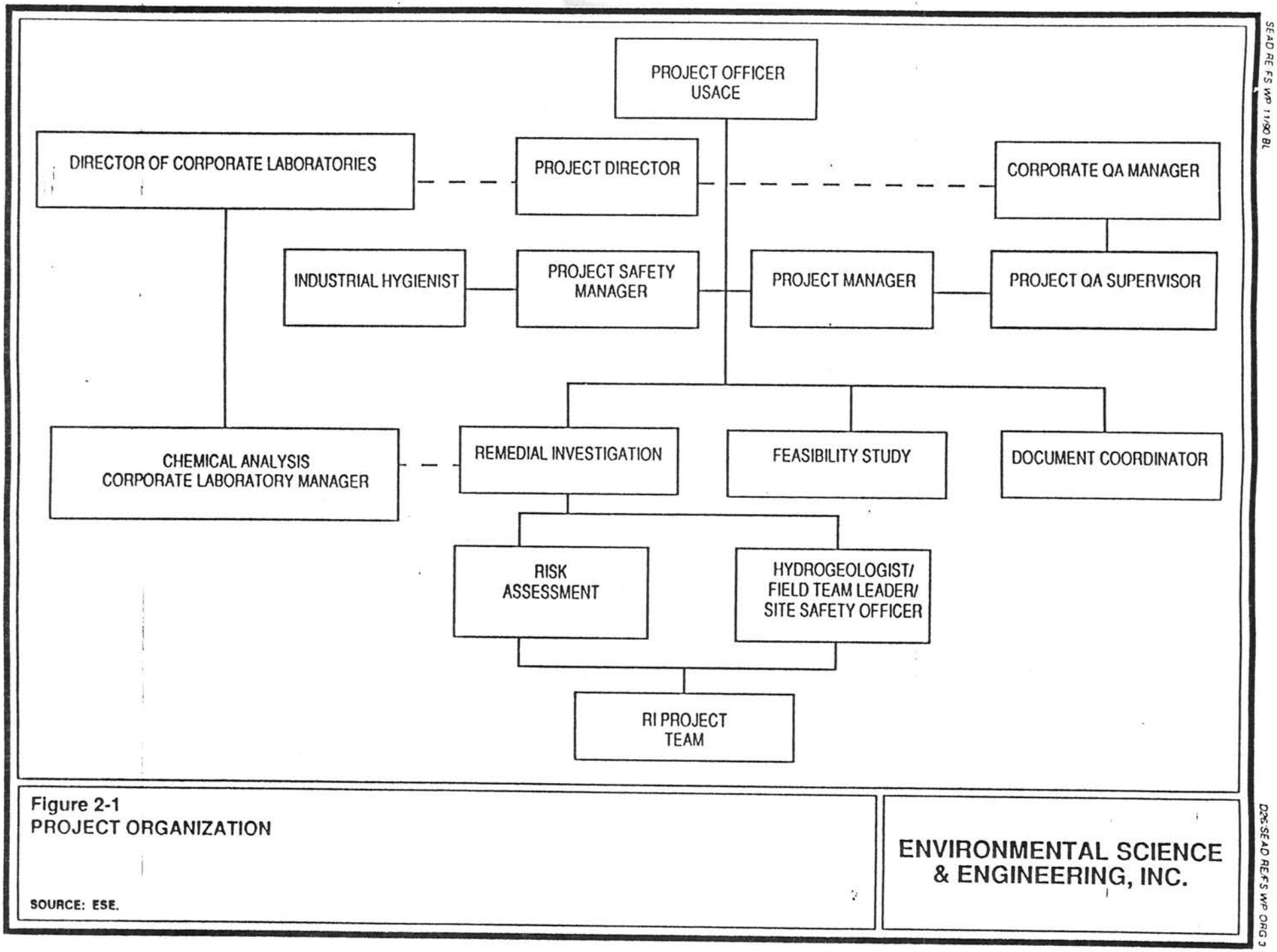

Figure 2-1
PROJECT ORGANIZATION

SOURCE: ESE.

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

SEAD RE FS WP 11/90 BL

D:\SEAD RE\FS WP ORG 3

2. Adequate and appropriate safety training and equipment are available for project personnel, and
3. Project personnel are medically monitored and qualified for their involvement in the project.

2.2.2 PROJECT SAFETY MANAGER

The project safety manager is responsible to the project manager for overall project safety. The responsibilities of the project safety manager include:

1. Reviewing the project SHERP, making necessary changes, and giving final approval only when the SHERP is satisfactory;
2. Categorizing and identifying the hazards and associated risks for the conditions and activities to be encountered onsite; and
3. Reviewing reports of incidents related to project activities.

2.2.3 SITE SAFETY OFFICER

The site safety officer is responsible to the project manager for the health and safety of personnel during site activities. Responsibilities of the site safety officer include:

1. Implementing all safety procedures and operations onsite;
2. Updating equipment or procedures based upon new information gathered during the site inspection;
3. Upgrading or downgrading the levels of personal protection based upon site observations;
4. Determining and posting locations and routes to medical facilities (including poison control centers) and arranging emergency transportation to medical facilities (as required);

5. Notifying (as required) local public emergency officers (i.e., police and fire departments) of the nature of the team's operations and making emergency telephone numbers available to all team members;
6. Ensuring that at least one member of the field team is available to stay behind and notify emergency services if the site safety manager must enter an area of maximum hazard, or entering this area only after notifying emergency services (police department);
7. Observing work party members for symptoms of onsite exposure or stress; and
8. Arranging for the availability of onsite emergency medical care and first aid, as necessary.

The site safety officer has the ultimate responsibility to stop any operation that threatens the health or safety of the team or surrounding populace or causes significant adverse impact to the environment.

The site safety officer should have over 3 years' experience supervising personnel and functioning as site safety officer at hazardous waste sites. He/she must complete the site supervisor training required under 29 Code of Federal Regulations (CFR) 1910.120.

The site safety officer also must have over 3 years' experience using field monitoring equipment and will perform, or directly supervise the individuals performing, air monitoring.

2.2.4 FIELD TEAM LEADER

The field team leader is responsible to the project manager for all operational activities onsite, as well as for all safety and health practices by site personnel. The responsibilities of the field team leader include:

1. Ensuring and enforcing compliance with the SHERP,
2. Controlling site entry of unauthorized personnel or coordinating with local law enforcement agencies or state authorities to limit site access,
3. Coordinating site activities such that they may be performed in an efficient and safe manner consistent with the SHERP,
4. Enforcing the buddy system onsite, and
5. Ensuring the ready access and availability of all safety equipment.

2.2.5 FIELD TEAM MEMBERS

Contractor field employees and subcontractors are responsible to the field team leader and the site safety officer for all activities onsite. The responsibilities of field team members include:

1. Complying with all aspects of the SHERP, including strict adherence to the buddy system;
2. Obeying the orders of the field team leader and the site safety officer; and
3. Notifying the field team leader or site safety officer of hazardous or potentially hazardous incidents or working situations.

2.2.6 SITE VISITORS

Visitors and client and governmental agency representatives are required to comply with all provisions of the SHERP and may be responsible to the field team leader or site safety officer. The responsibilities of site visitors include:

1. Complying with all aspects of the SHERP, including strict adherence to the buddy system; and
2. Obeying the orders of the field team leader and the site safety officer.

2.2.7 CLIENT CONTACT--Kevin Healy [telephone (205) 895-5170]
The client contact is the individual serving as the primary liaison between the client and the project manager and field team leader. All contractor project personnel and subcontractors are directly or indirectly responsible to the client. However, the client contact must comply with all applicable portions of the SHERP when in areas covered by its provisions. In case of immediate, onsite difficulties, Randall Battaglia [telephone (607) 869-1450] should be contacted.

2.3 TRAINING

All contractor site personnel will have completed training required by 29 CFR 1910.120. Subcontractors will have had equivalent training. Attachment B lists onsite personnel and their training dates.

The course will be designed to meet training requirements of 29 CFR 1910.120. The training course should consist of an initial 40-hour session and annual refresher courses of 8 hours. The field team leader will have completed an additional 8 hours of waste site management training. The following topics should be covered in the training courses:

Hazardous Waste/Materials Site Investigations Training Course
- Safety plans
- Fundamentals of industrial hygiene
- Properties of hazardous materials/compatibility testing, shipping, and handling of samples/chain of custody
- Levels of personal protection
- Air characterization (includes hands-on session)
- Hotline systems
- Decontamination operation
- Emergency response
- Air-purifying respirators and fit-testing air-supplying respirators
- Field exercise, air-purifying respirators, and self-contained breathing apparatus (SCBA), levels A, B, and C
- Field exercises (site zones and sampling operations)
- Confined space entry
- Review of regulations
- Engineering controls

Annual Refresher
- Regulations review
- Properties of hazardous materials
- Safety plans
- Levels of protection
- Review of instruments
- Transportation
- Respiratory protection
- Site control/decontamination
- Emergency preparedness/prevention
- Review and quiz

Supervisor Training Course
- Site safety requirements and responsibility
- Medical monitoring program
- Respiratory protection program
- Air monitoring
- Regulations--OSHA/Resource Conservation and Recovery Act (RCRA)/Superfund Amendments and Reauthorization Act (SARA), and Hazard communication
- Shipping and handling
- Costs of hazardous site work
- Problems encountered during site work

Site-specific training will be given by the field team leader or site safety officer to inform field team members of site-specific hazards and hazardous activities. Training will be provided prior to site entry, each morning before work begins, and after all project field activity has been completed. A record will be prepared by the site safety officer detailing each training session, including topics discussed, individuals present, date, and time of the training.

Prior to site entry, subcontractors and visitors must verify to the satisfaction of the site safety officer that they have met the formal training requirements for work on a hazardous waste site in accordance with 29 CFR 1910.120.

2.4 MEDICAL SURVEILLANCE

All contractor site personnel will be subject to a medical surveillance program for hazardous waste site workers. This program should be designed in accordance with the recommendations found in the National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Operations, and meets the requirements of 29 CFR 1910.120. Attachment B lists onsite personnel and their medical surveillance dates. Medical records for onsite personnel will be reviewed by a board-certified occupational physician as required under this contract. Physician statements of findings will be kept in employees' personnel files and will be available for review. The following examinations will be covered in the Medical Examination and Monitoring Program.

1. Basic physical exam
2. Heart status and functions [electrocardiogram (EKG)]
3. Chest X-ray (Roentgenogram posterior-anterior)

4. Pulmonary function--forced vital capacity, forced expiratory volume at 1 second and reserve volume
5. Blood--full SMAC Series
   a. Hemoglobin--cell counts, protein levels
   b. Acetylcholinesterase activity
   c. Heavy metals
   d. PCB in serum
6. Liver function--full enzyme profile
7. Renal function--blood, urea, nitrogen (BUN), creatinine, creatine/Creatinine ratio, lipoprotein count and differential, uric acid
8. Urinalysis
9. Audiometry--audio spectrum response of ear
10. Eye--physical condition, visual acuity.

2.5 DOCUMENTATION

Personnel and environmental monitoring will be made part of the permanent project record. Monitoring records will be kept in accordance with 29 CFR 1910.20. Training and medical records for contractor personnel will be available for inspection as required. Subcontractors are required to have training and medical records available for inspection as required by contractor and client representatives.

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.

CALIBRATION

DIRECT READING INSTRUMENTS

INSTRUMENT 1

PRE-SAMPLING CALIBRATION

1. INSTRUMENT (TYPE, MFG, MODEL NO., SN): Thermo Environ. Inst. OVM Model 580B SN: 27196-228
2. LOCATION/T&BP: Seneca Army Depot Romulus, N.Y.
3. CALIBRATION SOURCE: 106 ppm Isobut.
4. RESULTS: 110 ppm
5. INITIALS: RJB
6. DATE/TIME: 10-6-94 / 0815

POST-SAMPLING CALIBRATION

35. CALIBRATION SOURCE: 106 ppm Isobut.
36. RESULTS: 112 ppm
37. LOCATION: Seneca Army Depot Romulus, N.Y.
38. INITIALS: RJB
39. DATE/TIME: 10-6-94 / 1803

INSTRUMENT 2

1. INSTRUMENT (TYPE, MFG, MODEL NO., SN):
2. LOCATION/T&BP:
3. CALIBRATION SOURCE:
4. RESULTS:
5. INITIALS:
6. DATE/TIME:

35. CALIBRATION SOURCE:
36. RESULTS:
37. LOCATION:
38. INITIALS:
39. DATE/TIME:

INSTRUMENT 3

1. INSTRUMENT (TYPE, MFG, MODEL NO., SN):
2. LOCATION/T&BP:
3. CALIBRATION SOURCE:
4. RESULTS:
5. INITIALS:
6. DATE/TIME:

35. CALIBRATION SOURCE:
36. RESULTS:
37. LOCATION:
38. INITIALS:
39. DATE/TIME:

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.

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).

4.0 FIELD STANDARD OPERATING PROCEDURES

4.1 GENERAL SAFE WORK PRACTICES

In addition to the specific requirements of this project safety plan, common sense should prevail at all times. The following general safety rules and practices will be in effect at the site.

1. The site will be suitably marked or barricaded as necessary to prevent unauthorized visitors but not hinder emergency services if needed.
2. All open holes and obstacles will be properly barricaded in accordance with local site needs. These needs will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench, or obstacle. If holes are required to be left open during nonworking hours, they will be adequately decked over or barricaded and sufficiently lighted.
3. Before any digging or boring operations are conducted, underground utility locations will be identified. The client contact will provide locations of underground utility lines and piping. All boring and other site work will be planned and performed with consideration for underground lines.
4. Smoking and ignition sources in the vicinity of potentially flammable or contaminated material are prohibited.
5. Drilling; boring; and movement and use of earth-moving equipment, cranes and drilling rigs; erection of towers; movement of vehicles and equipment; and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; lights; canopies;

buildings and other structures and construction; and natural features such as trees, boulders, waterbodies, and terrain.

6. When working in areas where flammable vapors may be present, particular care must be exercised with tools and equipment that may be sources of ignition. All tools and equipment so provided must be properly bonded and/or grounded.
7. Approved and appropriate safety equipment (as specified in this SHERP), such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required by the SHERP. In addition, eye protection must be worn when sampling soil or water that may be contaminated is handled.
8. Beards that interfere with respirator fit are not allowed within the site boundaries because all site personnel may be called upon to use respirator protection in some situations, and beards do not allow for proper respirator fit.
9. No smoking, eating, or drinking will be allowed in the contaminated areas.
10. Tools and hands must be kept away from the face.
11. Personnel must shower at the end of the shift or as soon as possible after leaving the site.
12. Each sample must be treated and handled as though it were extremely toxic.
13. Persons with long hair and/or loose-fitting clothing that could become entangled in power equipment are not permitted in the work area.
14. Horseplay is prohibited in the work area.
15. Work while under the influence of intoxicants, narcotics, or controlled substances is prohibited.

4.2 AIR MONITORING

An air monitoring program is fundamental to the safety of onsite and offsite personnel. TOV levels associated with onsite activities will be monitored with a photoionization detection (PID) instrument (HNU PI-101) equipped with an 11.7 electron volt (eV) lamp. This instrument will provide information for upgrading or downgrading personal protection. Calibration and maintenance of monitoring equipment will be in accordance with manufacturer recommendations. The absence or presence of TRCLE, 1,2-dichloroethane, vinyl chloride and chloroform will be demonstrated by a suitable laboratory method, such as gas chrometography, performed by trained personnel. Samples may be taken during the field effort or within two weeks prior to the field effort.

Contractor personnel will establish a daily background TOV prior to initiating onsite activities. Under most circumstances, this level can be determined by taking multiple readings at representative locations about the site before work has begun and averaging the results of sustained measurements. Daily TOV background levels may vary in accordance with local conditions, including any industrial, retail/wholesale, or natural features, but should not exceed 5 ppm. If, due to site conditions, it appears that perimeter readings will not yield a truly representative background level, the site safety officer or contractor corporate health and safety officer will be consulted for guidance.

Contractor personnel will monitor TOV at the frequencies given in Section 4.2.4 (Air Monitoring) of the work plan (WP). Decisions to upgrade personal protection will be based on sustained breathing zone TOV that exceeds background levels. Breathing zone refers to the area from the top of the

collect analytical samples through centrifugal pumps and/or drop pipes.

c. If bailers are used to evacuate wells, decontaminate the bailers as described in Section 4.6.2.

2. Drilling tools:

   a. Steam clean all drilling equipment prior to shipment to a site.

   b. Between borings, steam clean drilling tools using tap water to remove traces of soil, rock, or other contaminants. In addition, rinse downhole tools with DI water and air-dry.

   c. Steam clean well casings and screens prior to installation.

3. Well casings: Steam clean well casings prior to installation to ensure that oils, greases, and waxes have been removed. Place well casings on clean polyethylene sheeting to prevent contamination.

4. Field instrumentation: Clean instrumentation as per manufacturer's instructions. Rinse probes like those used in pH and conductivity meters after each use with DI water.

Tap water used for decontamination purposes will be obtained from SEAD. A sample of the water will be collected and analyzed for the TCL compounds prior to the field effort. The deionized water (used for cleaning procedures), the ultrapure water (used for equipment rinsate blanks), or the organic-free water (used to prepare trip blanks) will be analyzed and the results provided to Region II. The water will be analyzed for all parameters of concern monthly during field activities.

4.7 SAMPLING PROCEDURES

4.7.1 SOIL BORINGS

A series of soil borings will be drilled in the landfill area to evaluate the extent of soil contamination. The final locations for the borings will be determined following completion of the proposed geophysical

following completion of the proposed geophysical and soil gas surveys. The USACE project manager, EPA, and New York State Department of Environmental Conservation (NYSDEC) will be consulted for approval prior to the initiation of soil sampling operations.

This information, in conjunction with the proposed geophysical and soil-gas surveys, will be used by the field team leader to locate soil borings to determine maximum, average, and background concentrations of metals and VOCs at the site. Figure 4.7-1 illustrates the proposed soil borings as determined from the site investigation to date. One soil boring will be located directly downgradient of the diesel tank located on the eastern side of the incinerator building. These samples will be analyzed for TRPH. Additional soil borings will be selected based on the proposed geophysical and soil gas surveys.

Four samples will be obtained from each soil profile using a split-spoon sampler. In each boring, discrete samples will be taken from the surface (0 to 2 ft-bls), at an intermediate zone (3 to 4 ft-bls), from the top of the water table to 1 ft above the water table, and from the zone of weathered shale (2-ft interval above the competent shale unit) (see Table 4.7-1). Samples obtained from the soil borings will be transferred to a laboratory for analysis. Samples will be analyzed for TCL organic compounds (volatiles, semivolatiles, pesticides/PCBs) herbicides, and TAL metals.

A VOC grab sample from each sampling interval will be collected using a stainless steel spatula and containerized as previously described. The remaining material will be placed into a stainless-steel bowl and homogenized in a

shoulders to the top of the head. Specific criteria for upgrading personal protection based on TOV is presented in Table 4-1. Attachment E contains a sample logsheet for recording TOV measurements. If TOV levels exceed background, gas chromatograph analysis may be made of the air in the breathing zone. In the absence of documented evidence that TRCLE, 12DCLE, C2H3CL, and CHCL3 are not present in the breathing zone, work will be performed in Level B personal protective equipment. Further air-monitoring information is given in the Air Monitoring section of the WP.

A radioactive survey using a Geiger counter will be conducted during drilling and sampling operations. If any radioactive material is detected, the site will be evacuated and the RI/FS will be re-scoped to handle this issue.

4.3 WORK LIMITATIONS

Work will be limited to daylight hours and during normal weather conditions. If work is to be performed at times of reduced illumination, such as late evening hours, artificial flood lighting will be provided. Extremes in temperature and weather conditions (i.e., wind and lightning) will restrict working hours. All work onsite will be suspended when lightning occurs in the vicinity.

4.3.1 HEAT STRESS

During warm weather, especially when personnel are wearing protective clothing, drinking water will be made available. Noncarbonated, noncaffeinated, and nonalcoholic beverages are acceptable as a substitute to water. Drinks are to be located so that personnel are encouraged to drink small quantities frequently [i.e., 8 fluid ounces (oz) 3 to 4 times per hour].

Table 4-1. Organic Vapor Measurements and Corresponding Personal Protection Levels/Actions

Total Organic Vapor	Personal Protection Level or Action*
Background	D
In excess of background, with demonstrated absence of trichloroethene, 1,2-dichloroethane, vinyl chloride, and chloroform	C
In excess of background, without demonstrated absence of trichloroethene, 1,2-dichloroethane vinyl chloride, and chloroform	B
In excess of background + 50 ppm, without demonstrated absence of trichloroethene, 1,2-dichloroethane, vinyl chloride, and chloroform	Evacuate site and resample after 1 hour. If sampling after 1 hour results in a level in excess of 50 ppm above background, contact the project safety manager for specific instructions.

*See Section 3.3 for personal protective equipment level descriptions.

Source: ESE.

Drinks should be kept as close to the work area as practicable and should be kept reasonably cool (50 to 60°F).

For monitoring the body's recuperative ability toward excess heat, the following techniques will be used as a screening mechanism. Monitoring of personnel wearing protective clothing will commence when the ambient temperature is 70°F or above. When temperatures exceed 85°F, workers will be monitored after every work period. Monitoring will include visual observations for signs of heat stress and measurement of radial pulse rate for 30 seconds at the beginning of each rest period. If the heart rate exceeds 110 beats per minute, the oral body temperature will be measured. If the body temperature is more than 98.6°F but less than 100.5°F, the next work period will be shortened by 10 minutes, with no reduction in rest period. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle will be shortened another 10 minutes.

If the body temperature exceeds 100.5°F, the worker will be monitored again at the end of the rest period and will not be allowed to return to work until the body temperature falls below 100.5°F. If the body temperature is still in excess of 100.5°F ten minutes after the second monitoring during a single rest period, the worker will be treated for heat stress, and medical attention will be sought for the worker.

4.3.2 COLD STRESS

The human body senses cold as a result of two factors, air temperature and wind velocity. Cooling of the flesh increases rapidly as wind velocity goes up. Frostbite can occur at relatively mild temperatures if wind penetrates the body

insulation. For example, when the air temperature is 40°F and the wind velocity is 30 miles per hour (mph), the exposed skin would perceive an equivalent still air temperature of 13°F. Table 4-2 illustrates windchill indices and the associated hazards to exposed flesh. Precautions will be taken to minimize exposed flesh, and layered clothing will be provided, as appropriate.

If a worker shows signs of cold stress, such as excessive shivering, the worker's oral body temperature will be monitored. If the temperature is less than 96.8°F, the worker will be allowed to warm up in a heated rest area. If, at the end of the scheduled rest period, the worker's temperature is still below 96.8°F, the worker will not be allowed to return to work until the body temperature rises to above 96.8°F. If the body temperature is still below 96.8°F ten minutes after the second monitoring during a single rest period, the worker will be treated for cold stress, and medical attention will be sought for the worker.

Also, good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods. If skin problems occur, medical personnel should be consulted.

4.4 LABORATORY SAFETY

Certain samples collected from the site and shipped to a laboratory for analysis may present a potential for exposure of laboratory personnel to dangerous levels of hazardous materials. The laboratory has implemented an effective safety plan for handling these materials.

The system designed for laboratory personnel protection prevents skin contact with hazardous chemicals and respiratory protection from dangerous levels of

Table 4-2. Windchill Index

Windspeed Miles per Hour	Actual Thermometer Reading (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Over 40	LITTLE DANGER (little added effect)			INCREASING DANGER (for properly clothed person)				GREAT DANGER (danger from freezing of exposed flesh)		

Source: National Safety Council, 1982.

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.

5.0 EMERGENCY INFORMATION

5.1 CONTINGENCY PLANS

In the event of any site emergency, the site safety officer will notify the post environmental coordinator.

5.1.1 FIRE CONTROL

No smoking will be allowed during drilling or sampling activities. Fire extinguishers, suitable for Class A, B, and C fires (rated at least 1A, 10BC), will be available at sampling sites for use on small fires. All samples must be treated as flammable or explosive. The site safety officer will have available the telephone number of the nearest fire station and local law enforcement agencies in case of a major fire emergency.

5.1.2 SPILL CONTROL

In the event of a spill, the site safety officer will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary, until proper disposal can be completed. Subsequent to cleanup activities, the site safety officer will survey the area to ensure that no toxic or explosive vapors remain.

5.2 LOCAL RESOURCES

All emergency numbers and routes will be posted onsite.

Seneca Army Depot:	(607) 869-0448 (Police)	(607) 869-1436 (Ambulance)	(607) 869-1316 (Fire)
Hospitals:	Seneca Army Depot Clinic Romulus, New York		(607) 869-1243
	Geneva General Hospital 196-198 North Street Geneva, New York		(315) 798-4222

5.3 SITE RESOURCES

Support vehicle

Safety and first-aid equipment accessible in the support vehicle:

1. One fire extinguisher, rated at least 1A, 10BC;
2. One Standard Industrial First Aid Kit, fully stocked; and
3. One Portable Emergency Eyewash Shower Unit, providing 0.4 gallon (gal) clean water per minute for 15 minutes.

5.4 EMERGENCY CONTACTS

1. Mr. Randy Battaglia, environmental contact, Seneca Army Depot, (607) 869-1450.
2. Project manager.
3. Corporate health and safety officer.
4. Project safety manager.

5.5 HOSPITAL ROUTES

Seneca Army Depot Clinic

Located onpost near the south (main) gate (Figure 5-1).

Geneva General Hospital (Figure 5-2)

Exit the north gate from the depot onto State Road 96A. North on State Road 96A to Geneva.. In Geneva turn right on State Roads 5 and 20 to North Street. Turn left on North Street to hospital.

SEAD RI/FS WP 10-90LB

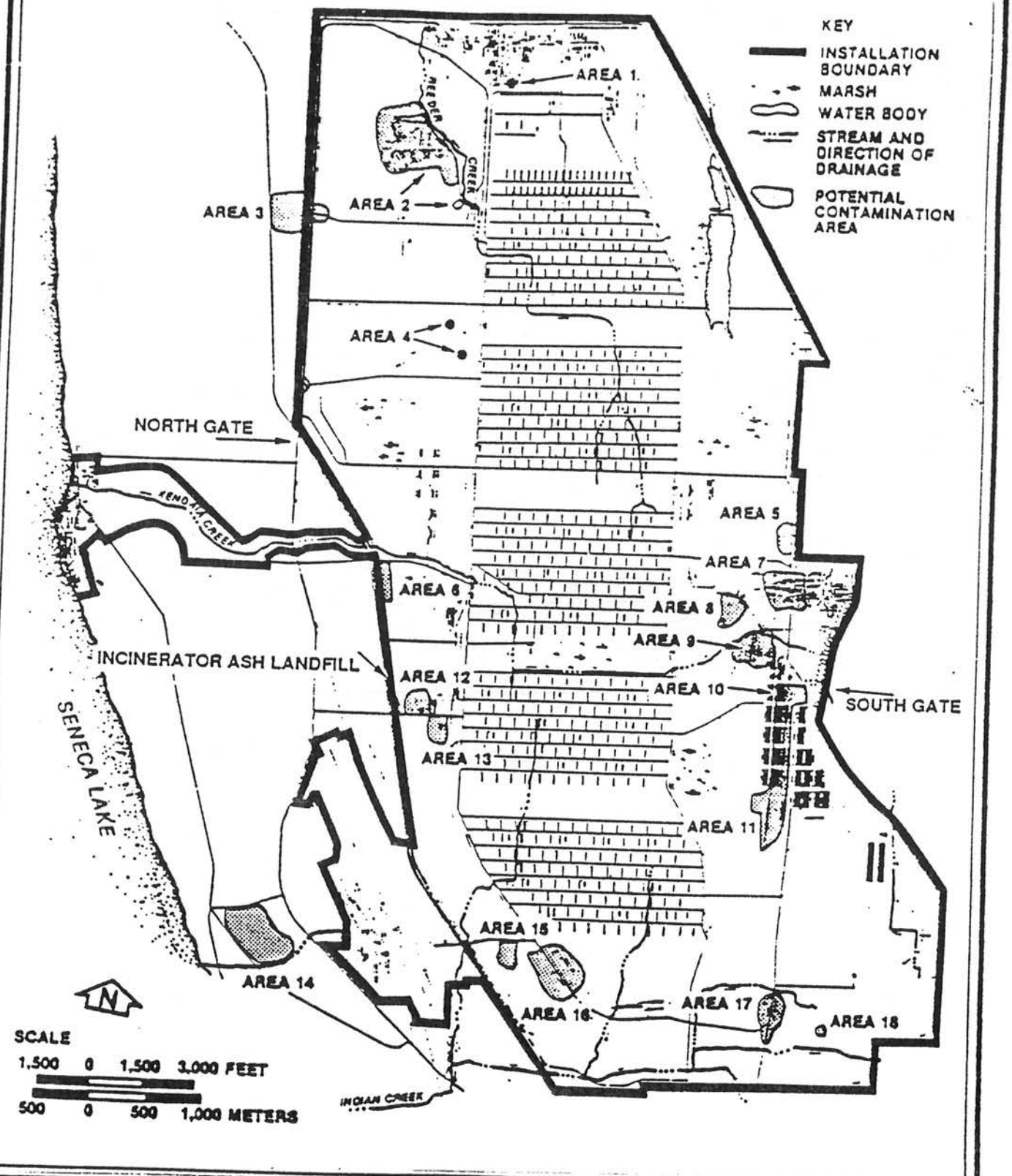

Figure 5-1
SITE MAP

SOURCE: ESE.

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SEAD RIFS WP 1090LB

Figure 5-2
HOSPITAL ROUTE TO
GENEVA GENERAL HOSPITAL

SOURCE: ESE.

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HUNTSVILLE, ALABAMA

ATTACHMENT A--DECLARATION OF UNDERSTANDING

PROJECT SPECIFIC HEALTH AND SAFETY PLAN

PROJECT NAME: _____

PROJECT NUMBER: _____

PROJECT MANAGER: _____

CORPORATE SAFETY OFFICER: _____

Check if Designee ☐

DECLARATION OF UNDERSTANDING

I have read and understand this Health and Safety Plan (HASP), and agree to abide by the procedures and limitations specified. I also certify that all medical monitoring and health and safety training requirements which may be applicable to my employment at this site are current and will not expire during onsite activities.

NAME	EMPLOYEE NO.	SS NO.	DATE

NOTE: All subcontractors must abide by the specifications and limitations contained in this HASP.

D12/PPG 10/90S

ATTACHMENT B--PERSONNEL TRAINING AND MEDICAL SURVEILLANCE

PERSONNEL TRAINING AND MEDICAL SURVEILLANCE

Project: _____ Site: _____

The following personnel are expected to perform activities at this site. Training and medical surveillance, in accordance with 29 CFR 1910.120 and ESE standard practices, has been provided on the dates indicated.

NAME	HAZARDOUS WASTE SITE	SITE SUPVSR	FIRST AID	CPR	MEDICAL EXAM

ATTACHMENT C--DIAGRAM OF SITE WORK ZONES

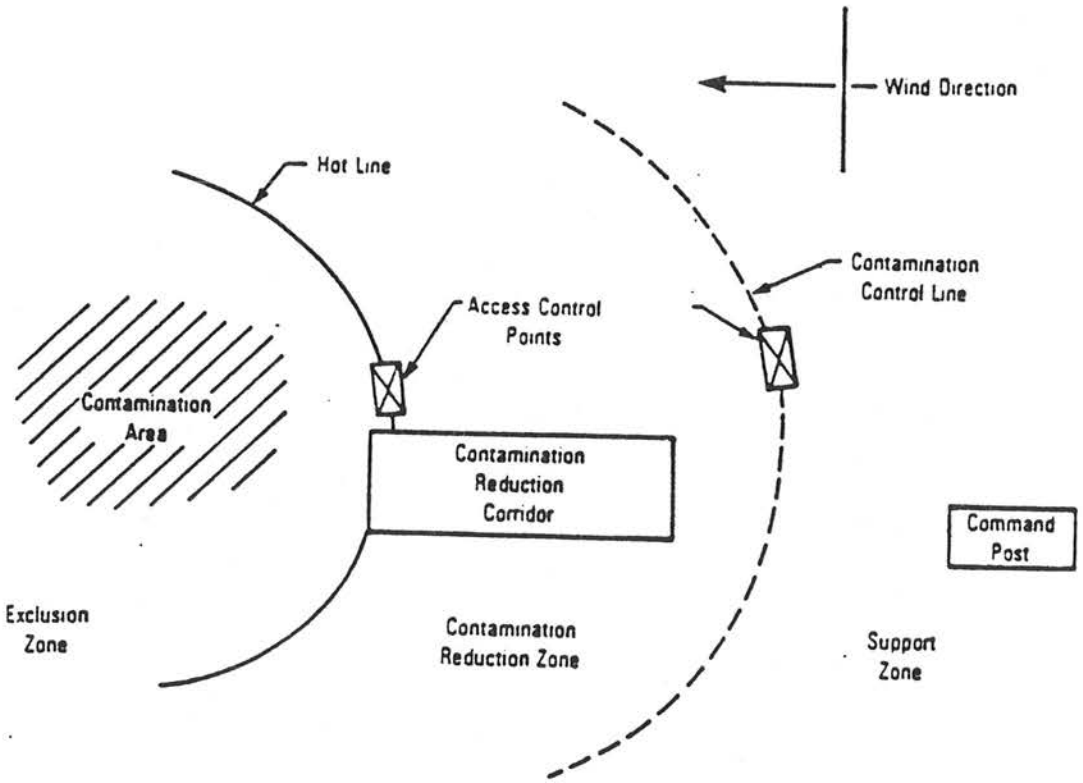

Figure C-1
DIAGRAM OF SITE WORK ZONES

SOURCES: NUS, 1983; ESE, 1990

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ATTACHMENT D--DECONTAMINATION PROCEDURES

Level B Decontamination

Equipment Worn

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

1. One-piece, hooded, chemical-resistant splash suit
2. Self-contained breathing apparatus
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 onsite (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 decontamination solution or detergent/water solution.

Equipment necessary is:

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

Station 3: Boot Cover and Glove Rinse

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

Equipment necessary is:

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

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

SOURCES: NUS, 1983; ESE, 1990.

U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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 gallons)
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 gallons)
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 gallons)
2. Plastic liners

Station 7: Suit/Safety Boot Wash

Thoroughly wash chemical-resistant splash suit, self-contained breathing apparatus, gloves, and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decontamination solution or detergent/water solution. Wrap self-contained breathing apparatus regulator (if belt-mounted type) with plastic to keep out water. Wash backpack assembly with sponges or cloths.

Equipment necessary is:

1. Container (30 to 50 gallons)
2. Decontamination solution
   or
3. Detergent/water solution
4. Two or three long-handle, soft-bristle scrub brushes
5. Small buckets
6. Sponges or cloths

Figure D-1
LEVEL B DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 2 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

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HUNTSVILLE, ALABAMA

Station 8: Suit/Self-Contained Breathing Apparatus/Boot/Glove Rinse

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

Equipment necessary is:

1. Container (30 to 50 gallons)
   or
2. High-pressure spray unit
3. Water
4. Small buckets
5. Two or three long-handle, soft-bristle scrub brushes
6. Sponges or cloths

Station 9: Tank Change

If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged; new outer glove and boot covers donned, and joints taped. Worker then returns to duty.

Equipment necessary is:

1. Air tanks
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 gallons)
2. Plastic liners
3. Bench or stool
4. Boot jack

Station 11: Self-Contained Breathing Apparatus Removal

While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.

Equipment necessary is:

1. Table

Figure D-1
LEVEL B DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 3 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

U.S. ARMY CORPS
OF ENGINEERS
HUNTSVILLE, ALABAMA

Station 12: Splash Suit Removal

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

Equipment necessary is:

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

Station 13: Inner Glove Wash

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

Equipment necessary is:

1. Decontamination solution
   or
2. Detergent/water solution
3. Basin or bucket
4. Small table

Station 14: Inner Glove Rinse

Rinse with water. Repeat as many times as necessary.

Equipment necessary is:

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

Station 15: Facepiece Removal

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

Equipment necessary is:

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

Station 16: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment necessary is:

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

Figure D-1
LEVEL B DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 4 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

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Station 17: Inner Clothing Removal

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

Equipment necessary is:

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

Station 18: 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. Small table
4. Basin or bucket
5. Field showers

Station 19: Redress

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

Equipment necessary is:

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

Figure D-1
LEVEL B DECONTAMINATION PROCEDURES
(CONTINUED, PAGE 5 OF 5)

SOURCES: NUS, 1983; ESE, 1990.

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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.

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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.

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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, 1983; ESE, 1990.

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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.

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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, 1983; ESE, 1990.

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4.5 LABORATORY CLEANING PROCEDURES

The contractor will use commercially cleaned sample containers (i.e., from I-Chem). Any containers prepared in-house will conform with the cleaning procedures specified in Table 4.5-1. Sample-kit containers are stored in clean, dust-free areas segregated from the analytical laboratory and solvent/reagent storage areas. Occasional audits of containers to document freedom from contaminants will be performed to supplement the various blanks that are frequently and routinely analyzed to provide similar QC data.

Demonstrated analyte-free water will be used for trip blanks, equipment rinse blanks, and decontamination procedures. EPA must be supplied with the test results for TCL/TAL analyzed for the detection levels of interest. The water will then be analyzed monthly during field activities.

4.6 LABORATORY/FIELD DECONTAMINATION OF SAMPLING EQUIPMENT

4.6.1 GENERAL CONSIDERATIONS

Sampling equipment to be used by field sampling teams may be decontaminated prior to mobilization to the sampling site or in the field. When possible, field equipment should be decontaminated prior to mobilization. In either case, the decontamination procedures listed in this section will be used. Sampling equipment that cannot be efficiently decontaminated with these procedures, due to heavy organic contamination, will be discarded.

Table 4.5-1. Sample Container Cleaning Procedures Within the Laboratory

Analysis/Parameter	Container Type	Matrix	Fraction Code	Cleaning Protocol*
Volatile organics analyses	Glass septum vial with Teflon®-lined septum	Water	VP	B
	Wide-mouth glass jar with Teflon®-lined cap	Soil/ Sediment	SV	B
Metals	Linear polyethylene cubitainer with polyethylene cap	Water	N	C
Acid, Base-Neutral Extractables	Glass jar with Teflon®-lined cap	Water	MS	A
	Glass jar with Teflon®-lined cap	Soil/ Sediment	SS	A

Note: Glass = amber for all organic analyses.

*Cleaning Protocol A	B	C	Specifications
X	X	X	Wash with hot tap water using laboratory-grade, nonphosphate detergent.
X	X	X	Rinse 3 times with tap water.
X		X	Rinse with 1:1 nitric acid (reagent-grade nitric acid diluted with the American Society for Testing and Materials (ASTM) Type 1 deionized water).
X	X	X	Rinse 3 times with ASTM Type 1 deionized water.
X			Rinse with pesticide-grade hexane using 20 mL per 64-ounce (oz) bottle, 10 mL per 32- or 16-oz bottle, or 5 mL per 8- or 4-oz bottle. Hexane is used as organics rinse.
X	X		Oven dry, using a forced-air oven, at 105° to 125°C for 1 hour.
		X	Invert and air dry in contaminant-free environment. No cleaning required; use new cubitainers (only).

Source: ESE.

A major concern in decontamination of sampling equipment has been the choice of solvent. The standard decontamination solvent will be pesticide-grade isopropanol. Disposal of solvent rinses must be performed in an approved manner (evaporated onsite or containerized for disposal through a disposal contract, depending on the volume). The following sampling equipment decontamination procedures are for sampling equipment that contacts sample matrices.

4.6.2 DECONTAMINATION PROCEDURES

The required decontamination procedures for all sampling equipment are:

1. Clean with Liquinox® and tap water (a higher grade of water always may be substituted for tap water) using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with tap water.
3. Rinse thoroughly with 10-percent nitric acid (HNO_3) ultrapure. For carbon-steel split spoons, this rinse is to be reduced to 1 percent HNO_3. If metals samples are not being collected, the 10 percent HNO_3 rinse may be omitted.
4. Rinse thoroughly with tap water.
5. Rinse with acetone only, or a methanol rinse followed by a hexane rinse (solvents must be pesticide grade or better).
6. Rinse thoroughly with DI water.
7. Allow to air-dry.
8. For overnight storage or transport, wrap in new aluminum foil to prevent contamination.

4.6.3 DECONTAMINATION OF PERIPHERAL EQUIPMENT

1. Groundwater purging and monitoring equipment:
   a. Rinse elevation tapes and slugs (slug testing) with tap water, followed by DI water. Place in a polyethylene bag to prevent contamination during storage or transit.
   b. Clean submersible pumps used for purging the deep wells prior to use and between wells by pumping copious amounts of tap water through the pumps and associated hoses, followed by rinsing with DI water. Clean the exterior of the submersible pumps and hoses that contact formation water by washing with Liquinox® solution, followed by tap water rinse, and a final DI water rinse. Dedicate all tubing to individual wells; i.e., do not reuse tubing. To prevent degradation of or damage to submersible pump seals, impellers, and electric motors, do not rinse with solvents and/or acids. Typically, do not collect analytical samples through submersible pumps. Clean the exterior of drop pipes and tubing used to purge the shallow wells prior to use and between wells by washing with Liquinox® solution, rinsing with tap water or potable water, followed by rinsing with analyte-free water, followed with a final rinse of analyte-free water. Rinse the interior of drop pipes and tubing with copious amounts of tap water. Dedicate all tubing to individual wells; i.e., do not reuse tubing. Typically, do not