DRAFT

Phase II Work Plan

Smithtown Landfill, I.D. No. 152042-3

Town of Smithtown, Suffolk County

April, 1990

General:

Based on this work plan, a costing sheet is to be developed and attached by our consultant. The work plan and associated costs will be made part of this cost plus fixed fee contract with a limiting upset figure. Unless otherwise stated in this work plan, the work shall conform to the concepts of the Generic Work Plan -- State Superfund Program -- Phase II Investigations (Schedule 4, Exhibit 1) and Schedule 4, Exhibit 3, both of the contract document. As these latter documents are crucial to the proper field implementation of New York State Department of Environmental Conservation (NYSDEC) protocols, a copy of this work plan attached to Exhibits 1 and 3 of the contract must be taken to the field by the consultant's representative during the Phase II field activities. The representative must display, through his actions, thorough familiarity with the provisions of the work plan and exhibits. Failure by the consultant's representative to present these documents upon NYSDEC request or demonstration of inadequate knowledge of their contents are both sufficient ground for NYSDEC to halt the Phase II field operations.

Introduction:

The site is located in the Hamlet of Kings Park, in the Town of Smithtown, Suffolk County (Figure 1). It is situated on the northside of Old Northport Road. It was leased from Izzo Brothers and operated as a municipal landfill by the Town of Smithtown from 1970 to 1979.

Landfilling was ceased in 1979 when landfilling began at Smithtown Municipal Services Facility (MSF) Landfill which is located approximately 3/4 of a mile west of Smithtown Landfill (Figure 1). Household and scavenger wastes of all types were delivered to the site during its operation. The Suffolk County Department of Health Services (SCDHS) suspects that unknown industrial wastes were deposited there. This was reaffirmed by NUS Corporation, a USEPA contractor. Their 1983 preliminary investigation reported that through the alleged acceptance of unknown waste materials in the past, it is possible that hazardous materials do exist in the landfill. However, there is no evidence of this. The landfill does not have a liner or a leachate collection system.

The New York State Department of Environmental Conservation initiated a legal case against the Town of Smithtown in September 1980 for the following violations: Odor control, final cover application, leachate ponding, methane gas, groundwater monitoring and ground cover crop. In October 1982, data collected by SCDHS indicated that methane was migrating onto the Indian Head elementary school property to the north of the site. In 1983, a methane collection system, converting methane to electricity was installed. At DEC's site visit on 3/29/90, it was noted that the system was no longer operating.

In July 1980, SCDHS collected samples from private drinking water wells around the site. The results show moderate levels of volatile organics (including trichloroethane and tetrachloroethylene). The chloride, nitrate and aesthetic standards were also exceeded in some wells.

The Smithtown Landfill site is 29.09 acres. It is located approximately 3 miles from the Long Island Sound at about 150 ft. above mean sea level. The regional and facility slope are both in the range of 1 to 2 percent. Drainage across this area is generally northeasterly and toward the Nissequogue River which is approximately 2.5 miles from the site. There is a fresh water wetland of unknown acreage within 3 miles of the site. Soil types at the landfill are classified as Carver and Plymouth sands with a permeability of greater than 4.45×10^{-3} cm/sec. The depth to the top of the fill material is unknown but it is between 5 to 7 feet above groundwater at the base of the fill. The fill material reaches to the site boundary on the western side of the site. On the northern side it is about 150 ft. away, and it is approximately 100 ft. from the boundary on the other sides. The Upper Glacial Deposits, which is the top layer of the land mass, consists of glacial sands, gravels and clays. The groundwater in this layer is an important water supply source for the Smithtown area. Groundwater at the site is found at approximately 100 ft. below the ground surface but can vary significantly. It appears to move in a north-northeast direction.

Beneath the glacial deposit is the Magothy formation, the most important water supply source in the Smithtown area. Its lower boundary generally corresponds to the upper surface of the Raritan formation which consists of a lower Lloyd sand member and an upper Clay member. The Raritan formation lies directly on top of the bedrock basement. Groundwater recharge takes place at the Smithtown landfill site, but the deeper Magothy formation is not directly affected by the recharge.

Aquifers underlying Long Island are the sole source of water for public supply, industry and irrigation. The Magothy and Upper Glacial aquifers act as a single hydrogeologic unit.

Objectives:

The objective of this Phase II investigation is to collect essential field information required to adequately document the disposal of hazardous waste (as defined by 6NYCRR Part 371) by direct and indirect evidence and determine whether a significant threat to human health or environment exists, to prepare final Hazard Ranking System (HRS) scores and make recommendations for future actions at the site. Specifically, this will be accomplished by a thorough geophysical investigation, drilling of test borings, installation of groundwater monitoring wells and sampling and analysis of groundwater, surface water, soil, wastes and sediments (where any or all of these media are applicable).

For the purpose of report preparation, the consultant is to compile all data available from the NY State Department of Environmental Conservation and various other agencies, including the Phase I report data, which contains a record search of the data sources of various other agencies.

Site Reconnaissance:

A site investigation was conducted by NYSDEC personnel on March 29, 1990. The purpose of the site inspection was to locate the proposed wells and sampling locations. Based on the inspection, a site sketch was prepared showing the proposed boring, wells and sampling locations (Figure 2). Careful examination of the site was made to identify possible access problems for the drilling, sampling activities, preliminary siting of groundwater monitoring wells, and tentative locations for surface water, soil, leachate or waste samples. No access problem for a drilling rig is anticipated. Exact location of all buried power lines, underground gaslines, water mains, sewer lines and storm water pipes, if any, must be obtained by the consultant from the appropriate utility and/or municipal department prior to the arrival of the drill rig and commencement of drilling.

Field Investigation:

The project has been subdivided into specific tasks. Table 1 briefly summarizes each task. Field efforts required to complete this investigation are described as follows:

1. Geophysical Survey:

   The use of geophysical surveys has been established in the Bureau of Hazardous Site Control's Generic Phase II Workplan. The broad considerations are:

   a. location of buried materials
   b. determination of the presence of contaminant plumes
   c. characterization of subsurface conditions.

The consultant should prepare to conduct electromagnetic and resistivity surveys of the site. The purpose of these surveys will be to characterize the fill materials and aid in evaluating the best sampling locations.

Generally, the goals of a geophysical survey are:

- to determine existence of contaminant plumes
- to optimize location and number of monitoring wells
- to reduce risks associated with drilling into unknown terrain and waste
- to reduce overall project time and cost, and to improve accuracy of and confidence in the project
- to determine the thickness of and depth to layers of soil and rock
- to determine the depth to water table
- to determine the existence of buried waste and its vertical and horizontal boundaries
- to determine of lateral and vertical anomalies
- to determine direction of groundwater flow

All geophysical data must be reduced by the consultant, analyzed and made available to the Bureau for review prior to the installation of monitoring wells. The findings of the geophysical survey must be used to determine the best location of the wells and to select other environmental sampling locations.

2. Soil Gas Survey: A soil gas survey will be performed by the Consultant. The purpose of the survey is to help determine the best locations for the monitoring wells and other sampling points. All data collected from the soil gas survey must be reduced and presented to the Department prior to the start up of drilling operations. The data will be used to reposition, if necessary, the proposed monitoring well locations to obtain the most information. We estimate that up to 100 soil gas sampling points may be necessary. See Figure 3.

3. Test Boring and Well Installation:

   Monitoring wells will be installed to provide data pertinent to both water chemistry and characterization of the stratigraphy and groundwater regime at the site. It is anticipated that ~~four inch~~ four 4-inc diameter monitoring wells will be installed at the approximate locations shown in Figure 2. (?

   Based on what is presently known, it appears that the test borings and wells will be completed in overburden. It is anticipated that a 6-1/4" I.D. hollow stem auger will be used in the unconsolidated material.

   A PID (Photoionization detector, e.g. an HNu), an explosimeter to measure lower explosive level and oxygen level, and a dosimeter must be used during all boring activity.

   Bolt-on centralizers, one per well, with stainless steel bolts must be used at the base of each screen. This should aid in obtaining plumb alignment for the wells and assure that the sand pack is of uniform radial thickness.

Installation of the bentonite seal above the groundwater table during monitoring well construction shall be done in accordance with the following. After installation of the filter pack, a slurry of bentonite powder and water mixed to the consistency of pudding (approximately 5 lbs. bentonite powder per 4 gallons of water) shall be pumped into the working space of the well with side discharge tremie pipe. The working space of the well is defined as the space between the outside diameter of the riser pipe and the inside diameter of the casing or augers. A quantity of slurry sufficient to fill the annular space of the boring to one foot above the filter pack is needed. Bentonite pellets should then be added to complete the seal to two feet above the filter pack with continuous measurements of the level. The bentonite pellets must be hydrated before adding grout. The amount of water added to hydrate the pellets and time allowed for hydration shall be determined from the manufacturer's recommendations or a slow flowing stream of water should be introduced for one hour. In any event the water should be added continuously during the period of hydration. When the pellets have been given sufficient time to hydrate, a measurement of the thickness of bentonite seal should be taken. Then the grout may be pumped into the working space of the well using a side discharge tremie pipe. Periodic measurement of the grout level should be made during the addition of bentonite grout for every 10 feet rise in the grout level. Well construction should adhere to the NYSDEC protocols enumerated in Exhibit 3 of the consultant contract and also in the Phase II investigation Generic Work Plan. These protocols govern not only well installation and development, but also the proper procedures in regard to decontamination of drilling equipment, split spoon samples, and all downhole materials. The consultant will provide an experienced geologist, engineer or adequately experienced technical staff to be on-site at all times to ensure that these procedures are carried out. The well logs shall be completed by the consultant and submitted with the report. After the development of the well and during sampling, the turbidity of the water from the well shall not exceed 50 NTU's for entire water column in the well.

Each well will be developed as soon as its recovery is complete, but no sooner than 24 hours after construction is finished. The development method used should be powerful enough in pumping rate and pressure to dislodge and remove all fine particles from the sandpack to achieve the desired low turbidity water. After the development of the well and during sampling, the turbidity of the water from the well shall not exceed 50 NTU's (Nephelometric Turbidity Units) for the entire water column in the well. If the above criteria is not met within two hours, well development must cease and the NYSDEC representative contacted to determine how to proceed. For costing purposes, allow four hours of development per well.

The consultant shall provide cost for additional work associated with performing a downhole geophysical analysis of one down gradient monitoring well location.

The goal is to screen the wells in an area of contamination (e.g. a plume) as evidenced by the downhole geophysical data. The consultant shall provide a contingency cost for additional work associated with performing this survey which will include the following. The drill rig will be set up a minimum of 5 ft. and a maximum of 10 ft. from one of the proposed downgradient monitoring well locations. A borehole will then be advanced to a maximum of 75 feet or a confining layer which ever comes first, with split spoon samples taken at 5 ft. intervals unless otherwise specified by the NYSDEC on-site representative. Two-inch threaded flush joint PVC will then be installed to the full depth of the hole, and the annular space will be pressure-grouted to the surface as the augers are removed. NYSDEC personnel will then log the hole through the PVC casing (approximately 1/2 hour). A steel protective casing with locking cap shall then be placed at the surface to secure the borehole for possible future use. Split spoon samples at the adjacent well site will not be necessary, and split spoon sampling intervals for the remaining well sites will be determined from the lithologies encountered in this trial hole. Well depth estimates given in Tabel 2 are in accordance with the maximum footage applied to the trial hole for downhole geophysics and thus may be overestimations. Should the downhole geophysical survey reveal nothing, the wells are to be screened so as to sample the upper 10 ft. of groundwater.

It will be the responsibility of the consultant to arrange for the appropriate drilling equipment to be present at the site. Standby time to arrange for additional equipment or a water supply will not be allowed unless caused by unexpected site conditions.

Prior to initiating drilling activities, the drilling rig, augers, split spoons, pertinent equipment, well pipe and screens will be steam cleaned. This cleaning procedure will also be used between each boring. These activities will be performed in a designated on-site decontamination area.

Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will not be permitted. Clean support structures, such as wooden pallets or sawhorses, will be used for the staging of equipment. The drill rig and all equipment will be steam cleaned upon completion of the investigation and prior to leaving the site.

If the borings are not completed as wells the same day they are drilled, a mechanism to safeguard their integrity must be devised. The consultant will provide NYSDEC with their plan for this contingency.

During the drilling, a photoionization detector (PID), e.g. HNu or Flame ionization detector, e.g. OVA will be used to monitor the gases exiting the borehole. Cuttings will be contained if PID meter readings are greater than 5 ppm or the cuttings show visible evidence of contamination. The drilling operation must also be concurrently monitored with an explosimeter/oxygen meter. Soil samples will be collected using a two-inch outside diameter split-spoon sampler advanced in accordance with the standard penetration test procedure (ASTM D-1585). The samples will be cleaned prior to each use by one of the following procedures:

- initially cleaned of all foreign matter
- sanitized with a steam cleaner

OR

- initially cleaned of all foreign matters
- washed with a detergent and water mixture
- rinsed with potable water
- rinsed with methanol
- rinsed with hexane
- rinsed with distilled water
- allowed to air dry

A photoionization detector will be used to monitor the gases from each sample as the split spoon sampler is opened. Samples for chemical analysis will be secured should the PID read 5 ppm or greater for any sample. All samples will be placed in precleaned, teflon-lined screw cap glass jars. Samples will be delivered, under chain of custody control, to the designated NYSDEC technically acceptable laboratory.

The split spoon soil samples will normally be taken at five foot intervals. The sampling device will be decontaminated by the above described procedure prior to each sample. Additional samples will be collected where major changes in lithology occur or as deemed necessary by the supervising geologist or engineer. Additional samples can also be requested by the NYSDEC onsite representative at a pre-agreed upon cost per sample basis. A grainsize analysis for non-cohesive materials and an Atterberg limits analysis for cohesive materials will be conducted for each separte soil unit in each well and within the screen interval. If a mixture of cohesive and non-cohesive materials is encountered, only a grain size analysis will be performed. Hydrometer analysis will also be performed on soils if twenty (20) percent or more of the sample passes the No. 200 sieve size. For costing purposes, two grain size analyses should be assumed per boring, depending upon the lithlogy encountered.

All drilling oprations shall be documented by the consultant's on-site representative in accordance with Schedule 4, Exhibit 3, Section II, C9.

Well development will be performed using air surge, a pump, or bottom discharge bailer at each well no sooner than twenty-four (24) hours after the well grouting has been completed or after its recovery is completed (whichever is later). Care must be taken that the device used does not cause cross-contamination of the wells. Where air is used, the compressor must have a recently installed and effective high efficiency carbon filter. Other methods of development will be allowed only if included in the consultant's QA/QC manual and approved by the DEC.

Prior to water and sediment evacuation, static water level and well bottom measurements will be recorded at each well using an electric level sounder or fiberglass/chalked steel tape. These tools will be cleaned prior to and after each use with a steam cleaner or wash procedure as outlined for the split spoons. The well water/sediment volume will also be calculated. Well evacuation will be supplemented by:

- Temperature, pH, and specific conductance measurements
- Evacuation volume measurements
- Measure of water clarity (goal of 50 NTU's) and visual observation of color
- Visual identification of the physical characteristics of removed sediments

The development process will continue until a stabilization of pH, specific conductance, temperature, and clarity of the discharge is achieved. Water levels will be recorded at the completion of development. If a Department representative is not present when the measurements are taken, a signed statement will be provided to the Department that the turbidity was equal to or less than 50 Nephelometric Turbidity Units (NTU) for each well immediately after development.

Permeability testing of the newly installed monitoring wells will be conducted following development. Initial static water level measurements will be made in each well followed by the introduction of a weighted slug of specific volume. An instantaneous head displacement associated with the slug volume will be created and the subsequent decline in water level will be measured with an electronic water level sounder. Once head conditions reach a

static state, the slug will be removed and a negative head condition will result relative to the initial state water level. The subsequent rise in water level will be measured with an electronic water level sounder. Data analysis will involve the determination of the coefficient of permeability.

The testing will provide data to be used in the final HRS scoring. This data will be useful in estimating the rate of groundwater flow in the vicinity of the monitoring wells and in evaluating potential migration pathways, potential targets and conceptual remedial activities.

A temporary staff gauge or other surface water elevation measuring device will be established on any nearby surface water body, if any, which may significantly influence groundwater movement. The surface elevation of these water bodies will be checked whenever groundwater elevations are measured.

Surveying and Mapping:

To facilitate accurate water level measurements, a licensed professional land surveyor will be used to establish the locations and elevations of each of the monitoring wells as follows:

- Vertical Control: Elevation measurements will be made to the top of the well casing to the nearest 0.01 foot and the ground surface adjacent to the well to the nearest 0.01 foot. Preliminary measurements will also be made when necessary to assist in placement of downgradient wells. Elevation will be determined relative to a USGS benchmark, or to a permanent immovable site-specific datum if a bench mark is not available within 200 ft.

- Horizontal Control: Wells will be located by ties (location and distance) to at least two nearby permanent objects. The distance between wells will be measured to a foot accuracy. All suficial sampling points and significant site features must be shown on the final site map. USGS benchmarks will be used whenever available. All sampling points will be surveyed to determine relative location.

4. Sampling and analysis:

If leachate is observed, two samples will be taken. Sample locations and analysis to be performed are shown in Tables 2 and 3.

Sampling and chemical analyses will be performed by the consultant. Field QA/QC Protocol for sample collection and for sample integrity from the field to the laboratory shall be submitted by the consultant. This includes split spoon samples for chemical analysis when it is known or observed that soils are contaminated. When sampling is requested, the consultant must follow the QA/QC and chain-of-custody protocols as referred to in the Generic Wrok Plan and as described in the New York State Analytical Services Protocol (ASP) September 1989.

Where determined by NYSDEC or the consultant's field representative that chemical analysis are required for soil samples from well drilling activities, the consultant must be prepared to obtain such samples for shipment to a laboratory. Pricing for this activity must be included. For costing purposes, assume one sample per well for analysis.

All samples for chemical analyses shall be delivered to the laboratory within 24 hours of their collection. Express courier service shall be used to transport the samples, unless the laboratory is close enough to the site for the consultant to make direct delivery.

Where dilution of any Phase II sample is to be done by the chemical analytical laboratory prior to analysis, NYSDEC is to be advised immediately. The concern is that a component of low concentration, but of significant environmental impact, could become so diluted that its presence in the final extract will not be detected.

During this contract, the NYSDEC chemist will discuss alternatives with the laboratory's chemist on how best to conduct the analysis. NYSDEC's chemist is Mr. John Rankin, telephone (518) 457-3252.

Although a method or extra work may be agreed upon by both chemists, clearance for any extra cost must be obtained by the consultant from the NYSDEC contract manager. Such cost will be paid from the contingency amount in the contract, and clearance must be confirmed by NYSDEC in writing.

The consultant shall provide an estimate of the cost for sub-contracting the task of reviewing the CLP QA/QC documents by an independent laboratory not involved with the Phase II investigations under this contract.

Air monitoring, consisting of a perimeter survey with a photoionization instrument such as HNU or OVA shall occur upon arrival at the site. A survey within the boundary of the site shall follow the perimeter survey. The air samples should be taken in the ambient air and in the "breathing zone," normally 4-6 feet above the ground surface. Continuous readings or individual readings at nodal points on a grid pattern throughout the site will be made. This air monitoring is separate from monitoring that is part of the health and safety plan. If a source of air contamination is identified, the air should be sampled using the appropriate equipment to determine the nature and concentration of the contaminant. Upwind air samples must also be analyzed at the same time. Wind direction must be continuously monitored and documented during any sampling and on-site analysis of air samples.

Health and Safety Plan

A site-specific Health and Safety Plan must be developed and followed for each site. A copy of the Health and Safety Plan shall be submitted to NYSDEC.

Health and safety apparel and equipment are expected to be required during the major field activities - initial site investigation, geophysical study, drilling and monitoring well installation, and sampling. For the purpose of costing the investigation, Level D protection is assumed with Level C as back up. The health and safety precautions and procedures will conform to the consultant's generalized Health and Safety Plan. Should protective levels higher than Level D be required for any activity, the consultant shall prepare a site-specific health and safety plan appropriate for the level of protection required.

Report Preparation

Report preparation will involve analysis of the data as well as preparation of the text. Included in this task are the compilation and organization of the data, editing of boring logs, reduction of hydrologic data, preparation of graphical representations, analysis, and calculations, and updating the HRS score for the site. The report shall follow the format detailed in the Generic Phase II Work Plan. Four copies of the draft report shall be submitted. A revised draft will be submitted to the NYSDEC within five weeks of the receipt of the Department's comments on the draft report. Fourteen copies of the final report will be submitted once the revised report is considered acceptable. Draft and final reports must bear the stamp of a professional engineer in accordance with Article 49.

Quality Assurance/Quality Control

The QA requirements for the Phase II investigation must be addressed. Sample control forms attached to the contract amendment as Exhibit 1 must be supplied to the analytical laboratory for completion and inclusion with the data package. The Quality Assurance/Quality Control Plan will be submitted as a separate document.

Table 1
Phase II Work Plan - Task Description
Smithtown Landfill, I.D. No. 152043

Tasks	Description
Task	
II-A Prepare and update work plan	Will be done by NYSDEC
II-B Conduct records search/data compilation	Review all available information.
II-C Site reconnaissance	Collaborate NYSDEC information regarding locations of proposed monitoring wells and test borings, terrain for accessibility by drill rigs, suitability for geophysical surveys and appropriate locations of sampling points.
II-D Conduct geophysical studies	Based on the study (where applicable) revise the location of monitoring wells, if needed which shall be approved by NYSDEC.
II-E Soil Gas Survey	Conduct soil gas analysis (when specified in the text). Based on the soil gas and geophysical studies, revise the location of monitoring wells and test borings, if needed, for approval by NYSDEC.
II-F 1. Install monitoring wells	Install four wells. Wells will be constructed of two inch PVC pipe. ?
2. Soil samples during drilling	During drilling, soil samples collected at five-foot intervals, and at changes in lithologies. Perform grain size analysis and Atterberg limits. Where determined by NYSDEC or the consultant's field representative that chemical analyses are required for soil samples from well drilling activities, collect soil sample for chemical analyses. For costing purpose, assume one analyses per well.

II-G Surveying	Surveying of the site including monitoring well locations will be done in accordance with Section C.10 of Exhibit 3.
II-H Perform sampling and analysis	Refer to Table 3 and "Sampling and Analysis" on page 9.
ASP QA/QC documentation	To be reviewed by a sub-contracting laboratory not involved with this contract.
II-I Report preparation	A site contamination assessment will be conducted to complete the final HRS and HRS documentation records.
	Prepare final reports containing significant Phase I information, additional field data, final HRS and HRS documentation records and site assessments.
II-J Project Management	Project coordination, administration and reporting.

Table 2

Phase II Work Plan - Sampling Summaries

Smithtown Landfill, Site I.D. #152043

Designation	Location	Aquifer Screened	Approximate Boring Depth (ft.)
Groundwater			
MW-1	Upgradient	Overburden	125+ (or as determined by
MW-2	Downgradient	Overburden	125+ downhole geophysical
MW-3	Downgradient	Overburden	125+ survey)
MW-4	Downgradient	Overburden	125+
Leachate			
L-1	From any leachate seeps found.		
L-2	From any leachate seeps found.		
Well Borings			
As determined by field conditions/PID screening.			
Air			
As per section 4 of the Work Plan.			

NOTE: Locations, aquifer screened, approximate boring depth listed are based on existing data. These criteria may change based on the results of the geophysical surveys and/or field conditions.

Table 3

Smithtown Landfill, I.D. #1520043

	Type of Analysis[1]					
	TCL[2] Metals	TCL[2] Volatiles	TCL[4] Semi-Volatiles	TCL[5] Pesticides/ PCBs	EP TOX	Matrix/Spike/ Duplicate[6]
Groundwater[7]	~~4~~ 5	~~4~~ 5	~~4~~ 5	~~4~~ 5	--	1/1
Surface Water	--	--	--	--	--	---
Sediment	--	--	--	--	--	---
Soil (gas analysis[9])	~~105~~ 100	~~105~~ 100	~~103~~ 100	~~105~~ 100	--	---
Soil (borings)	4	4	4	4	1	---
Leachate	2	2	2	2	--	1/1
Field Blank	1	1	1	1	--	---
Trip Blank	---	1	---	---	--	---

(1) Complete identification per NYSDEC Generic Work Plan, Section 3(b)(ii)(B). Field pH, conductivity temperature measurements will be conducted on all water samples. Also, pH, specific conductance, Chemical Oxygen Demand (COD), Total Dissolved Solids (TDS), and Total Suspended Solids (TSS) measurements will be made at the laboratory for all water samples.

(2) TCL (Target Compound List, formerly known as Hazardous Substances List) Inorganics - preparation and analysis of the 15 Task 1 and 9 Task 2 inorganic compounds using the specified ASP methods. ASP?

(3) TCL Volatiles - Preparation and analysis using the CLP specified GC/MS method for TCL purgeable organics plus a library search for and the quantification of any additional non-TCL compounds (the ASP requires the library search only for the 10 non-TCL compounds of largest apparent concentration).

(4) TCL Semi-Volatiles - Preparation and Analysis using the ASP specified GC/MS method for TCL Extractable Base/Neutral and Acid Organic ompounds plus a library search for and the quantification of any additional non-TCL compounds (the ASP requires the library search only for the 20 non-TCL compounds of largest apparent concentration).

(5) TCL Pesticides/PCBs - Preparation and pre-extraction of the TCL organochloride pesticides and polychlorinated biphenyls using the ASP specified GC-ECD method.

(6) Superfund and Analytical Services Protocol, September 1989, requires at least one spiked sample analysis and one duplicate sample analysis from each group of samples of a similar matrix type for each case of samples or for each 20 samples received, whichever is more frequent.

(7) A duplciate groundwater sample must be obtained from a monitoring well chosen at random (or some other medium if wells are not available). That duplicate sample must not be identified as a duplicate to the laboratory, but must be assigned an identifier similar to other groundwater samples.

The Bureau requires the blind analysis of a duplicate sample for each site by the laboratory, to confirm the integrity of all sampling and analytical activities.

(8) Where applicable, samples will also be analyzed for EP (Toxicity), corrosivity (pH), ignitability and reactivity to determine whether they are characteristic hazardous waste.

(9) The samples will be analyzed for all the TCL volatile and semi-volatile compounds which can be picked up by soil gas analysis technique. For soil gas analysis, sampling, supply of sample devices and/or sample bottle and analysis shall be provided by a firm who has expertise in this area. For costing purpose, cost of analysis for soil gas analysis technique will vary form that of other samples (groundwater, surface water, etc.). The estimated number of samples include field blanks.

--- Designates that samples are not to be analyzed for that parameter.

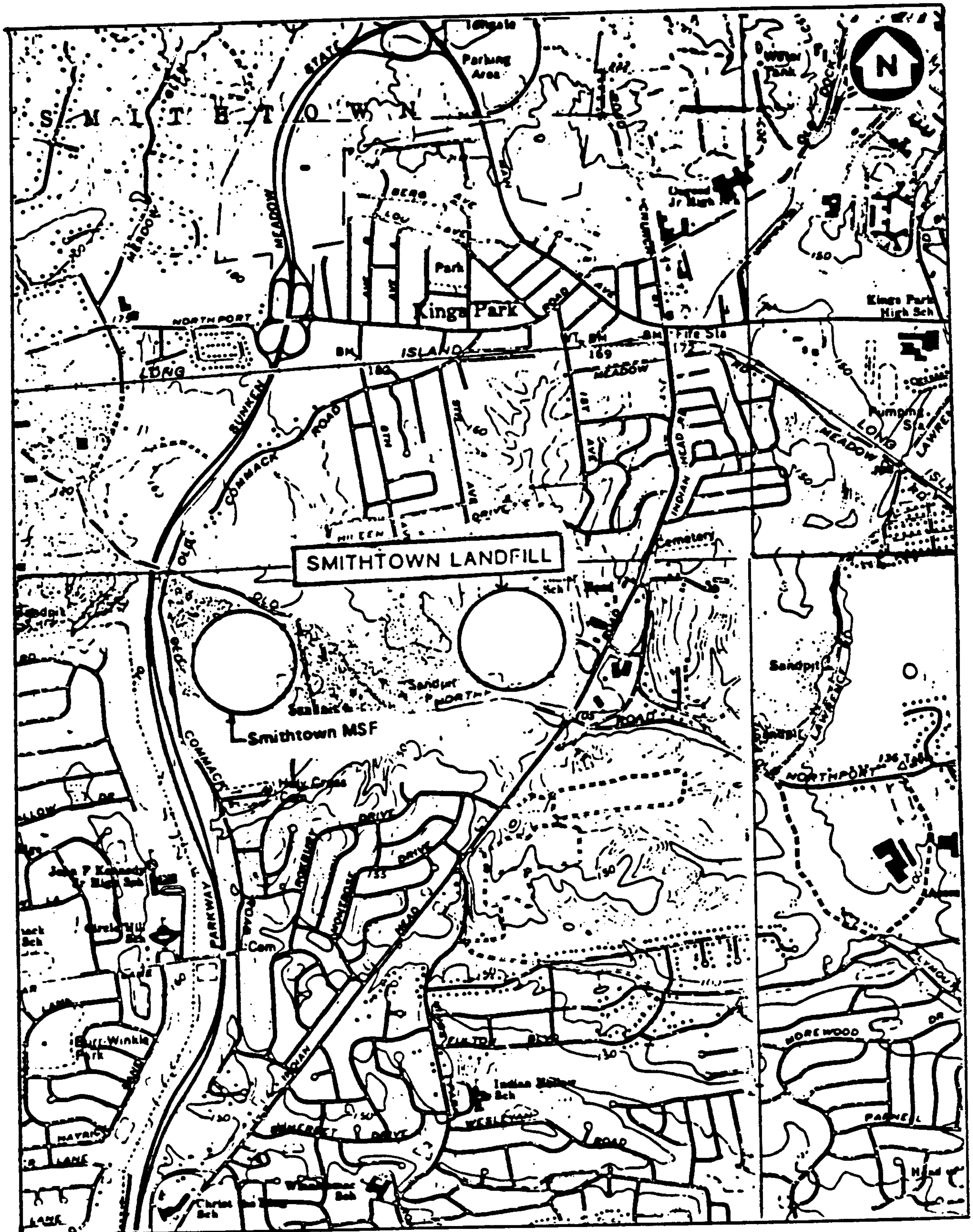

Figure 1
SMITHTOWN LANDFILL
Smithtown, NY

SOURCE: USGS Quadrangle
Maps, 1967
SCALE: 1 inch = 2000 ft

Northport, Greenlawn, Central Islip
and Saint James Quadrangles

SITE COORDINATES:
Longitude: 73 15' 50"

SENDER'S COPY

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON-U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 6633617266

54N 6633617266

Sender's Federal Express Account Number: 1252-0464-7

Date: 5/22/90

SENDER'S COPY

1 From (Your Name) Please Print: Gerald P. Brezner

Your Phone Number (Very Important): (516) 751-4076

Company: NYSDEC/SOLID & HAZARDOUS WASTE

Department/Floor No.:

Street Address: BLDG 40 RM 133-UNIV CAMPUS

City: STONY BROOK

State: NY

ZIP Required: 11794

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.)

2 To (Recipient's Name) Please Print: Mr. Patrick Izzo

Recipient's Phone Number (Very Important): ( )

Company:

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes ●): 10 Printer Court

City: Huntington Station

State: NY

ZIP Required: 11746

3 PAYMENT 1 ☑ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card
5 ☐ Cash

Expiration Date /

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City:

State:

ZIP Required:

4 SERVICES (Check only one box)

Priority Overnight Service (Delivery by next business morning†)
- 11 ☐ YOUR PACKAGING
- 16 ☑ FEDEX LETTER *
- 12 ☐ FEDEX PAK *
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight Service (Delivery by next business afternoon†)
- 51 ☐
- 56 ☐ FEDEX LETTER *
- 52 ☐ FEDEX PAK *
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Service (formerly Standard Air) (Delivery by second business day†)
- 30 ☐ ECONOMY SERVICE

Heavyweight Service (for Extra Large or any package over 150 lbs.)
- 70 ☐ HEAVYWEIGHT **
- 80 ☐ DEFERRED HEAVYWEIGHT **

†Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

DELIVERY AND SPECIAL HANDLING
- 1 ☐ HOLD FOR PICK-UP (Fill in Box H)
- 2 ☐ DELIVER WEEKDAY
- 3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐
- 4 ☐ DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods Shipments)
- 5 ☐ CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Release Signature Not Applicable)
- 6 ☐ DRY ICE ____ Lbs.
- 7 ☐ OTHER SPECIAL SERVICE ____
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- 11 ☐ DESCRIPTION
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)	OVER SIZE
Total	Total	Total	

DIM SHIPMENT (Heavyweight Services Only) ☐ ____ lbs.

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ B.S.C. 5 ☐ Station

FedEx Emp. No. Date/Time

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Maximum amount limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

5 Release Signature:

Federal Express Use
- Base Charges
- Declared Value Charge
- Other 1
- Other 2
- Total Charges

REVISION DATE 11/89
PART # 119501 WCSEL
FORMAT #014

014

PRINTED IN U.S.A.
1/90

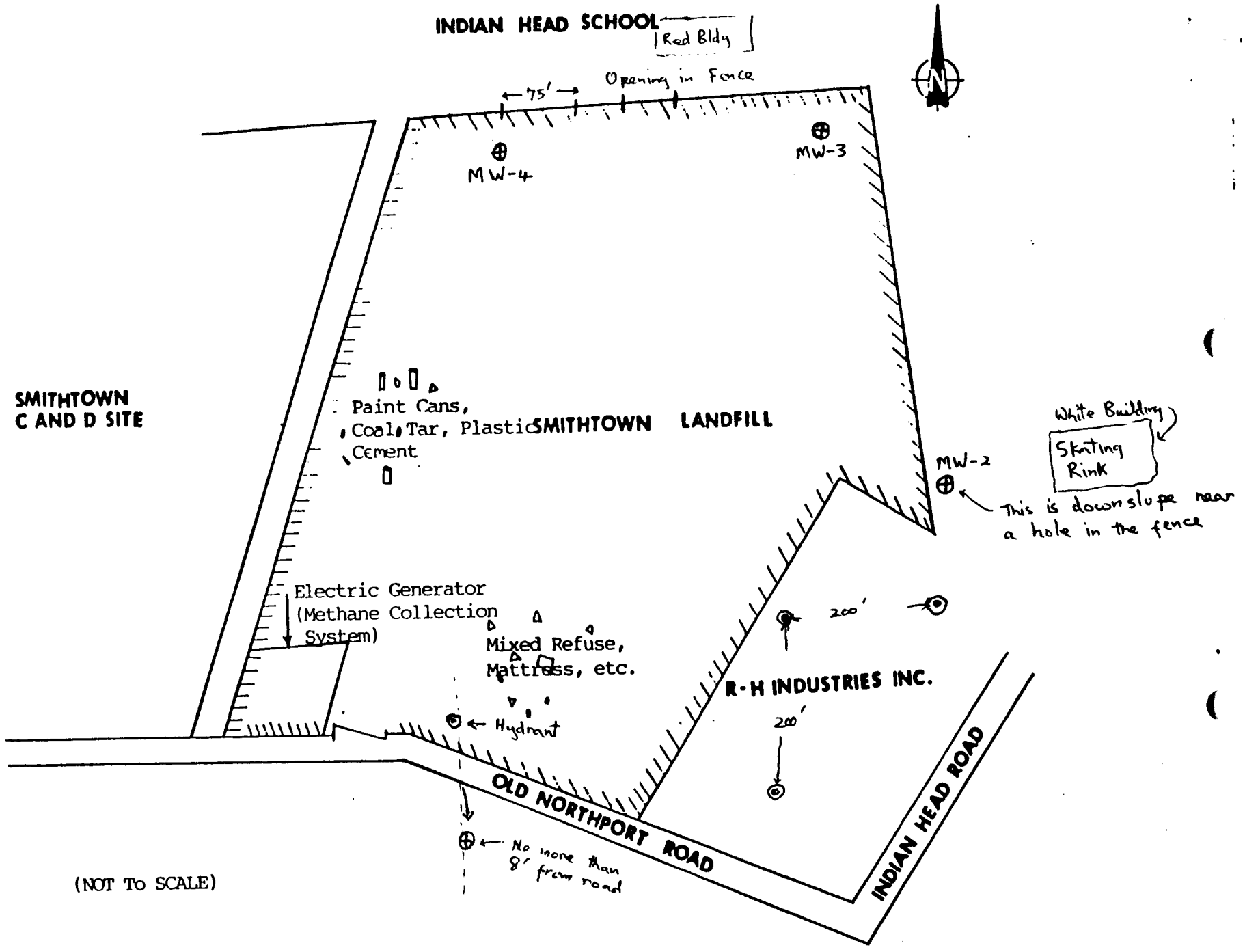

FIGURE 2. SITE SKETCH. SMITHTOWN LANDFILL

⊕ Monitoring Well locations ⊙ These wells no longer exist

SOIL GAS SURVEY

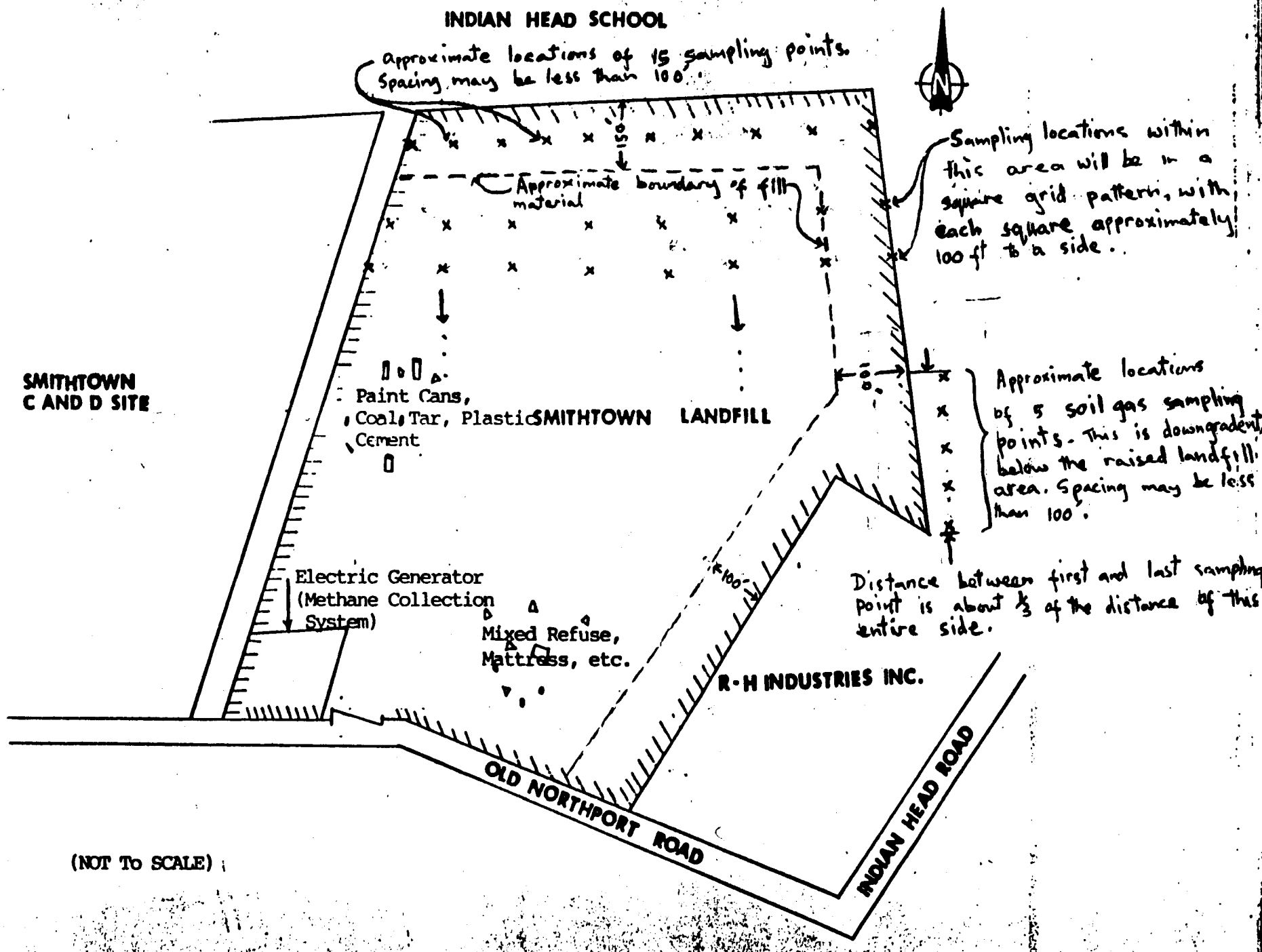

FIGURE 3 SITE SKETCH, SMITHTOWN LANDFILL