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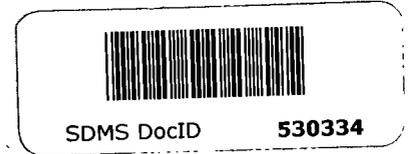
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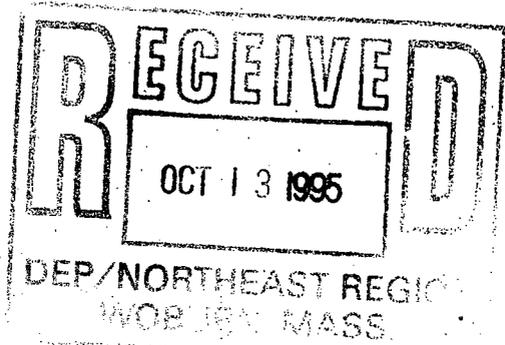
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FINAL REPORT
ENVIRONMENTAL SITE ASSESSMENT

228 SALEM STREET
WOBURN, MA



PREPARED FOR:
JOHN J. RILEY, JR.



PREPARED BY:

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330 BOSTON ROAD
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PROJECT NUMBER 90-0505-1 DATED 12/26/90

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21E INC.



INTRODUCTION



1. INTRODUCTION

21E Inc. was contracted on May 14th, 1990 by Mr. John J. Riley for Wedel Corporation to conduct a Phase I - Limited Site Investigation at the property located at 228 Salem Street in Woburn, MA. 21E Inc. has attempted to provide an accurate description of site conditions within the scope of this project.

A review of previously prepared reports for the Site and the surrounding area was conducted to minimize duplication of information gathered on the Site. The scope of this project included an update of municipal and state records pertaining to the subject property and the surrounding area. A site inspection was completed during this study. Soil borings and monitoring wells were installed on the property. Soil samples were field screened with an HNu photoionization meter. Selected soil and groundwater samples were analyzed for various analytes to better assess the subsurface environment. The monitoring wells installed on the property were surveyed and groundwater contour elevations and groundwater flow direction were calculated for the property. Conclusions drawn from the data collected are presented in the text of this report.



BACKGROUND



2. BACKGROUND

As part of this project, previously prepared reports on the property located at 228 Salem Street in Woburn, MA were reviewed. The following section summarizes the materials presented in the YE²ARS report entitled "Hydrogeologic Investigation of the John J. Riley Tanning Company" (hereafter referred to as YE²ARS) and the GEI report entitled "21E Assessment of J. J. Riley Property dated April 19, 1985 (hereafter referred to as GEI). Other documents have also been reviewed and pertinent data from those sources has also been presented in this section.

J.J. Riley Tanning Company has been in operation on the Site since approximately 1915. Currently, the property is vacant of any business. Previously, the operation existed on 15.8 acres of land. Since the previous reports, the back (northwest) area of the property has been subdivided and no longer is part of the Riley site. The current assessment was completed on approximately 10 acres of land. Formerly the tanning operations took place in Buildings 1 and 2. To the north of Building 1 is the former location of the bag house and lagoon. To the east of the lagoon is the former location of three underground fuel oil tanks and the power plant. To the north of the lagoon and power plant was the former hide storage area, which comprised about 51,000 square feet. On the northwestern portion of the current property, the lot is bounded by the drainage ditch. A sewer easement runs through the property between Building 1 and 2. A currently unused production well (PW#1) is located in the northeast portion of the property.

The property is bordered to the south by Salem Street, to the west by Wildwood Avenue, to the northwest by land formerly utilized by the Riley Company and by land to the northeast formerly occupied by Bio Assay Inc. The abutting lot to the northwest is currently occupied by the BASF Co. and the lot formerly occupied by Bio Assay Inc. is occupied by Toxikon Laboratories. To the east, the property is bordered by land owned by B&M Railroad. Across the B&M Railroad land located to the northeast of the Site is land currently owned by Wildwood Conservation Trust. This land was formerly owned by the Beatrice Food Company and a production well (PW#2) exists on this land which was formerly utilized by the Riley Company. Across Salem Street to the south is currently an office building. This lot, 215 Salem Street, is the former location of a leather tannery, Murray Leather Co. Also across Salem Street to the south is a concrete form operation and a business which sells banding saws and knives. A florist is located across Wildwood Avenue to the west of the Site.



Tanning operations on-site were primarily in the preparation of hides into leather for shoes. The facility was considered a medium sized operation. The process at the Riley site used the chrome tanning method.

The Riley facility used hexavalent chromium, in the chrome tanning method, however prior to introduction into the tanning process the chromium (hexavalent) was converted to trivalent chromium. Trivalent chromium is NOT a hazardous substance according to the EPA. Chemicals formerly used on the Site which are hazardous substances were benzidine based dyes, phenolic based detergents (for soaking of hides), ortho-dichlorobenzene (for disinfecting), butyl acetate (as a solvent for lacquers and finishing products), and 1,1,1-trichloroethane (for cleaning one embossing plate prior to 1979). Several other chemicals not classified as hazardous substances were also used at the Site. Butoxyethanol, diisobutyl ketone, and methoxyethanol are volatile compounds which were used as solvents in carrying lacquers and finishing products. Fuel oil was used for the power plant.

The tanning process at the Riley site produced several waste products. One of these products was the sludge collected in the lagoon in the northwest portion of the site. These solids were dredged periodically from the lagoon and from the catch basin and landfilled on-site. EP toxicity tests have been done on the material landfilled on-site and all levels including hexavalent chromium and total chromium are within acceptable levels. Buffing dust was also produced during the process. This dust was disposed of in a lagoon on-site. Buffing dust, which is primarily composed of leather particles, is not considered a hazardous waste according to the EPA and DEP. According to information obtained from Mr. Riley, the buffing dust has been removed from the Site.

Between November of 1980 and March of 1981, Ecology and Environment under contract to the EPA, sampled groundwater from PW#1 and PW#2. The results revealed levels of volatile organic compounds in both samples. Levels in PW#2, 28 to 1372 ppb (parts per billion) were significantly higher than from PW#1, 10 to 53 ppb. The source of contamination was not determined. According to the YE²ARS report "some of the contaminants present in PW#1 and PW#2 are also present in the City of Woburn's Municipal Production Wells G and H, which are located approximately 2000 feet northeast of Riley Production Well #2, and east of the Aberjona River (EPA, 1981)." Groundwater samples obtained from PW#1 were additionally analyzed for Priority Pollutants, no levels of benzidine were reported as detected.



As part of the investigation conducted by YE²ARS, nine (9) test pits were excavated on the 15.8 acre site. Three of the test pits (TP-7, TP-8, and TP-9) were located on the front (southern) 10 acres. TP-7 was excavated to a depth of 9'4", TP-8 to 6.5', and TP-9 to 7'. Six (6) monitoring wells were installed on the property by YE²ARS in 1983. Four of the six wells (B-1, B-2, B-3c, and B-6b) were installed in the front 10 acres. Refer to Figure 1 for former test pit and monitoring well locations. With the exception of B-6b, the wells were installed to bedrock. Groundwater levels in the four wells ranged from about 4 feet below grade in B-6b, to 37 feet in B-3c. Wells were surveyed and the groundwater flow direction was calculated to be west to east across the site. This flow direction was calculated while PW#2 was pumping under normal conditions.

Groundwater samples collected by YE²ARS in 1983 from wells B-1, B-2 and PW#1 were analyzed for chlorinated volatile organic compounds by EPA method 601. The results revealed no levels of chlorinated solvents in B-1 above the detection limit of 0.1 ppb. Groundwater from PW#1 was found to contain 0.4 ppb of trans-1,2-dichloroethene and 0.4 ppb of trichloroethene (TCE). 0.7 ppb trans-1,2-dichloroethene and 2.3 ppb of chlorobenzene were detected in the groundwater from B-2. This is a substantial decrease from the number and quantity of volatile organic compounds reported in 1980/1981 by Ecology & Environment.

Both reports concluded that the Riley tannery is not a probable source of contamination of Production Well #2. It was also concluded that the Riley site is not a probable source of the contamination detected in the City of Woburn's Municipal Wells G & H.

The previously mentioned underground tanks were removed in November of 1989 by Clean Harbors. According to a 1982 DEQE (now DEP) Division of Air Quality Control material storage sheet, the former tanks were all 15,000 gallons in capacity and 2 years old. Two of the tanks were used for the storage of #6 fuel oil and the other tank was used to store #2 fuel oil. A Woburn Fire Department Report stated that the three tanks were removed in November of 1989 and the excavation was free of product. Also stated in the report was that no penetrations were noted in any of the tanks. The excavation was backfilled with the existing fill, according to the report. One soil sample from the tank removal was analyzed by Clean Harbors laboratory. The sample was found to contain 110 ppm (parts per million) of petroleum hydrocarbon/oil & grease by IR.



Upon inspection of the property by 21E Inc., it was observed that the wells installed by YE²ARS were no longer existing on-site. However, 21E Inc. did note that three additional wells were located on the site. Information provided by Mr. Riley indicates that these wells were installed under authorization of Beatrice Foods through instruction by their council, Hale & Dorr. These wells were reportedly installed in July 1989. No logs or drilling information was available at this time for these wells.

Based upon the above information 21E Inc. proposed to install four additional wells on the property, screen soil samples in the field and again at 21E Inc. facilities under controlled conditions, and analyze selected soil samples in the laboratory.

21E Inc. proposed to analyze selected groundwater samples obtained from seven wells (three existing and four proposed) for concentrations of the eight RCRA metals, volatile organic compounds, petroleum hydrocarbons and semivolatile (acid/base/neutral) compounds. These analyses were chosen based upon the chemicals formerly used or detected at the property. For example, semivolatile analysis will detect benzidine and phenols, whereas, volatile organic analysis will detect the chlorinated and aromatic solvents.

The following sections summarize the updated review of municipal and state records, methods of field work, and results of field work. Conclusions are presented in the final text section of this report. Selected site plans, including groundwater flow and contours, as well as logs and field data collected during the study are included as Figures and Appendices.

21E INC.



SITE INVESTIGATION



3. SITE INVESTIGATION

3.1 SITE OWNERSHIP AND LOCATION

According to Mr. John J. Riley the property is owned by the Wedel Corporation and is located at 228 Salem Street in Woburn, MA. As shown on the north central portion of the Boston North, MA 7.5 X 15 minute topographic quadrangle map, the site is located approximately 2100 feet east of the WoodBrook Cemetery and 8000 feet and 10,000 feet southwest of Woburn Municipal Wells G and H, respectively (see Figure 2). The boundaries of the site are shown on maps 16 and 21, X coordinate 698264 and Y coordinate 542743 of the City of Woburn Assessors plans (see Figure 3).

The Site is comprised of approximately 10 acres. The Site lies between the 50 and 90 foot contours on the USGS Boston North, MA quadrangle. The topography of the Site generally slopes to the northeast and east. The former operations buildings occupy the central portion of the Site. Vegetation exists on-site and appears to be healthy.

3.2 MUNICIPAL FILE REVIEW

Information was reviewed at the Woburn Health Department regarding site investigations on the subject site and properties in the vicinity of the Site. These properties included, but are not limited to, Whitney Barrel Co. at 256 Salem Street, Murphy Waste Oil Co. at 252 Salem Street, the property at 225 Wildwood Avenue, and Woburn Municipal Wells G and H. Conversations with Mr. Jack Fralick, Director of the Board of Health, indicated he knew of no releases of petroleum or hazardous materials at the Site since the completion of the 1985 GEI report.

Records available at the Woburn Fire Department concerned the removal of three 15,000 gallon underground fuel oil storage tanks (USTs). The records indicated these USTs were installed in 1981, and that two of the USTs contained #6 oil and the third UST contained #2 oil. Chief Doherty of the Woburn Fire Department indicated he knew of no problems at the Site concerning any releases of petroleum or hazardous materials since the completion of the 1985 GEI report.

Conversations with representatives of the Woburn Conservation Commission indicated the Conservation Commission is unaware of any specific on-site problems, and that wetlands existed to the east of the site along the B&M railroad property.



According to information provided by Mr. John J. Riley, a spill of fuel oil occurred at the subject site during the time the Site was run by its employees under the name Riley Leather Co. This period of employee run operations took place from 1985 to 1989. Mr. Riley indicated the Department of Environmental Protection was notified, and the spill cleaned up by an approved clean-up contractor. No record of this incident was found during either the municipal or DEP file reviews.

3.3 DEP FILE REVIEW

A review of the available Incident Response Files, Hazardous Waste Generator List and Water Supply Overlays at the Woburn Office of the DEP revealed that there are no records of releases of oil or hazardous materials for the subject site since the completion of the previous reports. However, there are records concerning a number of properties in the vicinity of the Site. Refer to Figure 4 for locations.

Murphy's Waste Oil Services Co., 252 Salem Street, is located approximately 250 feet to the east and topographically downgradient of the subject site. In 1989 during a subsurface investigation at this site, petroleum contaminated soils were encountered during the drilling of soil borings. Analysis of soils and groundwater from installed soil borings and monitoring wells, indicated that volatile organic compounds and petroleum hydrocarbons were present in both media and that one soil sample exhibited low levels of PCBs. Building construction was proposed for a portion of this property. The consultant recommended that soil in the area of proposed construction be excavated and stockpiled on-site to await proper disposal.

Toxikon Laboratories, 225 Wildwood Avenue, is located abutting a portion of the northern subject site boundary and topographically upgradient of the subject site. A subsurface investigation of this property was conducted by excavating test pits, drilling soil borings and installing monitoring wells. The investigation referenced a discolored soil horizon encountered on-site. Volatile organic compounds were reported as detected in the soil samples and in one groundwater sample. In addition, the groundwater in one monitoring well was determined to have concentrations of the metals barium, chromium, and lead above established drinking water standards. A second sampling of this well showed the levels of metals to be below the established drinking water standard. The consultant for this property recommended that the groundwater on this property be monitored.



The former Whitney Barrel Co., 256 Salem Street, is located approximately 350 feet to the east and topographically downgradient of the subject site. In 1985 an attempt was made to install a monitoring well on this property as an investigation into the contamination found in Woburn Municipal Wells G and H. The monitoring well was not completed because volatile compounds at a concentration of 250 ppm were detected in the ambient air at the monitoring well.

In 1986 a Notice of Responsibility (NOR) was issued by the DEP for 256 Salem Street. A subsurface investigation of this property was performed as required by the NOR. This investigation included a soil vapor survey, a geophysical survey, excavation of test pits and installation of monitoring wells. The soil gas survey reported volatile compounds when surveyed with an HNu photoionization meter, but when ambient air samples were taken no purgeable halocarbons or aromatic volatile organic compounds were detected.

The geophysical survey was performed to determine if there were any buried drums or underground storage tanks on the site. The subsequent test pits in the areas where anomalous readings were found showed no buried objects. During test pit excavation, contaminated soils were encountered. Several analyses of these soils showed the presence of volatile organic compounds, semi-volatile compounds, PCBs, elevated metal concentrations, and a pesticide. Soil borings and monitoring wells were installed on the site and the same compounds that were detected in the soils from the test pits were detected in the soils from the soil borings.

Groundwater samples obtained and analyzed from the monitoring wells exhibited concentrations of volatile organic compounds, semi-volatile compounds, PCBs and elevated metals. A sediment sample taken from a floor drain in the building at this property showed concentrations of volatile organic compounds, semi-volatile compounds, and a pesticide. The consultant determined that groundwater contamination encountered on the site was likely from on-site and off-site sources. This was determined because the upgradient well on the property contained volatile organic compounds. The contaminants from on-site sources were detected in the soils above the groundwater and therefore would be derived from an on-site source.



The consultants recommendations included removal of surficially stained soils to prevent any human contact, determination of the horizontal and vertical extent of the contamination, determination of groundwater flow conditions over the property during pumping and non-pumping periods of the John J. Riley Co. production wells, sampling of on-site surface water, completion of a risk characterization for the property, and securing the site from trespassers to prevent any soil contact.

A number of other sites listed for the subject area which have been described in previously reported investigations include the Aberjona Auto Parts at 280 Salem Street; the Sutherland Foundry at 3 Aberjona Drive; a former portion of the John J. Riley property, now belonging to Dowd Enterprises, at 99 Wildwood Avenue; and Woburn Municipal Wells G and H.

21E INC.



FIELD METHODS



4. FIELD METHODS

4.1 HOLLOW STEM AUGER SOIL BORINGS

Hollow stem auger soil borings were drilled at four locations on the subject site on May 29th, 30th, 31st and June 6th, 1990. Drilling services were provided by Geosearch, Inc. of Leominster, MA. Monitoring wells were installed in the four completed boreholes. Refer to Figure 5 for monitoring well locations. Each boring was advanced by drilling 4 and 1/4 inch inner diameter, flighted augers continuously through the soil until refusal was reached, with one exception. Samples of undisturbed soil were collected using a two inch inner diameter, two foot long, split spoon sampler. The samples were taken at five foot intervals by driving the spoon ahead of the augers using a 140 pound hammer mechanism. Blow counts were recorded and the samples were logged in the field by a 21E Inc. geologist. Refer to Appendix A for Soil Boring Logs.

A representative portion of each sample was collected in a sealed glass jar for future inspection and analysis. No unusual odors were detected from any of the soil samples. The 34-35.5' soil samples from MW1, MW3 and MW4 were scheduled for total RCRA metals analysis at Water Control Laboratories in Hopkinton, MA.

4.2 MONITORING WELL INSTALLATION

Monitoring wells were installed in the four test borings immediately upon their completion. The well assemblies consisted of ten to forty-five foot sections of machine slotted, schedule 40, two inch diameter PVC screen set in the boring so as to encounter saturated conditions noted at the time of drilling. The PVC screen is threaded to PVC riser pipe of the same diameter. The remaining annular space around the well was filled with filter sand to a minimum of two feet below the ground surface. A bentonite seal was formed above the filter sand by placing a minimum of six inches of bentonite pellets in the hole. The well stick-up was cut flush to the ground surface, and a two foot long protective steel casing was installed flush with the ground surface and concreted in place. The well top was secured with a bolted, seated cover and covered with cement blocks.



4.3 HNu SCREENING OF SOIL SAMPLES FOR VOLATILES

The jarred soil samples collected in the field were screened with an HNu photoionization meter in the field and again under controlled conditions. The HNu photoionization meter is a portable instrument used to analyze samples for the presence of a wide variety of organic and inorganic vapors. Refer to Appendix B for jar headspace analytical screening procedures.

4.4 GROUND WATER SAMPLE COLLECTION

Groundwater from seven (three existing and four installed) monitoring wells was sampled on June 15, 1990. Groundwater samples from monitoring wells MW1, MW2, MW3, MW4, RR-1, RR-2, and RR-3 were obtained for determination of volatile organic compounds via EPA method 624. Groundwater samples from monitoring wells MW1, MW2, MW3, MW4 and RR-2 were analyzed for concentrations of petroleum hydrocarbons. Groundwater samples from MW1, MW3 and RR-2 were analyzed for concentrations of total RCRA metals. Groundwater samples from MW4 and RR-3 were analyzed for concentrations of semi-volatile compounds. A strict quality control program was utilized during the sampling procedures. Groundwater sampling was conducted according to 21E Inc. standard operating procedures.

Prior to sampling, groundwater level measurements were obtained with a water level indicator meter, Model 51453 manufactured by Slope Indicator, Co. Depth to the groundwater table was measured to the nearest 1/100th of an inch. Three standing well volumes were calculated for each monitoring well using the obtained groundwater level measurements and the specific monitoring well construction design. Three standing well volumes were purged from the monitoring wells using a KV System submersible pump. The pump is thoroughly cleaned with methanol and distilled water before sampling and between each monitoring well sampled. New PVC tubing is utilized for each monitoring well.

After recharge, groundwater samples were collected using the submersible pump with the exception of samples collected for volatile organic analysis which utilized a bottom filling stainless steel and teflon bailer. The bailer is thoroughly cleaned with methanol and distilled water before sampling and between each monitoring well sampled. New nylon rope is used for each well. Prior to filling the sample bottles, the bailer is rinsed with well water by filling and emptying the bailer three times. No unusual odors were detected during the purging and sampling activities.



Groundwater samples scheduled for volatile organic compound analysis (EPA Method 624) were collected in new 40mL amber vials with a teflon seal cover. Care was taken to ensure no air bubbles were trapped in the samples. Two vials were collected from each well. The remainder of the groundwater samples were collected in new 1000mL amber jars.

Samples were immediately stored in a cold-packed cooler until shipment to a laboratory for analysis. Groundwater samples were scheduled for volatile organic compound analysis (EPA method 624) at New England ChromaChem of Salem, MA. Groundwater analysis for petroleum hydrocarbons was scheduled at Environmental Consulting Laboratory, Inc. of Billerica, MA. Groundwater analysis was scheduled for RCRA metals and semi-volatiles (Acid/Base/Neutral, ABN) at Water Control Laboratories of Hopkinton, MA. Soil and groundwater samples were either hand delivered or shipped UPS to the respective laboratories. Chain-of-custody forms were prepared and are included in Appendix C.

21E INC.



RESULTS



5. RESULTS

5.1 GEOLOGY AND HYDROGEOLOGY

The following is a description of the geologic and hydrogeologic characteristics of the subject property, which lies within the tributary basin of the Aberjona River. The topography of the subject site slopes to the northeast and east. Surface water is expected to follow the natural topography of the Site and flow to the east and northeast.

The geology of the Site consists of bedrock overlain by surficial deposits. The local bedrock in the area of the Site has been mapped by the USGS as a Proterozoic Period complex of diorite and gabbro, with subordinate metavolcanic rocks and intrusive granite and granodiorite. Local surficial deposits have been mapped by hydrological surveys (HA-589) as stratified and sorted deposits of sand, gravel, boulders, silt and clay. The Site is located within three differing areas of water well yield rates and transmissivity rates. Water well yields range from less than 100 gallons/minute (gpm) to greater than 300 gpm, and transmissivity values typically range from less than 1,400 to greater than 4,000 ft²/day. According to Hydrologic-Data Report No. 21, Production Well #1 for the John J. Riley Co. was installed in 1945 to a depth of 35 feet, and has a well yield rate of 500 gpm.

Subsurface investigations completed for this study included the advancement of four soil test borings, by hollow stem auger methods, and the installation of four monitoring wells. Monitoring well MW1 was drilled in the front portion of the Site to assess local conditions. MW2 was located in the vicinity of the front of Building #2. MW3 was sited near the former hide storage area and former lagoon. MW4 was sited in the vicinity of the former underground fuel oil storage tanks. Three monitoring wells had been previously placed on the Site and for the purposes of this report were arbitrarily named RR-1, RR-2, and RR-3. No soil boring data was available for these wells. Refer to Figure 5 for locations of these monitoring wells.



Based upon the information gathered during the advancement of the four hollow stem auger borings, the local on-site soil sequence consists of asphalt or loam overlying stratified deposits, in concurrence with previously reported USGS information. The loam typically consisted of dark brown, fine grained sands, and silts interlayered with root matter and traces of gravel. Below the asphalt or loam layer, a sand and gravel layer was encountered which typically consisted of fine to coarse grained sands and gravel, silts, cobbles and boulders. Below the sand and gravel layer, a fine to very fine grained sand layer was generally encountered, although in boring MW3 a very fine sand lens was found within the sand and gravel layer at a depth of 7 to 12 feet below existing grade. Also at this boring location, a layer of black sand was encountered at a depth of 34 to 35.5 feet, just prior to encountering the till stratum. In borings MW1, MW3, and MW4 till was encountered below the sand layer, prior to encountering refusal. The till layer typically consisted of dense, fine grained sands and silts interbedded with gravel.

During the course of this investigation, the monitoring wells were surveyed and additional depth to groundwater measurements were collected. The depth to groundwater measurements were converted to elevations to define the local potentiometric surface (i.e. the water table). The elevation of the potentiometric surface in each well was then computer contoured and hand smoothed. Three point problems were used as a check. The completed groundwater contour map is included as Figure 6. Inferred groundwater flow direction was determined to be easterly across the subject site.

5.2 HNU SCREENING OF SOIL SAMPLES

Soil samples obtained during the subsurface investigations were field screened with an HNu photoionization meter model PI101. Additionally, samples were screened under controlled conditions. The utilized analysis method is described both in Section 4.3 and Appendix B of this report. In general, the HNu photoionization meter is used to screen for a wide variety of organic and inorganic compounds. The results of the HNu screening are presented in Appendix A of this report as a component of the Soil Boring Logs.

No levels of volatiles were detected, by HNu screening, in any of the soil samples obtained from the soil borings.



5.3 CHEMICAL ANALYSIS

5.3.1 SOIL SAMPLES

As previously described, soil samples were collected for selected laboratory analysis. Specific samples chosen for analyses were based upon the boring location and the depth of the soil sample. Refer to Table 1 and Appendix D for results.

RCRA METALS

Three soil samples from the borings were analyzed for RCRA metals. The RCRA metals include arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se), and silver (Ag). This method uses an acid digestion of the sample followed by analysis on a graphite furnace, or an atomic absorption unit, or an inductively coupled argon plasma instrument; with the exception of mercury which utilizes a cold vapor extraction procedure.

The results of the analysis reveal levels of arsenic in all three samples (3.1 - 6.8 ppm) within the commonly expected range found in soils (0.1 - 40 ppm). Barium was found in all three samples ranging from 15 to 58 ppm. The commonly found levels of Ba in soils range from 100 to 3500 ppm. Cd was found in the soils from 0.1 to 0.2 ppm. Levels found in soils commonly range from 0.1 to 0.7 ppm. Levels of chromium were found in the samples between 17 and 24.3 ppm which are well within the commonly expected levels of 5 - 3000 ppm. Lead was detected between 3.8 and 6.7 ppm. Commonly expected levels are 2 - 2000 ppm of lead in soil. No levels of mercury or selenium were detected in the soil samples. The detection limit for mercury and selenium are 0.1 and 0.5 ppm, respectively. The common range for silver in soils is 0.1 - 5 ppm. Silver was detected in the soils analyzed at 0.1 ppm.

5.3.2 GROUNDWATER ANALYSIS

As previously described, groundwater samples were collected for selected laboratory analysis. The specific analysis chosen for each well was dependent on the location of the well. For a summary of results refer to Table 2 and Appendix D.



VOLATILE ORGANIC COMPOUND ANALYSIS (EPA method 624)

Seven groundwater samples were analyzed for volatile organic compounds by EPA method 624 at New England ChromaChem of Salem, MA. VOA (volatile organic analysis) was performed due to the past solvent usage on the property and the previous analytical data generated from on- and off-site sources. This analytical method uses a purge and trap unit attached to a gas chromatograph with a mass spectrometer detector (GC/MS). Groundwater samples from all wells (MW1, MW2, MW3, MW4, RR-1, RR-2, and RR-3) were submitted for analysis of volatile organic compounds. The results reveal no levels of volatile organic compounds above the detection limit in any of the samples. The detection limit was 1 part per billion (ppb).

PETROLEUM HYDROCARBON ANALYSIS

Five groundwater samples were submitted for petroleum hydrocarbon (PHC) analysis at Environmental Consulting Laboratory, Inc. of Billerica, MA. PHC analysis was chosen due to the past petroleum storage and releases in the area and on the subject property. This method uses a solvent extraction of the sample, followed by concentration of the extract then injection into a gas chromatograph with a flame ionization detector (GC/FID). The results of the five groundwater samples analyzed, MW1, MW2, MW3, MW4, and RR-2, reveal no levels of petroleum hydrocarbons above the detection limit of 0.1 ppm.

RCRA METALS

Three groundwater samples (MW1, MW3, and RR-2) were analyzed for RCRA metals. RCRA metals include arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se), and silver (Ag). This method uses an acid digestion of the sample followed by analysis on a graphite furnace, or an atomic absorption unit, or an inductively coupled argon plasma instrument; with the exception of mercury which utilizes a cold vapor extraction procedure.

The groundwater sample obtained from MW1 was found to contain As at 9 ppb, barium at 120 ppb, cadmium at 7 ppb, chromium at 50 ppb, lead at 21 ppb, and Ag at 1 ppb. No levels of mercury or selenium were detected in the sample. The following metals were detected in MW3, As at 8 ppb, Ba at 70 ppb, Cr at 30 ppb, and lead at 4 ppb. Cadmium, mercury, selenium and silver were not detected. RR-2 was found to contain Ba at 20 ppb, and Cr at 10 ppb. No levels of arsenic, cadmium, lead,



mercury, selenium or silver were detected in the groundwater from RR-2. All levels detected are at or below Massachusetts Ground Water Standards. The standards have been set at 50 ppb for arsenic, 1,000 ppb for barium, 10 ppb for cadmium, 50 ppb of chromium, lead at 50 ppb, 2 ppb of mercury, selenium at 10 ppb, and silver at 50 ppb.

SEMIVOLATILE ORGANIC ANALYSIS (EPA method 625)

Two groundwater samples were chosen for semivolatile organic analysis (acid/base/neutral, ABN) at Water Control Laboratories. ABN analysis was performed due to the past usage of benzidine and phenols in the manufacturing process on-site. This method uses a solvent extraction at an alkaline pH followed by a solvent extraction at an acidic pH. The extracts are concentrated then injected into a gas chromatograph with a mass spectrometer detector. The results revealed no semivolatile compounds, including pesticides and PCBs, in the groundwater samples analyzed.

TABLE 1

ANALYTICAL TABLE
SOIL DATA

SAMPLE LOCATION	ANALYTE							
	As	Ba	Cd	Cr	Pb	Hg	Se	Ag
MW1 34-35.5'	3.4	58.0	0.2	24.3	5.0	ND	ND	0.1
MW3 34-35.5'	3.1	29.0	0.1	17.5	6.7	ND	ND	0.1
MW4 35-35.5'	6.8	15.0	0.1	17.0	3.8	ND	ND	0.1
COMMON RANGES								
EPA SW-874	0.1-40	100-3500	0.1-0.7	5-3000	2-2000	0.01-0.5	0.01-38	0.1-5
CHEMICAL EQUILBRIA IN SOILS(1)	1-50	100-3000	0.1-0.7	1-1000	2-200	0.01-0.3	0.1-2	0.01-5

ND: Not Detected

NOTE: All Values are in parts per million

(1) Lindsay, Willard L., published by John Wiley & Sons (1926)



TABLE 2
ANALYTICAL TABLE
GROUNDWATER

SAMPLE LOCATION	ANALYTE										
	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	VOA	PHC	ABN
MW1	9	120	7	50	21	ND	ND	1	ND	ND	NA
MW2	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA
MW3	8	70	ND	30	4	ND	ND	ND	ND	ND	NA
MW4	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
RR-1	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
RR-2	ND	20	ND	10	ND	ND	ND	ND	ND	ND	NA
RR-3	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	ND
Mass GW Standards (1)	50	1000	10	50	50	2	10	50			

ND: Not Detected
NA: Not Analyzed

NOTE: All Values are in parts per billion

(1) From "Guidance For Disposal Site Risk Characterization And Related Phase II Activities, DEP ORS (1989)



21E INC.



SUMMARY AND CONCLUSION



6. SUMMARY AND CONCLUSION

The purpose of this investigation was to determine if a release or threat of release of oil or hazardous materials exists on the property located at 228 Salem Street in Woburn, MA. All pertinent information gathered has been presented herein. 21E Inc. has attempted to provide an accurate description of Site conditions within the scope of this project.

The property is the former location of the Riley tanning company which began operations at the Site in approximately 1915. Currently the Site is vacant. The Riley tanning company was a medium sized chrome tanning operation. The principle product was leather for shoes. As part of the process several chemicals were used on the site. Some of these are benzidine, phenols, 1,1,1-trichloroethane, butyl acetate, ortho-dichlorobenzene, and fuel oil (used as a heating fuel).

Previous investigations at the Site revealed that low levels of chlorinated solvents were present in the groundwater at the Site. The sludge which was produced from the former plant operations and which was collected in an on-site catch basin and lagoon, was analyzed for EP toxicity. All levels of chemicals detected in the EP extract were within acceptable ranges, therefore, the materials are classified as not hazardous. 21E Inc. is of the opinion that the waste material would, if anything, become less hazardous over time, therefore testing the material for this scope was not deemed to be necessary.

An update, since 1985, of municipal and state (DEP) files was completed as part of this investigation. Municipal records reveal several site investigations have been conducted in the immediate area since 1985. These properties include Whitney Barrel Company at 256 Salem Street, Murphy Waste Oil Company at 252 Salem Street, the property at 225 Wildwood Avenue, and Woburn Municipal Wells G and H. Fire Department records included documentation of the removal of three 15,000 gallon underground fuel oil storage tanks from the Riley property.

DEP records included reports on a subsurface investigation at Murphy Waste Oil Company property. This investigation found soils and groundwater contaminated with volatile organic compounds, petroleum, and PCBs. A study at 225 Wildwood Avenue revealed volatile organic contamination in both soil and groundwater on-site. An NOR was issued to Whitney Barrel at 256 Salem Street. The NOR required subsurface investigation at the property. The subsurface investigation revealed contamination of both soil and groundwater with volatile organic compounds,



semivolatile organic compounds, PCBs, and metals. Further investigations are ongoing at the property.

The geology of the Site was gathered from available reports and the current subsurface investigation of the property. The subsurface investigation consisted of the drilling of four soil borings and the installation of four monitoring wells. The information gathered from the subsurface investigation is consistent with the available reports. The Site is underlain by surficial deposits consisting of stratified and sorted deposits of sand, gravel, boulders, silt and clay. These surficial deposits are underlain by bedrock which has been mapped to be a complex of diorite and gabbro of the Proterozoic Period. The monitoring wells on the property were surveyed and depth to groundwater measurements were collected and converted to elevations to define the potentiometric surface or water table. The measurements were used to calculate the inferred groundwater flow direction, which was determined to be east.

Soil borings were drilled on the property and undisturbed soil samples were collected. All soil samples were screened with an HNu photoionization meter and selected soil samples were submitted for laboratory analysis. Monitoring wells were installed in all four of the soil boring locations. Groundwater samples were collected and analyzed from the four installed wells (MW1, MW2, MW3, and MW4) and three previously installed wells (RR-1, RR-2, and RR-3).

The results of the analysis reveal no volatile organic compounds in the groundwater collected from MW1, MW2, MW3, MW4, RR-1, RR-2 or RR-3. Groundwater samples analyzed for petroleum hydrocarbons (MW1, MW2, MW3, MW4, and RR-2) revealed no petroleum products. Semivolatile analysis of groundwater collected from MW4 and RR-3 revealed no semivolatile compounds, including pesticides and PCBs, present in the samples. Total RCRA metals analysis of groundwater from MW1, MW3, and RR-2 revealed no levels above the Drinking Water Standards as set forth by the Massachusetts Department of Environmental Protection. Soil samples (MW1, MW3 and MW4 at about 35') analyzed for total RCRA metals do not indicate levels above the commonly expected ranges.

Based on the data collected during the course of this investigation, it is the opinion of 21E Inc. that there is no evidence of a release or threat of release of oil or hazardous materials on the property located at 228 Salem Street in Woburn, MA. In addition, based on data obtained from this investigation, it appears that previous operations at the property have not adversely affected the integrity of the Site.

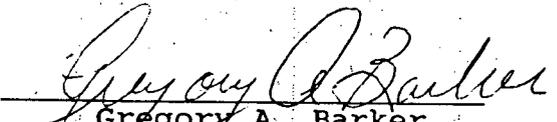


CERTIFICATION

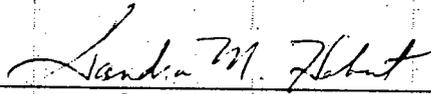


7. CERTIFICATION

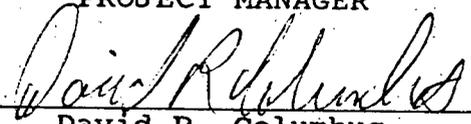
This report was prepared and reviewed by the following:



Gregory A. Barker
PRINCIPAL RESEARCHER



Sandra M. Hebert
PROJECT MANAGER



David R. Columbus
VICE PRESIDENT



RESEARCH SOURCES

8. RESEARCH SOURCES

Naomi Foley - City Clerk's Office
City Hall
Woburn, MA
(617) 932-4400

Assessors Office
City Hall
Woburn, MA
(617) 932-4400

Carol Cogan - Engineering Department
City Hall
Woburn, MA
(617) 932-4400

Jack Fralick - Health Department
Middle Street
Woburn, MA
(617) 938-8361

Chief Doherty - Hazardous Waste Officer
Woburn Fire Department
Woburn, MA
(617) 935-1636

Bill Murphy - Conservation Commission
City Hall
Woburn, MA
(617) 932-4400

DEP - Regional Office
5 Commonwealth Avenue
Woburn, MA
(617) 935-2160

Boston North, MA 7.5 X 15 minute topographic quadrangle map
(1985); published by USGS; scale 1:25000 metric.

Massachusetts Department of Environmental Quality Engineering
Office of Research and Standards, Guidance For Disposal
Site Risk Characterization and Related Phase II Activities -
In Support of The Massachusetts Contingency Plan, published
by the Office of the Massachusetts Secretary of State,
Michael J. Connolly, Secretary, May 17, 1989.



Delaney, David F. and Gay, Frederick B., Hydrology and Water Resources of the Coastal Drainage Basins of Northeastern Massachusetts, from Castle Neck River, Ipswich, to Mystic River, Boston, (HA-589), published by the U.S. Geological Survey, 1980.

Delaney, David F. and Gay Frederick B., Hydrologic Data of the Coastal Drainage Basins of Northeastern Massachusetts, From Castle Neck River, Ipswich to Mystic River, Boston, Massachusetts Hydrologic Data Report No. 21, published by the U.S. Geological Survey, 1980.

Zen, E-an; Goldsmith, Richard; Ratcliffe, Nicholas M.; Robinson, Peter and Stanley; Rolfe, S., Bedrock Map of Massachusetts, 1983.

Geotechnical Engineers Inc., "21E Assessment of J.J. Riley Property, 228 Salem Street, Woburn, Massachusetts," 1985

Yankee Environmental Engineering and Research Services, Inc., "Hydrogeologic Investigation of the John J. Riley Tanning Company Inc., 228 Salem Street, Woburn, Massachusetts," 1983



FIGURE 1



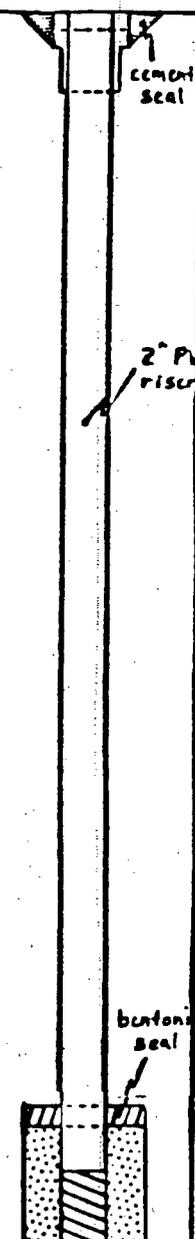
APPENDIX A



Soil Boring Log

Well Installation and Completion Data

Client John J. Riley Site Wbum Job No. 90-0505 Surveyed Elevation: Ground
 Date Drilled 5/29/90 Well No. MW1 Boring Co. Geosearch Top of Casing flush Screen Length 10'
 Total Depth 38.5' Boring Method Used hollow stem auger Piezometer Casing Size & Type 2" PVC
 Field Geologist GB Organic Vapor Instruments Used NO Water Table Depth 35'

Depth (feet)	Samp. No.	Blows per 6' <u>140</u> lbs.	Sample Interval	Adv. / Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
	S1	off auger	0-1'		0	Dk brown f SAND & Silt w/roots	loam	
	S1A	off auger	1-1.5'		0	Brown f SAND & Silt, some Gravel w/roots		
5	S2	53-47-39	4-5.5'	8"	0	Brown f SAND, little Silt, w/Gravel and cobbles	sand & gravel	
10	S3	10-29-26	9-10.5'	14"	0	Brown mf SAND, little Silt, some Gravel & cobbles		
15	S4	23-24-20	14-15.5'	14"	0	Brown mf SAND, little Silt, some Gravel & cobbles		
20	S5	11-15-9	19-20.5'	16"	0	Brown mf SAND, little Silt, some Gravel & cobbles		
						Brown-tan cm ⁺ SAND, little Gravel, trace Silt		
25	S6	10-9-9	24-25.5'	16"	0	Brown cm SAND, little Gravel, trace Silt		
30	S7	9-12-17	29-30.5'	16"	0	Brown mf SAND, trace Silt, trace Gravel		

Remarks:



Soil Boring Log

Well Installation and Completion Data

Client John J. Riley Site Woburn Job No. 90-0505 Surveyed Elevation: Ground
 Date Drilled 5/29-5/30/90 Well No. MW2 Boring Co. Geosearch Top of Casing flush Screen Length 45'
 Total Depth 75.5' Boring Method Used hollow stem auger Piezometer Casing Size & Type 2" PVC
 Field Geologist GB Organic Vapor Instruments Used HNU Water Table Depth 37'

Depth (feet)	Samp No.	Blows per 6" <u>140</u> lbs.	Sample Interval	Adv. / Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
	S1	off auger	0-1.5'		0	Brown f SAND & Silt, trace Gravel, w/roots	loam	
5	S2	40-31-26	4-5.5'		0	Brown f SAND, little Silt, some Gravel, some cobbles, some boulders		
10	S3	37-29-34	9-10.5'	6"	0	Brown f SAND, w/Silt, little Gravel, some cobbles	sand & gravel	
15	S4	27-11-11	14-15.5'	none		No sample recovered		
20	S5	27-11-10	19-20.5'	4"	0	Brown f SAND w/Silt, some Gravel, trace cobbles		
25	S6	15-9-7	24-25.5'	4"	0	Brown f SAND w/Silt, some Gravel, trace cobbles		
	S7	13-5-7	29-30.5'	none		No sample recovered		

Remarks:



Client John J. Riley Site Woburn Job No. 90-0505 Well No. MW2

Depth (feet)	Samp. No.	Blows per 6" <u>140</u> lbs.	Sample Interval	Adv. / Recov.	Org Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
30								
35	S8	21-20-16	34-35.5'	16"	0	Lt brown cmf ⁺ SAND, w/Gravel, trace Silt		<p>2' PVC screen</p>
40	S9	8-8-10	39-40.5'	14"	0	Lt brown cmf ⁺ SAND, w/Gravel Tan f SAND, w/Gravel, trace Silt	sand	
						Lt brown cmf ⁺ SAND, w/Gravel, trace Silt		
45	S10	5-5-6	44-45.5'	18"	0	Lt brown mf SAND, trace Gravel, trace Silt Tan vf SAND, trace Gravel, trace Silt		
50	S11	3-5-5	49-50.5'	18"	0	Tan vf SAND, w/Silt		
55	S12	3-3-3	54-55.5'	18"	0	Tan vf SAND, w/Silt		
60	S13	3-3-3	58-60.5'	18"	0	Tan mf SAND, w/Silt		

Remarks:



Soil Boring Log

Well Installation and Completion Data

Client John J. Riley Site Woburn Job No. 90-0505 Surveyed Elevation: Ground
 Date Drilled 5/30-5/31/90 Well No. MW3 Boring Co. Geosearch Top of Casing flush Screen Length 25'
 Total Depth 50' Boring Method Used hollow stem auger Piezometer Casing Size & Type 2" PVC
 Field Geologist GB Organic Vapor Instruments Used HNU Water Table Depth 29'

Depth (feet)	Sample No.	Blows per 6' <u>140</u> lbs.	Sample Interval	Adv. / Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
						Asphalt 2"		
	S1	off auger	2"-2'		0	Dark brown f SAND, w/\$ilt, w/Gravel, trace asphalt	sand & gravel	cement seal
5	S2	3-3-3	4-5.5'	8"	0	Dark brown f SAND, w/\$ilt, w/Gravel, w/cobbles		
10	S3	4-6-6	9-10.5'		0	Tan vf SAND w/\$ilt, trace Gravel	sand	2" PVC riser
15	S4	11-17-19	14-15.5'	18"	0	Brown mf SAND w/Gravel, little \$ilt Tan f SAND w/\$ilt, trace Gravel Brown mf SAND w/Gravel, little \$ilt	sand & gravel	bentonite seal
20	S5	11-23-26	19-20.5'	8"	0	Brown-Gray cmf SAND & Gravel, little cobbles, little \$ilt		
25	S6	24-24/10"	24-25.5'	4"	0	Brown cmf ⁺ SAND & Gravel w/\$ilt, little cobbles		2" PVC screen
30	S7	6-7-8	29-30.5'	16"	0	Tan f SAND & \$ilt Brown-Gray f SAND, trace \$ilt		Filter Sand

Remarks:



Client John J. Riley

Site Woburn

Job No. 90-0505

Well No. MW4

Depth (feet)	Sam. No.	Blows per 6' 140 lbs.	Sample Interval	Adv. / Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
30								
35	S8	27-12	34-35'	10"	0	Brown cm SAND, w/\$ilt, w/Gravel	sand	<p>2' PVC screen</p> <p>Filter Sand</p>
	S8A	17	35-35.5'		0	Brown f-vf SAND; w/\$ilt		
40	S9	3-3-3	39-40.5'	18"	0	Tan f-vf SAND, w/\$ilt, trace Gravel.		
45	S10	4-5-7	44-45.5'	18"	0	Brown f-vf SAND, w/\$ilt, trace Gravel		
50	S11	6-6-7	49-50.5'	16"	0	Tan f-vf SAND, w/\$ilt		
55	S12	5-5-6	54-55.5'	10"	0	Tan f-vf SAND, w/\$ilt		
60	S13	21-17-23	59-60.5'	6"	0	Brown f SAND and \$ilt, w/Gravel	till	

Remarks: refusal @ 61' end boring well point at 59'

GEOSARCH, INC.

P.O. BOX 342
LEOMINSTER, MA 01453

CLIENT Z-L INC.

PROJECT NAME John J. Riley Co.

LOCATION 228 Salem Street Woburn, MA

LOG NUMBER

ML-1

SHEET

No. 1

of 7

DRILLER Scott Lamarche

ARCHITECT
ENGINEER

FILE NO. 90-540

INSPECTOR _____

TYPE

Casing

Sampler

Core Barrel

SURFACE ELEV. _____

DATE START 5-29-90

SIZE I.D.

H.S.A.

4 1/4"

LINE & STATION _____

DATE FINISH 5-29-90

HAMMER WT.

140#

HAMMER FALL

30"

OFFSET _____

SAMPLE

NO.	DEPTH	RANGE	BLOWS PER 6" ON SAMPLER			REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
			0-6	6-12	12-18				
		0"							
S-1	0"-1'			T.F.F.					Moist, topsoil
		1'							
		1'							
S-2	1'-1'6"			T.F.F.					Moist, fine sand, some inorganic silt, trace f/c gravel
		2'							
		2'							
S-3	4'-5'6"		53	47	39				V. dense to dense, dry c/m sand and f/c gravel, some cobbles, trace bolders and inorganic silt
S-4	9'-10'6"		10	29	26				
S-5	14'-15'6"		23	24	20				
		17'							
		17'							
S-6	19'-20'6"		11	15	9				Med. dense, moist, c/m sand, grading to med. sand, trace f/m gravel and inorganic silt
S-7	24'-25'6"		10	9	9				
S-8	29'-30'6"		9	12	17				
		33'							
		33'							
S-9	34'-34'6"			118/6"					V. dense, wet, v. fine to fine sand, some inorganic silt, trace f/c gravel and cobbles
S-10	38'-38'0"			50/0"					
		38'6"							

SAMPLE IDENTIFICATION

- S _____ SPLIT SPOON
- T _____ THIN WALL TUBE
- U _____ UNDISTURBED PISTON
- O _____ OPEN END ROD
- W _____ WASH SAMPLE
- A _____ AUGER SAMPLE

PENETRATION RESISTANCE

140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med Dense	5-6	M/Stiff
30-49	Dense	8-15	Stiff
50 -	Very Dense	16-30	V-Stiff
		31 -	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

1. Refusal @ 38'6" w/H.S.A.
2. Set w.p. @ 38'6"
3. Water @ _____ upon comp.

COL. A _____

DRILLER Scott Lamarche
 INSPECTOR _____
 DATE START 5-29-90
 DATE FINISH 5-30-90

ARCHITECT ENGINEER _____
 TYPE H.S.A.
 SIZE I.D. 4 1/4"
 HAMMER WT. 140#
 HAMMER FALL 30"

FILE NO. 90-540
 SURFACE ELEV. _____
 LINE & STATION _____
 OFFSET _____

SAMPLE						COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS	
NO.	DEPTH	RANGE	BLOWS PER 6" ON SAMPLER						REC.
			0-6	6-12	12-18				
		0"							
S-1	0'-1'6"			T.F.F.			Dry f/m sand, trace organic silt, f/c gravel and cobbles		
		1'6"							
		1'6"							
S-2	4'-5'6"		40	31	26		V. dense to med. dense, dry, f/c silty sand, and f/c gravel, some cobbles, trace boulders		
S-3	9'-10'6"		37	29	34				
S-4	14'-15'6"		27	11	11	(no rec)			
S-5	19'-20'6"		27	11	10				
S-6	24'-25'6"		15	9	7				
S-7	29'-30'6"		13	5	7	(no rec)			
		32'6"							
		32'6"							
S-8	34'-35'6"		8	8	10		Med. dense, dry to wet m/c sand, grading to med. to fine, trace to some inorganic silt		
S-9	39'-40'6"		5	5	6				
S-10	44'-45'6"		3	5	5				
		47'							
		47'							
S-11	49'-50'6"		3	5	5		Loose, wet, v. fine to fine sand, some to trace inorganic silt		
S-12	54'-55'6"		3	3	3				
S-13	59'-60'6"		3	3	3				
S-14	64'-65'6"			W.O.R.					
S-15	69'-70'6"		3	4	4				
S-16	74'-75'6"		11	7	9	(no rec)			

Well Material

- 1 2" PVC End Plug
- 4 2" PVC 10' Risers
- 1 2" PVC 5' Riser
- 3 2" PVC 10' Screens
- 1 Buffalo Box (small)
- 16 50# Silica Sand
- 1/2 50# Bentonite Pellets

SAMPLE IDENTIFICATION

S _____ SPLIT SPOON
 T _____ THIN WALL TUBE
 U _____ UNDISTURBED PISTON
 O _____ OPEN END ROD
 W _____ WASH SAMPLE
 A _____ AUGER SAMPLE

PENETRATION RESISTANCE
 140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

1. Set w.p. @ 75'
2. Water @ 36.2' upon comp

COL. A _____

DRILLER <u>Scott Lamarche</u>	ARCHITECT ENGINEER	FILE NO. <u>90-540</u>
INSPECTOR _____	TYPE <u>H.S.A.</u>	SURFACE ELEV. _____
DATE START <u>5-30-90</u>	SIZE I.D. <u>4 1/4"</u>	LINE & STATION _____
DATE FINISH <u>5-31-90</u>	HAMMER WT. <u>140#</u>	OFFSET _____
	HAMMER FALL <u>30"</u>	

SAMPLE						COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS	
NO.	DEPTH	RANGE	BLOWS PER 6" ON SAMPLER						REC.
			0-6	6-12	12-18				
		0"						Asphalt pavement	
		2"							
		2"							
S-1	2'-2'0"			T.F.F.					
S-2	4'-5'6"		3	3	3			Loose, dry, f/c sand, some f/c gravel and cobbles, trace boulders, and inorganic silt	
		7'							
		7'							
S-3	9'-10'6"		4	6	6			Med. dense dry, fine sand, trace inorganic silt	
		12'							
		12'							
S-4	14'-15'6"		11	17	19				
S-5	19'-20'6"		17	23	26			Med. dense to v. dense dry, f/c sand and gravel, some cobbles, trace of inorganic silt	
S-6	24'-24'10"		17	25/1"	50/0"				
		27'							
		27'							
S-7	29'-30'6"		6	7	8				
S-8	34'-35'6"		3	3	4			Med. dense to loose wet, fine sand, trace m/c sand and inorganic silt	
		36'							
		36'							
S-9	39'-40'6"		17	18	19				
S-10	44'-45'6"		19	23	27			Dense to v. dense, dry, f/m sand, some inorganic silt and f/c gravel, trace cobbles and boulders	
		48'							

SAMPLE IDENTIFICATION S _____ SPLIT SPOON T _____ THIN WALL TUBE U _____ UNDISTURBED PISTON O _____ OPEN END ROD W _____ WASH SAMPLE A _____ AUGER SAMPLE	PENETRATION RESISTANCE 140 lb. Wt. falling 30" on 2" O.D. Sampler <table style="font-size: small;"> <tr> <th colspan="2">Cohesionless Density</th> <th colspan="2">Cohesive Consistency</th> </tr> <tr> <td>0-4</td> <td>Very Loose</td> <td>0-2</td> <td>Very Soft</td> </tr> <tr> <td>5-9</td> <td>Loose</td> <td>3-4</td> <td>Soft</td> </tr> <tr> <td>10-29</td> <td>Med. Dense</td> <td>5-8</td> <td>M/Stiff</td> </tr> <tr> <td>30-49</td> <td>Dense</td> <td>9-15</td> <td>Stiff</td> </tr> <tr> <td>50 -</td> <td>Very Dense</td> <td>16-30</td> <td>V-Stiff</td> </tr> <tr> <td></td> <td></td> <td>31 -</td> <td>Hard</td> </tr> </table>	Cohesionless Density		Cohesive Consistency		0-4	Very Loose	0-2	Very Soft	5-9	Loose	3-4	Soft	10-29	Med. Dense	5-8	M/Stiff	30-49	Dense	9-15	Stiff	50 -	Very Dense	16-30	V-Stiff			31 -	Hard	PROPORTIONS USED trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%	REMARKS: 1. 1st attempt refusal @ 51' 2. 2nd attempt refusal @ 49' 3. Set w.p. @ 48' 4. Water @ 27' upon comp COL. A _____
Cohesionless Density		Cohesive Consistency																													
0-4	Very Loose	0-2	Very Soft																												
5-9	Loose	3-4	Soft																												
10-29	Med. Dense	5-8	M/Stiff																												
30-49	Dense	9-15	Stiff																												
50 -	Very Dense	16-30	V-Stiff																												
		31 -	Hard																												

RILLER Scott Lamarche
INSPECTOR _____
DATE START 6-6-90
DATE FINISH 6-6-90

ARCHITECT ENGINEER _____
TYPE _____
SIZE I.D. 4 1/2"
HAMMER WT. 140#
HAMMER FALL 30"

FILE NO. 90-540
SURFACE ELEV. _____
LINE & STATION _____
OFFSET _____

SAMPLE					REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
NO.	DEPTH	RANGE	BLOWS PER 6" ON SAMPLER					
			0-6	6-12	12-18			
		0"						Asphalt
		2"						
		2"						
S-1	2"-2'2"		I.F.F.					
S-2	4'-5'6"		13	27	19		Dense, dry to wet f/c sand and gravel, some cobbles and boulders, trace f/c sand lenses and inorganic silt	
S-3	9'-10'6"		9	11	10			
S-4	14'-15'6"		7	14	12			
S-5	19'-20'6"		15	23	11			
S-6	24'-25'6"		27	13	13	(no rec)		
S-7	29'-30'6"		17	23	19			
S-8	34'-35'		27	12				
		35'						
		35'						
S-8A	35'-35'6"			7			Med. dense, wet, v. fine to fine sand, trace m/c sand and inorganic silt	
S-9	39'-40'6"		3	3	3			
S-10	44'-45'6"		4	5	7			
S-11	49'-50'6"		6	6	7			
S-12	54'-55'6"		5	5	6			
		57'						
		57'						
S-13	59'-60'6"		21	17	23		Dense, wet, f/c sand, some f/c gravel and inorganic silt, trace cobbles	
		61'						

- SAMPLE IDENTIFICATION
- SPLIT SPOON
 - THIN WALL TUBE
 - UNDISTURBED PISTON
 - OPEN END ROD
 - WASH SAMPLE
 - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 -	Very Dense	16-30	V-Stiff
		31 +	Hard

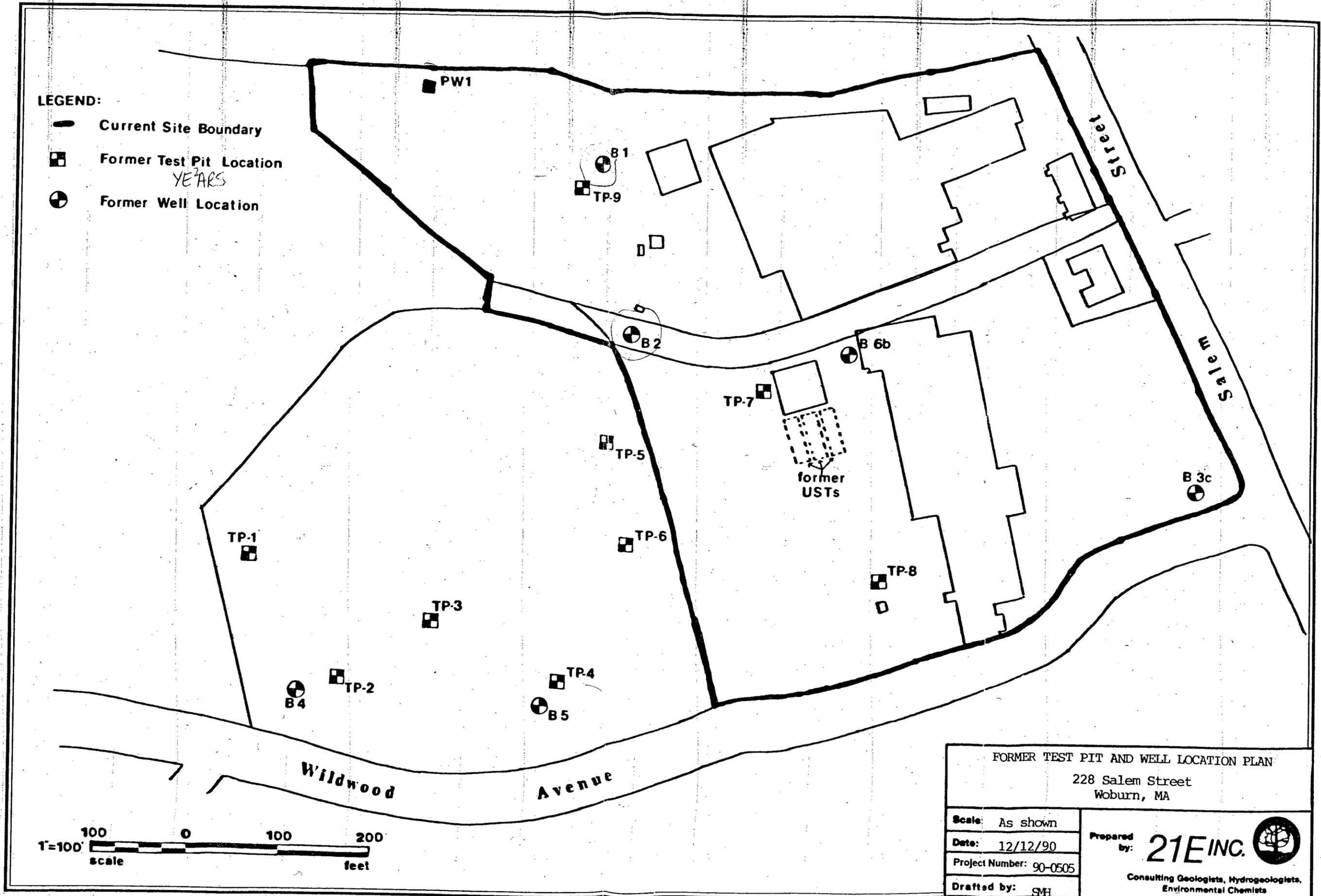
PROPORTIONS USED

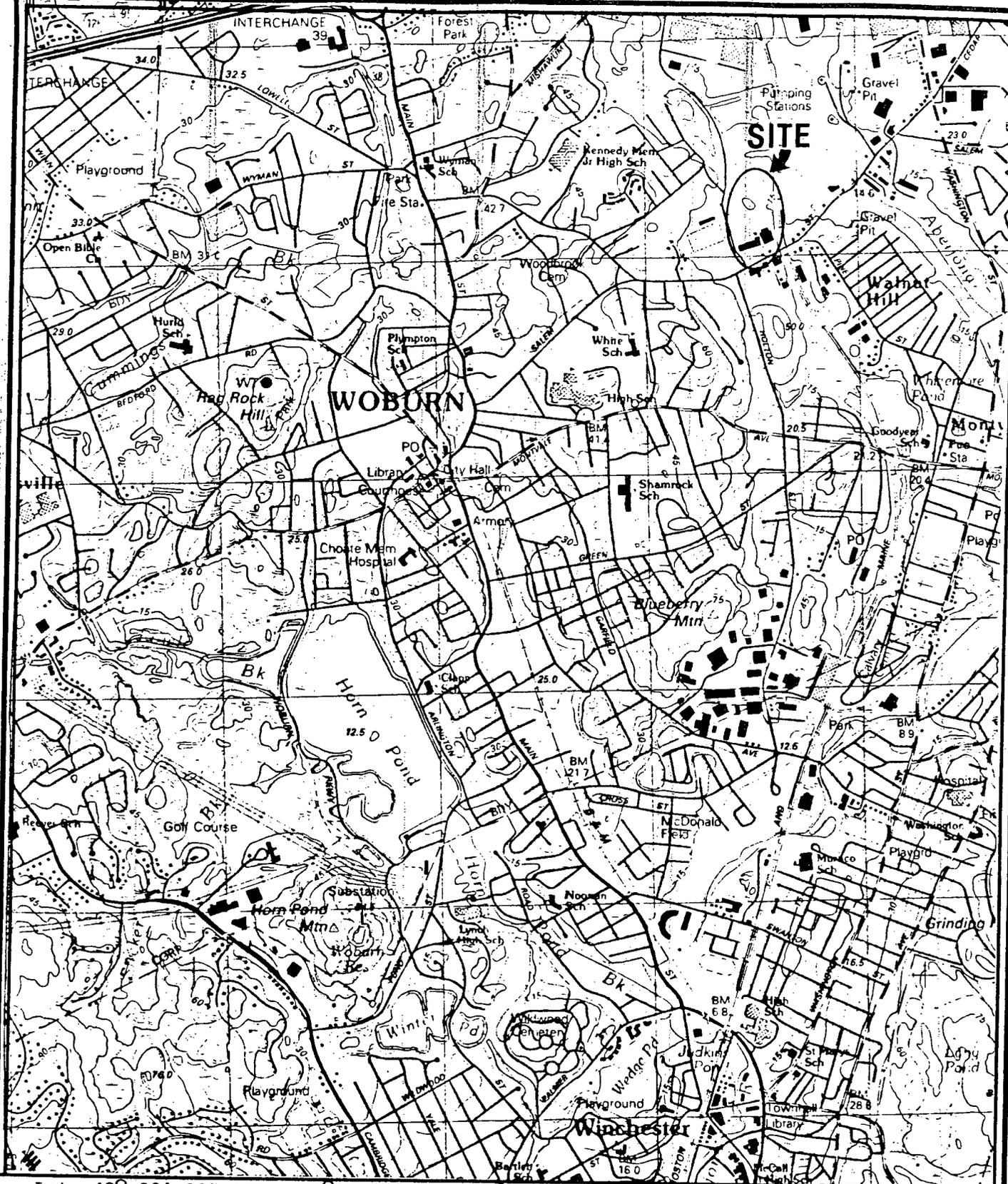
trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

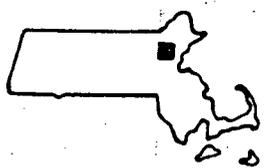
1. Refusal w/H.S.A. @ 61'
2. Set w.p. @ 59'
3. Water @ 23.3' upon comp

COL. A _____





Lat: 42° 29' 13" Long: 71° 8' 3"



USGS QUADRANGLE: Boston North, MA

TOPOGRAPHIC MAP

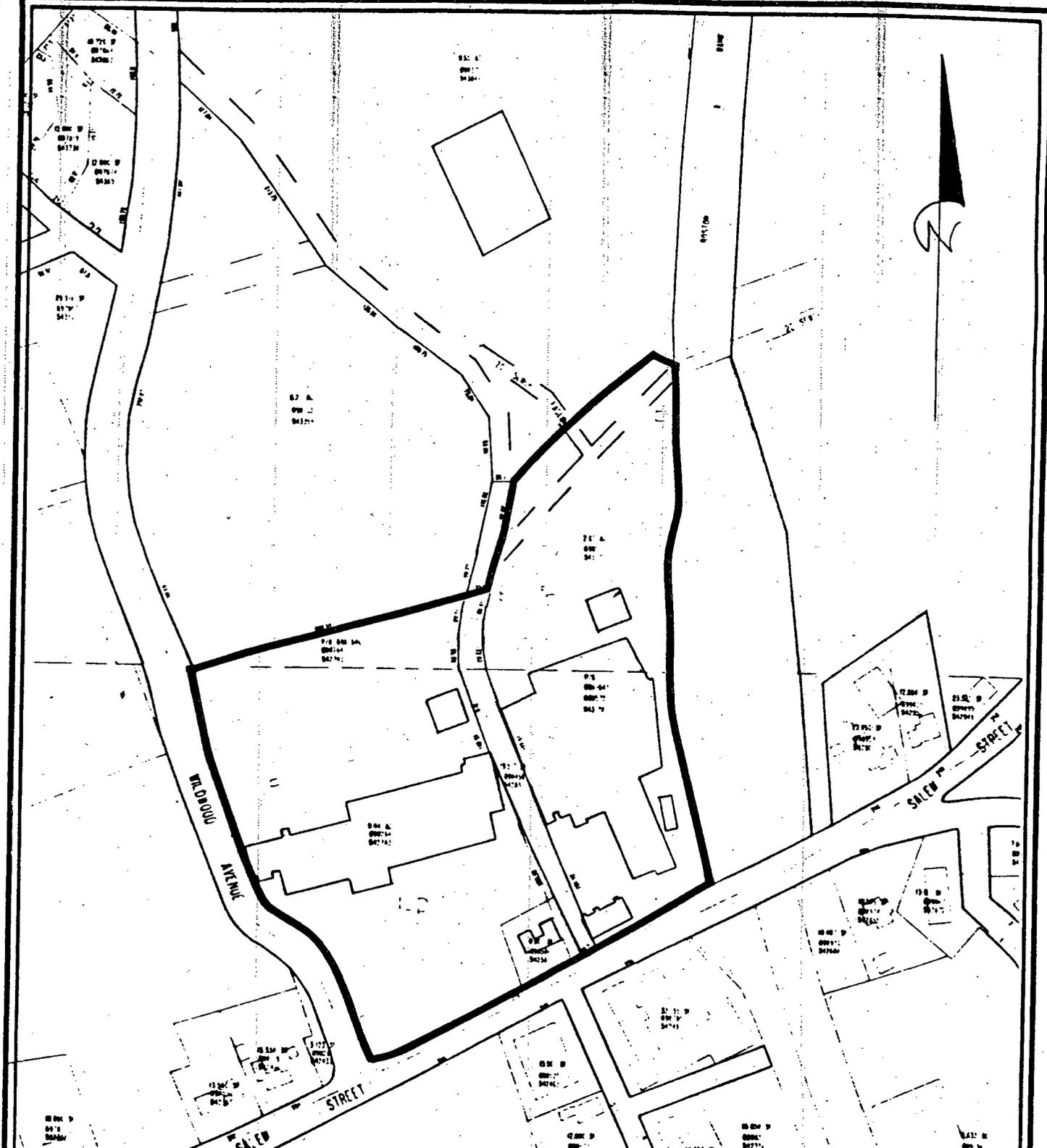
228 Salem Street
Woburn, MA

21E INC.

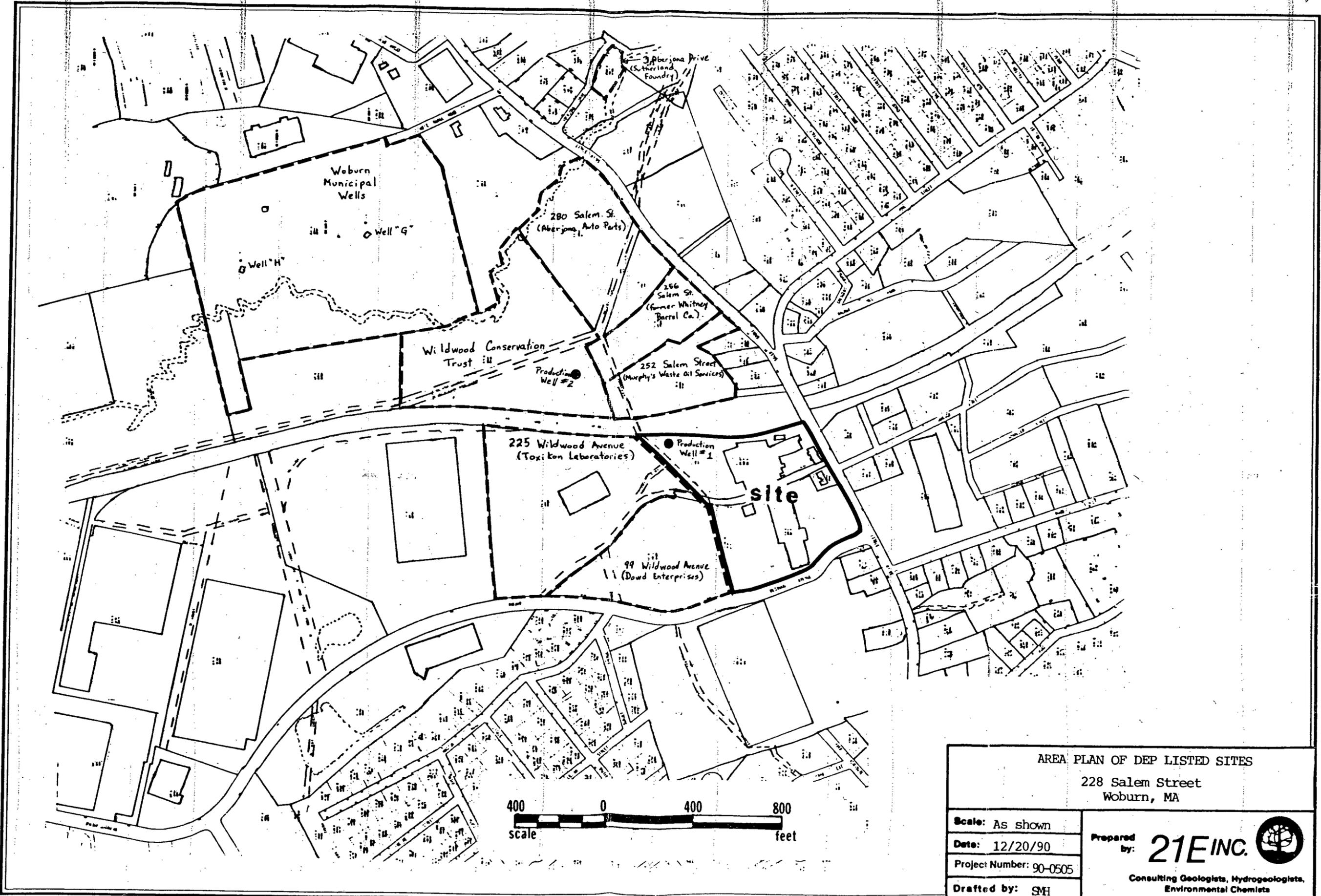
Consulting Geologists,
Hydrogeologists,
Environmental Chemists



APPROX. SCALE: 1"=2100'



SITE MAP 228 Salem Street Woburn, MA	
Scale: 1"=200'	Prepared by: 21E INC. 
Date: 08/08/90	
Designed by:	
Drafted by: DML	
Consulting Geologists, Hydrogeologists, Environmental Chemists	

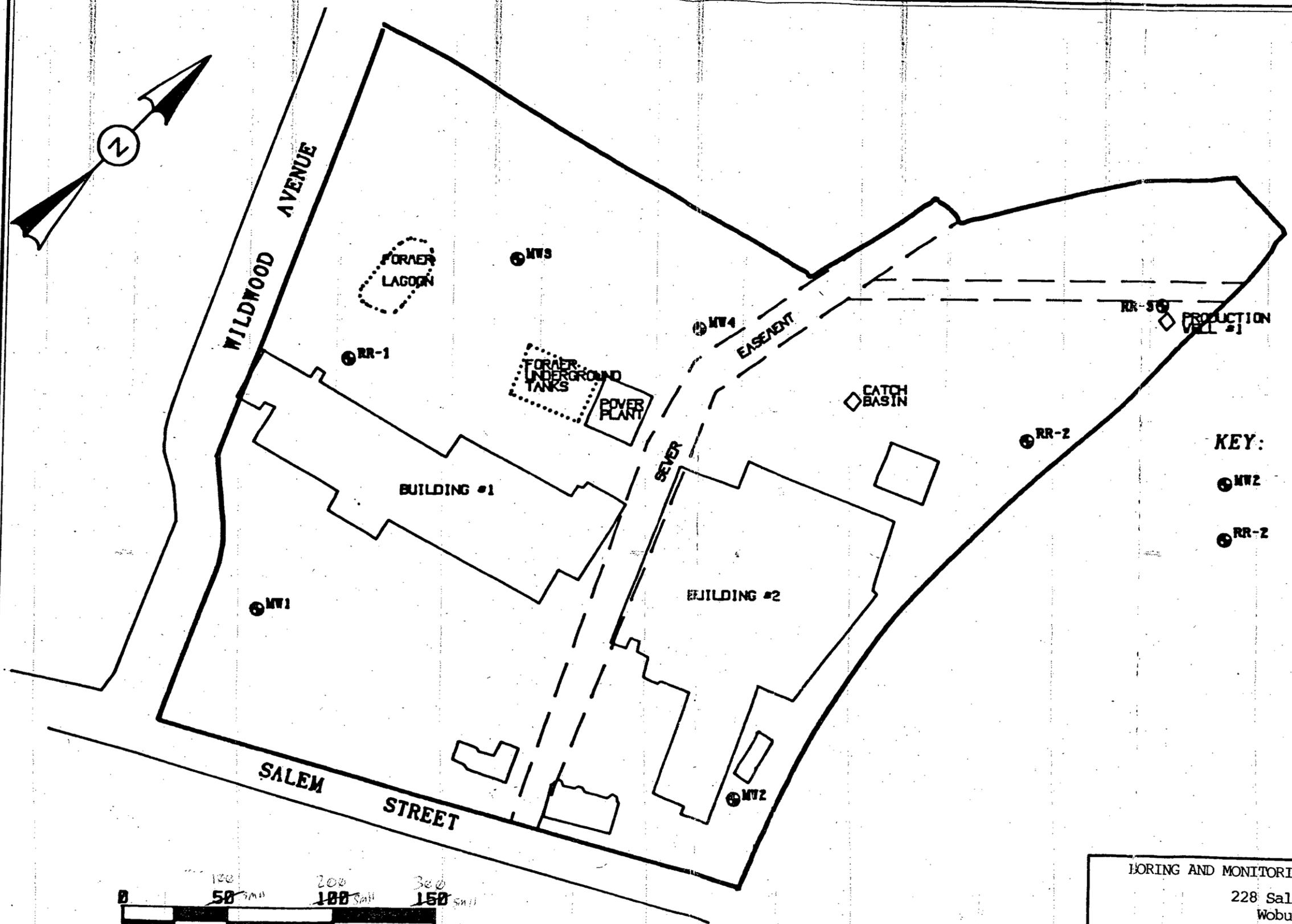
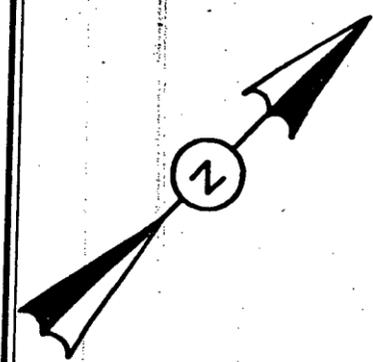


AREA PLAN OF DEP LISTED SITES

228 Salem Street
Woburn, MA

Scale: As shown
Date: 12/20/90
Project Number: 90-0505
Drafted by: SM

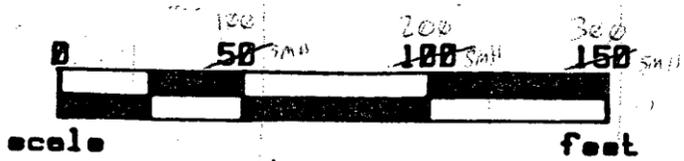
Prepared by: **21E INC.** 
Consulting Geologists, Hydrogeologists,
Environmental Chemists



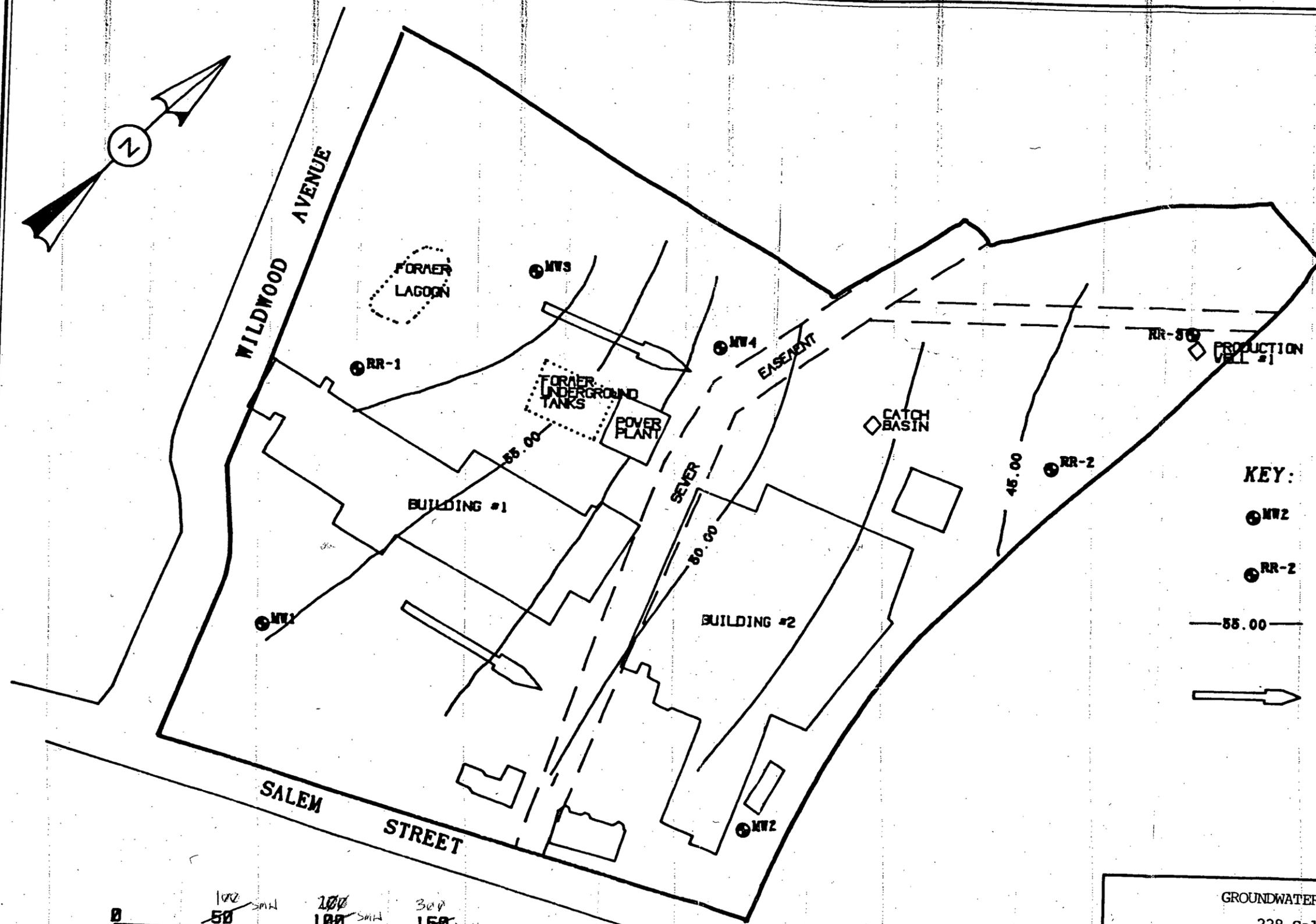
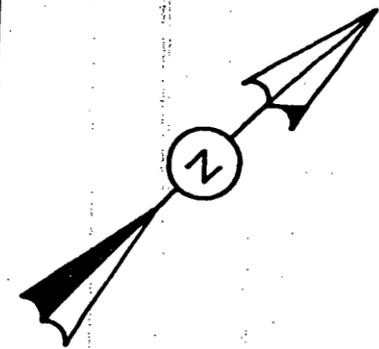
KEY:

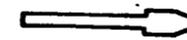
- MW2 Monitoring Well Location
- RR-2 Previously install Well

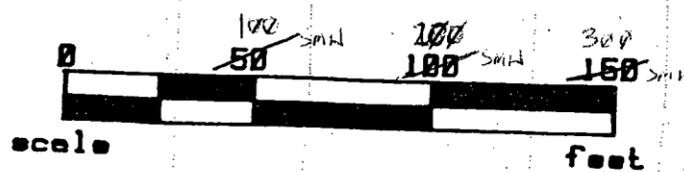
Butrice



BORING AND MONITORING WELL LOCATION PLAN	
228 Salem Street Woburn, MA	
Scale: As shown	Prepared by: 21E INC. 
Date: 08/06/90	
Project Number: 90-0505	
Drafted by: SMH	Consulting Geologists, Hydrogeologists, Environmental Chemists



- KEY:**
-  MW2 Monitoring Well Location
 -  RR-2 Previously install Well
 -  55.00 Groundwater Contour Elevation
 -  Inferred Groundwater Flow Direction



GROUNDWATER CONTOUR PLAN	
228 Salem Street Woburn, MA	
Scale: As shown	Prepared by: 21E INC. 
Date: 08/09/90	
Project Number: 90-0505	
Drafted by: SMH	Consulting Geologists, Hydrogeologists, Environmental Chemists

228 Salem Street
Woburn, MA

LABORATORY ANALYTICAL RESULTS
(IN PPM)

ANALYTE	SAMPLE DESCRIPTION																								
	TP-1/ 0-1'	TP-9/ 6'	TP-10/ 5'	TP-12/ 0-1'	TP-14/ 0-1'	TP-18/ 0-1'	TP-20/ 3'	TP-109/ 0-0.5'	TP-109/ 0.5-1'	TP-111/ 0-0.5'	TP-111/ 0.5-1'	TP-B/ 7'	TP-D/ 10'	TP-F/ 7'	TP-16/ SW COR	TP-16/ S WALL	TP-16/ 14'	TP-16/ BLUE*	TP-16/ ORANGE*	TP-16/ PINK*	TP-16/ BLACK*	Stockpile 1	Stockpile 2	Stockpile 3	
EXTRACTABLE ORGANIC COMPOUNDS																									
bis(2-Ethylhexyl)phthalate		ND	0.041				ND											ND	ND	ND	ND	ND	0.097	ND	ND
Butylbenzylphthalate		ND	ND				ND											ND	ND	ND	ND	ND	ND	0.089	ND
4-Nitroaniline		ND	ND				0.084																ND	ND	ND
Phenanthrene		ND	ND				0.088											ND	ND	ND	ND	ND	0.3	0.45	0.13
Anthracene		ND	ND				ND											ND	ND	ND	ND	ND	0.073	0.13	ND
Carbazole		ND	ND				ND																0.076	0.12	ND
Fluoranthene		ND	ND				0.098											ND	ND	ND	ND	ND	0.48	0.65	0.18
Pyrene		ND	ND				0.087											ND	ND	ND	ND	ND	0.42	0.66	0.14
Benzo(a)anthracene		ND	ND				0.1											ND	ND	ND	ND	ND	0.22	0.28	0.085
Chrysene		ND	ND				0.17											ND	ND	ND	ND	ND	0.25	0.34	0.11
Benzo(b)fluoranthene		ND	ND				0.45											ND	ND	ND	ND	ND	0.25	0.36	0.12
Benzo(k)fluoranthene		ND	ND				0.23											ND	ND	ND	ND	ND	0.22	0.33	0.1
Benzo(a)pyrene		ND	ND				0.1											ND	ND	ND	ND	ND	0.22	0.31	0.098
Indeno(1,2,3-cd)pyrene		ND	ND				0.26											ND	ND	ND	ND	ND	0.08	0.12	0.067
Benzo(g,h,i)perylene		ND	ND				0.29											ND	ND	ND	ND	ND	0.083	0.096	0.074
1,2-Dichlorobenzene		ND	ND				ND											ND	ND	ND	ND	ND	0.049	ND	ND
Phenol		ND	ND				ND											ND	ND	ND	ND	ND	ND	0.15	ND
4-Methylphenol		ND	ND				ND																ND	0.45	ND
Naphthalene		ND	ND				ND											ND	ND	ND	ND	ND	ND	0.08	ND
METALS																									
arsenic	95		3.5	40	6.1	4.7		23	110	6	7	5.0	13	3.4	8.4	4.3	11	5.8	8.5	77	61	5.4	11	2.6	
barium	51		70	600	69	100		170	780	110	21	60	161	204	136	14	21	224	292	267	471	4,800	310	3,400	
cadmium	ND		ND	ND	ND	ND						ND	ND	ND	ND	ND	ND	2.0	4.2	0.7	3	ND	ND	ND	
chromium	47		68	1,000	79	160		560	1,300	320	14	148	2,800	146	153	21	200	82,500	13,500	1,100	3,250	1,000	1,000	4,400	
lead	152		11	150	26	44						14	74	19	53	8	16	255	314	317	409	75	190	200	
mercury	51		ND	0.6	1	0.3											ND	1.0	0.4	0.9	1.8	0.4	1.2	ND	
selenium	ND		ND	ND	ND	ND						ND	ND	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	ND	ND
silver	ND		ND	ND	ND	ND						ND	ND	ND	ND	ND	ND	3.0	3.0	ND	ND	ND	ND	ND	ND
TOTAL PETROLEUM HYDROCARBONS																									
		ND																					180	1,500	180
VOLATILE ORGANIC COMPOUNDS																									
acetone																							0.006	0.006	ND
methylene chloride																							0.014	0.065	0.023
toluene																							ND	ND	0.002
xylenes																							0.003	0.007	0.007

NOTE: Blank space indicates sample not analyzed for that compound
 ND: Not detected
 *: Tannery material

Prepared by: **21E INC.** 
 Consulting Geologists, Hydrogeologists,
 Environmental Chemists

CONFIRMATORY RESULTS FROM EXCAVATION (in ppm)

228 Salem Street
Woburn, MA

SAMPLE ID	MAP ID	DEPTH	COMPOUND																	
			ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	THALLIUM	ZINC				
TP-B	1	7'		5	60			ND	148											
TP-F	2	7'		3.4	204			ND	146					ND	ND					
TP-16/S-1 SW CORNER	3	3'		8.4	136			ND	153					ND	ND					
TP-16/S-3 S WALL	4	1'		4.3	14			ND	21					ND	ND					
TP-16 (1) BOTTOM	5	14'		11	21			ND	200					ND	ND					
NE CORNER E WALL	6	5-6'		3.3	29			ND	96					ND	ND					
SW CORNER W WALL	7	3'		6.9	8			ND	17					ND	ND					
NE CORNER N WALL	8	3-5'		2.8	24			ND	112					ND	ND					
NW CORNER W WALL	9	6-8'		8.8	13			ND	763					ND	ND					
NW CORNER N WALL (2)	10	1-4'	ND	6.6		1.3		ND	343	20				ND	ND	ND		40		
NW CORNER N WALL	11	7-8'				ND														
NW CORNER W WALL	12	7-9'				ND														
NW CORNER W WALL	13	4'				ND														
NW CORNER N WALL	14	1-4'				0.7														
NW CORNER S WALL	15	3-5'				ND														
AVERAGE SITE CONCENTRATIONS			ND	6.05	56.6	0.47		ND	200	20				16.6	0.33	20	ND	ND	ND	40
S-1/GW-1&3 STANDARDS			10	30	1000	0.7		30	1000	N/A				300	20	300	400	100	8	2500
S-2/GW-1&3 STANDARDS			40	30	2500	0.8		80	2500	N/A				600	60	700	2500	200	30	2500
MEAN SITE BACKGROUND CONCENTRATIONS (3)			N/A	5.98	47.4	N/A		0.93	37.9	N/A				8.45	0.13	N/A	0.51	0.14	N/A	N/A
DEP BACKGROUND DATA (4)			1.4	17	45	0.4		2	29	38				89	0.3	17	0.5	0.6	0.6	116

NOTES

- Blank space indicates sample not analyzed for that compound
- ND=Compound not detected above the laboratory's detection limit
- N/A=No applicable standard or background concentration available for this compound
- (1)=sample also analyzed for extractable organic compounds including benzidine and aniline; all compounds reported as ND
Benzidine ND above 1000 ppb and aniline ND above 500 ppb
- (2)=Sample also analyzed for base neutral compounds; all compounds reported as ND
- (3)=Site background data displayed in Table 4
- (4)=Derived from Table 2.1 in "Guidance for Disposal Site Risk Characterization", BWSC/ORS-95-141

SOIL DISPOSAL DATA
 228 SALEM STREET
 WOBURN, MA

DATE	ARSENIC LOADS	ARSENIC TONS	TANNERY LOADS	TANNERY TONS	TOTAL LOADS	TOTAL TONS	TRANSPORTED FROM	TRANSPORTED TO
05/29/96	11.5	350.98	6.5	198.39	18	549.37(1)	WOBURN	ESMI
05/30/96	8	252.01	10	315.02	18	567.03(1)	WOBURN	ESMI
05/31/96	4	131.93	2	65.97	6	197.90(1)	WOBURN	ESMI
06/10/96	4	121.31	0	0	4	121.31	WOBURN	WMNH
					16	515.66(2)	ESMI	WMNH
06/11/96					12	366.63(2)	ESMI	WMNH
06/12/96	8	254.52	10	318.14	18	572.66	WOBURN	WMNH
06/13/96	0	0	23	719.18	23	719.18	WOBURN	WMNH
06/14/96	0	0	12	360.19	12	360.19	WOBURN	WMNH
06/17/96	0	0	6	189.12	6	189.12	WOBURN	WMNH
06/18/96	0	0	4	121.65	4	121.65	WOBURN	WMNH
TOTALS	35.5	1110.75	73.5	2287.66	109	3398.41		

NOTES:

WOBURN= J.J. Riley Tannery, 228 Salem St., Woburn, MA

ESMI= Environmental Soil Management, Inc., Loudon, NH

WMNH= Waste Management New Hampshire, Rochester, NH

(1) Only 432.01 tons of this material were recycled at ESMI: 120 tons of the arsenic material and 312 tons of the tannery material. The remaining material (882.29 tons) was transported to WMNH for disposal and amounts are not included in the disposal totals.

(2) This material was transported from ESMI to WMNH for disposal.



Appendix D

Analytical Results-Groundwater

LOCATION	A. MATERIAL STORED AND TRUE VAPOR PRESSURE @ 68 F	B. ANNUAL THROUGHPUT (GALS.) JAN TO DEC 31	C. CONTAINER	D. QUANTITY	COM	BM
ORAGE	1 Fuel Oil #6	480,000	Storage tanks	1-15,000 gal 1-15,000 gal		
TA	2 Fuel Oil #2	10,000	Storage tank	15,000 gal		
	3 Diisobutyl Ketone	2,425	55 gal drums	55 gal		} Finishing Dept -Dispensing
	4 Methyl Cellosolve	1,775	55 gal drums			
	5 Butyl Acetate	1,200	55 gal drums			
	6 Butyl Cellosolve	200	55 gal drums			
	7 Kerosene	530	275 g			
8						

} Finishing Dept
-Dispensing

	E. TYPE OF COVER/ ROOF	F. TANK AGE	G. TYPE OF TANK CONSTRUCTION	H. TANK DIAMETER		I. TANK COLOR
				(10)	(10)	
1	Underground	2 yrs.	Steel	10	10	
2	"		"			
3						
4						
5						
6						
7						
8						

ACK/ ENT TA	A. VAPOR CONTROL SYSTEM, TYPES AND EFFICIENCIES:				B. VENT HEIGHT ABOVE GROUND	C. VENT DIAMETER	D. TOTAL EMISSION RATE STORAGE	THAT
	STORAGE	% EFF.	FILL	% EFF.				
1	None				5 1/2 ft	3"		
2	"				5 1/2 ft	3"		
3								
4								
5								
6								
7								
8								

General Information: Number of employees at installation _____
Standard Industrial Classification code _____

MARKS

CERTIFICATION I certify that I have examined the above and to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements)

John J. Riley Jr.

6/1/82

SIGNATURE

WOBURN FIRE DEPARTMENT REPORT

Incident No. _____

Name _____ Address _____ Phone No. _____

Type of Report _____

DETAILS OF OFFENSE, PROGRESS OF INVESTIGATION, ETC.

Time _____

Date November 8 1979

① Tank 1 was cut off hole upon dry
drum. Hole appeared to be free of product
Tank appeared to be free of penetrations

② Tank 2 was removed while I was on site
Hole appeared to be free of product Tank
appeared to be free of penetrations.

③ Tank 3 was removed while I was on site
Hole appeared to be free of product. Tank
appeared to be free of penetrations.

④ Samples were taken from the bottom of
each hole.

⑤ Hole will be back filled using existing fill

REPORT MADE BY John S. McCHI DATE 11/8/79
John S. McCHI

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No. 3	Tank No.	T:
1. Status of Tank (Mark all that apply <input type="checkbox"/>) Currently in Use <input checked="" type="checkbox"/> Temporarily Out of Use <input type="checkbox"/> Permanently Out of Use <input type="checkbox"/> Brought into Use after 5/8/86 <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. Estimated Age (Years)	5	5	5		
3. Estimated Total Capacity (Gallons)	15,000	15,000	15,000		
4. Material of Construction (Mark one <input type="checkbox"/>) Steel <input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> Unknown <input type="checkbox"/> Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. Internal Protection (Mark all that apply <input type="checkbox"/>) Cathodic Protection <input type="checkbox"/> Interior Lining (e.g., epoxy resins) <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Other, Please Specify _____	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6. External Protection (Mark all that apply <input type="checkbox"/>) Cathodic Protection <input type="checkbox"/> Painted (e.g., asphaltic) <input checked="" type="checkbox"/> Fiberglass Reinforced Plastic Coated <input type="checkbox"/> None <input type="checkbox"/> Unknown <input type="checkbox"/> Other, Please Specify _____	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7. Piping <input checked="" type="checkbox"/> Coal Tar Mastic Coated <input checked="" type="checkbox"/> Steel <input checked="" type="checkbox"/> <input type="checkbox"/> Galvanized Steel <input type="checkbox"/> <input type="checkbox"/> Fiberglass Reinforced Plastic <input type="checkbox"/> <input type="checkbox"/> Cathodically Protected <input type="checkbox"/> <input type="checkbox"/> Unknown <input type="checkbox"/> Other, Please Specify _____	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply <input type="checkbox"/>) a. Empty <input type="checkbox"/> b. Petroleum <input type="checkbox"/> Diesel <input type="checkbox"/> Kerosene <input type="checkbox"/> Gasoline (including alcohol blends) <input type="checkbox"/> Used Oil <input type="checkbox"/> Other, Please Specify <u>No. 6 Fuel</u> c. Hazardous Substance <input type="checkbox"/> Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No. Mark box <input type="checkbox"/> if tank stores a mixture of substances d. Unknown <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9. Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr) <u>/</u> b. Estimated quantity of substance remaining (gal.) <u>/</u> c. Mark box <input type="checkbox"/> if tank was filled with inert material (e.g., sand, concrete) <input type="checkbox"/>	<u>/</u> <u>/</u> <input type="checkbox"/>	<u>/</u> <u>/</u> <input type="checkbox"/>	<u>/</u> <u>/</u> <input type="checkbox"/>	<u>/</u> <u>/</u> <input type="checkbox"/>	<u>/</u> <u>/</u> <input type="checkbox"/>



2

Submit to:
LOCAL FIRE DEPARTMENT

FIRE DEPT. ID Number
17347 OF *of JRC*
Date Received
5-8-86

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances; and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel; and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

- 1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
- 2. tanks used for storing heating oil for consumptive use on the premises where stored;
- 3. septic tanks;

- 4. pipeline facilities (including gathering lines) regulated under the Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1975, which is an intrastate pipeline facility regulated under State laws;
- 5. surface impoundments, pits, ponds, or lagoons;
- 6. storm water or waste water collection systems;
- 7. flow-through process tanks;
- 8. liquid traps or associated gathering lines directly related to oil or gas production or gathering operations;
- 9. storage tanks situated in an underground area (such as a basement, cell, mine-working, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed \$10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached

OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
WEDEL CORPORATION
Street Address
228A SALEM STREET
County
MIDDLESEX
City State ZIP Code
WOBURN MA 01801
Area Code Phone Number
617 933-3659
Type of Owner (Mark all that apply)
 Current State or Local Gov't Private or Corporate
 Former Federal Gov't (GSA facility I.D. no.) Ownership uncertain

LOCATION OF TANK(S)

(If same as Section I, mark box here)
Facility Name or Company Site Identifier, as applicable
RILEY LEATHER CO., INC.
Street Address or State Road, as applicable
228 SALEM STREET
County
MIDDLESEX
City (nearest) State ZIP Code
WOBURN MA 01801
Indicate number of tanks at this location
Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands

CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here) Job Title Area Code Phone Number
CHARLES J. SHEEHAN, PRESIDENT 617-933-5900

TYPE OF NOTIFICATION

Mark box here only if this is an amended or subsequent notification for this location.

CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative Signature Date Signed
JOHN J. RILEY, JR. PRES. WEDEL CORP. [Signature] 5/5/86

CONTINUE ON REVERSE SIDE



APPENDIX F

GROUND WATER MONITORING DATA

Well Number: RR1 Proj. 90-0505
 Page No. 2

DATE	TIME	ELEVATION*	DEPTH OF WATER FROM GROUND SURFACE	ELEVATION OF WATER	REMARKS	READ BY
6/15/90	1408	93.01'	33.89'	59.12'		GAB
8/7/90	1015		35.36'	57.65'		GAB

Well Number: RR2

6/15/90	1148	71.79'	26.59'	45.20'		GAB
8/7/90	1035		27.55'	44.24'		GAB

Well Number: RR3

6/15/90	1321	48.35'	4.60'	43.75'		GAB
8/7/90	1045		5.16'	43.19'		GAB

Well Number: _____

* Elevations based on YE²ARS NGVD datum benchmark

Well Number: MW1

Proj. 90-0505

Page No. 1

DATE	TIME	ELEVATION*	DEPTH OF WATER FROM GROUND SURFACE	ELEVATION OF WATER	REMARKS	READ BY
6/15/90	1453	91.50'	33.59'	57.77'		GAB
8/7/90	1005		36.35'	55.15'		GAB

Well Number: MW2

6/15/90	1603	84.28'	37.20'	47.08'		GAB
8/7/90	955		38.68'	45.60'		GAB

Well Number: MW3

6/15/90	932	86.55'	25.57'	60.98'		GAB
8/7/90	1023		27.12'	59.43'		GAB

Well Number: MW4

6/15/90	1057	84.33'	31.04'	53.29'		GAB
8/7/90	1026		32.46'	51.87'		GAB



APPENDIX E

106 SOUTH ST
HOPKINTON, MA 01748
508-435-6824

Mass Cert. No. 21000
NY ELAF No. 100000

90-0505 (QC-REPORT)

REFERRED BY:

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
/ /	06/21/90	06/27/90
00:00		

FINAL REPORT

SOIL

*** QC RECOVERY STUDIES

ANALYTE	IDENTIFICATION	DATE RECEIVED	LEVEL
ARSENIC ID:	01709285	RECOVERY	78. %
BARIUM ID:	01709285	RECOVERY	85. %
CADMIUM ID:	01709285	RECOVERY	80. %
CHROMIUM, T ID:	01709285	RECOVERY	118. %
LEAD ID:	01709285	RECOVERY	95. %
MERCURY ID:	01729385	RECOVERY	90. %
SELENIUM ID:	01729385	RECOVERY	98. %
SILVER ID:	01709285	RECOVERY	120. %

*** QC DUPLICATE STUDIES

ARSENIC ID:	01709286	VARIANCE	18. %
BARIUM ID:	01709286	VARIANCE	11. %
CADMIUM ID:	01709286	VARIANCE	0. %
CHROMIUM, T ID:	01708286	VARIANCE	15. %
LEAD ID:	01709286	VARIANCE	6. %
MERCURY ID:	01729385	VARIANCE	0. %
SELENIUM ID:	01729386	VARIANCE	0. %
SILVER ID:	01709286	VARIANCE	0. %

*** METHOD SUMMARIES

METAL ANALYSIS IS PERFORMED ON DIGESTED EXTRACTS USING ATOMIC ABSORPTION OR ICP SPECTROSCOPY. AA SAMPLES ARE ATOMIZED USING FASTAC AUTO DEPOSITION SYSTEMS AND AUTOMATICALLY DEPOSITED INTO GRAPHITE CELLS OR DIRECTLY INTO FLAME. ICP SAMPLES ARE AUTOMATICALLY SAMPLED, NEBULIZED AND TRANSPORTED INTO THE PLASMA TORCH. FINAL RESULTS ARE PRODUCED BY AUTO DATA/REDUCTION AND GRAPHICS PRINTER.

*** REFERENCES

1. TEST METHODS FOR EVALUATING SOLID WASTE: PHYSICAL/CHEMICAL METHODS. EPA SW-846. NOVEMBER 1986.
2. METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES. EPA 600/4-79-200. REVISED MARCH 1983.
3. STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER. APHA-AWWA-WACF., 16TH EDITION. 1985.

*** THIS IS A FINAL REPORT. ***

106 SOUTH ST.
HOPKINTON, MA 01748
508-435-6824

90-0505 (QC-REPORT)

Mass. Cert. No. 3131 Contr. Cert. No. F-05111 FFAIDN MA
N.Y. ELAP No. 11116

REFERRED BY:

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

ORDERED	RECEIVED	REPORTED
/ /	06/20/90	06/29/90
00:00		

FINAL REPORT

WATER

ACID/BASE NEUTRAL ANALYSIS IS PERFORMED USING H/P 5970 GC/MS SYSTEMS WITH AUTOSAMPLER. ANALYSIS IS PERFORMED WITH J&W MEGABORE COLUMN. TUNING IS BASED ON DEPTP CRITERIA. PROCEDURAL GUIDELINES DESCRIBED IN SW846 ARE USED FOR ALL ANALYSIS. DATA REDUCTION IS ACCOMPLISHED USING H/P RTE 1000 COMPUTER SYSTEMS.

*** REFERENCES

1. TEST METHODS FOR EVALUATING SOLID WASTE: PHYSICAL/CHEMICAL METHODS. EPA SW-846. NOVEMBER 1986.
 2. METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES. EPA 600/4-79-200. REVISED MARCH 1983.
 3. STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER. APHA-AWWA-WACF., 16TH EDITION. 1985.
- *** THIS IS A FINAL REPORT. ***

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
/ /	06/20/90	06/29/90
00:00		

FINAL REPORT

WATER

*** QC RECOVERY STUDIES

ANALYTE	IDENTIFICATION	RECOVERY	REMARKS
ARSENIC ID:	01709290	RECOVERY 82.	
BARIUM ID:	01709292	RECOVERY 89.	
CADMIUM ID:	01709292	RECOVERY 120.	
CHROMIUM, T ID:	01709292	RECOVERY 90.	
LEAD ID:	01709292	RECOVERY 85.	
MERCURY ID:	01709289	RECOVERY 90.	
SELENIUM ID:	01709290	RECOVERY 98.	
SILVER ID:	01709292	RECOVERY 100.	

*** QC DUPLICATE STUDIES

ANALYTE	IDENTIFICATION	VARIANCE	REMARKS
ARSENIC ID:	01709288	VARIANCE 11.	
BARIUM ID:	01709290	VARIANCE 0.	
CADMIUM ID:	01709290	VARIANCE 0.	
CHROMIUM, T ID:	01709290	VARIANCE 0.	
LEAD ID:	01709290	VARIANCE 0.	
MERCURY ID:	01709288	VARIANCE 0.	
SELENIUM ID:	01709288	VARIANCE 0.	
SILVER ID:	01709290	VARIANCE 0.	

*** BASE/NEUT SURROGATE STUDY

SAMPLE ID:	IDENTIFICATION	% REC
2-FLUOROBIPHENYL	102.	% REC
NITROBENZENE-D5	82.	% REC
P-TERPHENYL-D14	53.	% REC

*** ACID EXT. SURROGATE STUDY

SAMPLE ID:	IDENTIFICATION	% REC
2-FLUOROPHENOL	46.	% REC
PHENOL-D6	37.	% REC
2,4,6-TRIBROMOPHENOL	55.	% REC

*** METHOD SUMMARIES

METAL ANALYSIS IS PERFORMED ON DIGESTED EXTRACTS USING ATOMIC ABSORPTION OR ICP SPECTROSCOPY. AA SAMPLES ARE ATOMIZED USING FASTAC AUTO DEPOSITION SYSTEMS AND AUTOMatically DEPOSITED INTO GRAPHITE CELLS OR DIRECTLY INTO FLAME. ICP SAMPLES ARE AUTOMATICALLY SAMPLED, NEBULIZED AND TRANSPORTED INTO THE PLASMA TORCH. FINAL RESULTS ARE PRODUCED BY AUTO DATA/REDUCTION AND GRAPHICS PRINTER.

CONTINUED ON NEXT PAGE

A DIVISION OF COOPERATING MANAGEMENT INC
HOPKINTON INDUSTRIAL PARK
106 SOUTH ST.
HOPKINTON, MA 01748
508-435-6824
Mass. Cert. No. 3133 Cont. Cert. No. PH-2515 EPA ID No. MA013
NY ELAFN. 11116

01709291 001122 E01 3

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW-4)

REFERRED BY:

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED **RECEIVED** **REPORTED**
06/15/90 06/20/90 06/29/90
13:21

FINAL REPORT

TEST	RESULTS	UNIT	REPORTED	PERIOD
*** BASE/NEUTRALS	WATER			
HEPTACHLOR	ND	UG/L	5.	8270
HEPTACHLOR EPOXIDE	ND	UG/L	5.	8270
METHOXYCHLOR	ND	UG/L	5.	8270
TOXAPHENE	ND	UG/L	10.	8270
PCB-1016	ND	UG/L	10.	8270
PCB-1221	ND	UG/L	10.	8270
PCB-1232	ND	UG/L	10.	8270
PCB-1242	ND	UG/L	10.	8270
PCB-1248	ND	UG/L	10.	8270
PCB-1254	ND	UG/L	10.	8270
PCB-1260	ND	UG/L	10.	8270

*** THIS IS A FINAL REPORT. ***

ADDITIONAL INFORMATION

90-0505 (MW-4)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

06/15/90 06/20/90 06/29/90
13:21

FINAL REPORT

*** BASE/NEUTRALS	WATER			
CHRYSENE	ND	UG/L	2.5	8270
DIBENZ (AH) ANTHRACENE	ND	UG/L	2.5	8270
1,2-DICHLOROBENZENE	ND	UG/L	1.9	8270
1,3-DICHLOROBENZENE	ND	UG/L	1.9	8270
1,4-DICHLOROBENZENE	ND	UG/L	4.4	8270
3,3-DICHLOROBENZIDINE	ND	UG/L	16.5	8270
DIETHYLPHALATE	ND	UG/L	1.9	8270
DIMETHYLPHALATE	ND	UG/L	1.6	8270
DI-N-BUTYLPHALATE	ND	UG/L	2.5	8270
2,4-DINITROTOLUENE	ND	UG/L	5.7	8270
2,6-DINITROTOLUENE	ND	UG/L	1.9	8270
DI-N-OCTYLPHALATE	ND	UG/L	2.5	8270
FLUORENE	ND	UG/L	1.9	8270
FLUORANTHENE	ND	UG/L	2.2	8270
HEXACHLOROBENZENE	ND	UG/L	1.9	8270
HEXACHLOROBUTADIENE	ND	UG/L	0.9	8270
HEXACHLOROETHANE	ND	UG/L	1.6	8270
INDENO (1,2,3-)PYRENE	ND	UG/L	3.7	8270
ISOPHERONE	ND	UG/L	2.2	8270
NAPHTHALENE	ND	UG/L	1.6	8270
NITROBENZENE	ND	UG/L	1.9	8270
NITROSODINPROPLAMINE	ND	UG/L	1.9	8270
PHENANTHRENE	ND	UG/L	5.4	8270
PYRENE	ND	UG/L	1.9	8270
124-TRICHLOROBENZENE	ND	UG/L	1.9	8270
ALDRIN	ND	UG/L	5.	8270
ALPHA-BHC	ND	UG/L	5.	8270
BETA-BHC	ND	UG/L	5.	8270
GAMMA-BHC (LINDANE)	ND	UG/L	5.	8270
DELTA-BHC	ND	UG/L	5.	8270
CHLORDANE	ND	UG/L	10.	8270
4,4'-DDD	ND	UG/L	5.	8270
4,4'-DDE	ND	UG/L	5.	8270
4,4'-DDT	ND	UG/L	5.	8270
ENDOSULFAN I	ND	UG/L	5.	8270
ENDOSULFAN II	ND	UG/L	5.	8270
ENDOSULFAN SULFATE	ND	UG/L	5.	8270
ENDRIN	ND	UG/L	5.	8270
DIELDRIN	ND	UG/L	5.	8270
ENDRIN ALDEHYDE	ND	UG/L	5.	8270

CONTINUED ON NEXT PAGE

REGULATORY INFORMATION

90-0505 (MW-4)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

06/15/90 06/20/90 06/29/90
13:21

FINAL REPORT

DATE	TIME	DATE	TIME	DATE	TIME
------	------	------	------	------	------

*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** ACID EXTRACTABLES WATER
DETECTION LIMIT AS INDICATED.

ACID ANALYSIS DATE:	6/28/90			
ACID EXTRACTION DATE:	6/25/90			
4CHLORO3METHYLPHENOL	ND	UG/L	3.0	8270
2-CHLOROPHENOL	ND	UG/L	3.3	8270
2,4-DICHLOROPHENOL	ND	UG/L	2.7	8270
2,4-DIMETHYLPHENOL	ND	UG/L	2.7	8270
46DINITR2METYLPHENOL	ND	UG/L	24.0	8270
2,4-DINITROPHENOL	ND	UG/L	42.0	8270
2-NITROPHENOL	ND	UG/L	3.6	8270
4-NITROPHENOL	ND	UG/L	2.4	8270
PENTACHLOROPHENOL	ND	UG/L	3.6	8270
PHENOL	ND	UG/L	1.5	8270
2,4,6-TRICHLOROPHENOL	ND	UG/L	2.7	8270

*** BASE/NEUTRALS WATER
DETECTION LIMIT AS INDICATED.

B/N ANALYSIS DATE:	6/28/90			
B/N EXTRACTION DATE:	6/25/90			
ACENAPHTHENE	ND	UG/L	1.9	8270
ACENAPHTHYLENE	ND	UG/L	3.5	8270
ANTHRACENE	ND	UG/L	1.9	8270
BENZO (A) ANTHRACENE	ND	UG/L	7.8	8270
BENZO (A) PYRENE	ND	UG/L	2.5	8270
BENZO (B) FLUORANTHENE	ND	UG/L	4.8	8270
BENZO (G, H, I) PERYLENE	ND	UG/L	4.1	8270
BENZO (K) FLUORANTHENE	ND	UG/L	2.5	8270
BIS-2CHLORETHYLEETHER	ND	UG/L	5.7	8270
BIS2CLRETHOXYMETHANE	ND	UG/L	5.3	8270
BIS2CLRISOPROPYLETHR	ND	UG/L	5.7	8270
BIS2ETHLHEXLPHTHALATE	ND	UG/L	2.5	8270
4BROMOPHENLPHENLETHR	ND	UG/L	1.9	8270
BUTYLBENZYLPTHALATE	ND	UG/L	2.5	8270
2-CHLORONAPHTHALENE	ND	UG/L	1.9	8270
4CLROPHYNLPHPNYLETHR	ND	UG/L	4.2	8270

CONTINUED ON NEXT PAGE

106 SOUTH ST.
HOPKINTON, MA 01748
508-435-6824

Mass. Cert. No. 3157 Corp. Cert. No. PR-0515 FFA ID No. MA059
NY ELAF No. 11110

SAMPLE IDENTIFICATION INFORMATION

90-0505 (RR-3)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED 06/15/90
RECEIVED 06/20/90
REPORTED 06/29/90
13:21

FINAL REPORT

EDITION 10

CONCENTRATION	UNIT	CONCENTRATION	UNIT
*** BASE/NEUTRALS		WATER	
HEPTACHLOR	ND	UG/L	5.
HEPTACHLOR EPOXIDE	ND	UG/L	5.
METHOXYCHLOR	ND	UG/L	5.
TOXAPHENE	ND	UG/L	10.
PCB-1016	ND	UG/L	10.
PCB-1221	ND	UG/L	10.
PCB-1232	ND	UG/L	10.
PCB-1242	ND	UG/L	10.
PCB-1248	ND	UG/L	10.
PCB-1254	ND	UG/L	10.
PCB-1260	ND	UG/L	10.

*** THIS IS A FINAL REPORT. ***

HOPKINTON INDUSTRIAL PARK
100 SOUTH ST
HOPKINTON, MA 01748
508-435-6024

01709289

001122

E01 1

SAMPLE IDENTIFICATION INFORMATION

90-0505 (RR-3)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED **RECEIVED** **REPORTED**
06/15/90 06/20/90 06/29/90
13:21

FINAL REPORT

COMMENTS

*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** ACID EXTRACTABLES WATER
DETECTION LIMIT AS INDICATED.

ACID ANALYSIS DATE:	6/27/90			
ACID EXTRACTION DATE	6/25/90			
4CHLORO3METHYLPHENOL	ND	UG/L	3.0	8270
2-CHLOROPHENOL	ND	UG/L	3.3	8270
2,4-DICHLOROPHENOL	ND	UG/L	2.7	8270
2,4-DIMETHYLPHENOL	ND	UG/L	2.7	8270
46DINITR2METYLPHENOL	ND	UG/L	24.0	8270
2,4-DINITROPHENOL	ND	UG/L	42.0	8270
2-NITROPHENOL	ND	UG/L	3.6	8270
4-NITROPHENOL	ND	UG/L	2.4	8270
PENTACHLOROPHENOL	ND	UG/L	3.6	8270
PHENOL	ND	UG/L	1.5	8270
2,4,6-TRICHLOROPHENOL	ND	UG/L	2.7	8270

*** BASE/NEUTRALS WATER
DETECTION LIMIT AS INDICATED.

B/N ANALYSIS DATE:	6/27/90			
B/N EXTRACTION DATE:	6/25/90			
ACENAPHTHENE	ND	UG/L	1.9	8270
ACENAPHTHYLENE	ND	UG/L	3.5	8270
ANTHRACENE	ND	UG/L	1.9	8270
BENZO (A) ANTHRACENE	ND	UG/L	7.8	8270
BENZO (A) PYRENE	ND	UG/L	2.5	8270
BENZO (B) FLUORANTHENE	ND	UG/L	4.8	8270
BENZO (G, H, I) PERYLENE	ND	UG/L	4.1	8270
BENZO (K) FLUORANTHENE	ND	UG/L	2.5	8270
BIS-2CHLORETHYLETHER	ND	UG/L	5.7	8270
BIS2CLRETHOXYMETHANE	ND	UG/L	5.3	8270
BIS2CLRISOPROPYLETHR	ND	UG/L	5.7	8270
BIS2ETHLHEXLPTHALATE	ND	UG/L	2.5	8270
4BROMOPHENLPHENLETHR	ND	UG/L	1.9	8270
BUTYLBENZYLPTHALATE	ND	UG/L	2.5	8270
2-CHLORONAPHTHALENE	ND	UG/L	1.9	8270
4CLOPHYNLPHNYLETHER	ND	UG/L	4.2	8270

CONTINUED ON NEXT PAGE

90-0505 (RR-3)

HOPKINTON INDUSTRIAL PARK
105 SOUTH ST.
HOPKINTON, MA 01748
508-485-6824

SAMPLE IDENTIFICATION INFORMATION

90-0505 (RR-2)

MASS. REG. NO. 315, Cont. Cert. No. PH-0515, EPA ID No. MA055,
N.P.C. No. 11110

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED 06/15/90 13:21
RECEIVED 06/20/90
REPORTED 06/26/90

FINAL REPORT

COMMITTEE

DATE	TIME	TESTED BY	RECD
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*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** SAMPLE PREPARATION
DIGESTION-METALS 6/20/90
DIGESTION-HYDRIDES 6/20/90
DIGESTION-MERCURY 6/21/90

*** TRACE METALS	WATER			
ARSENIC	<0.005	MG/L	0.005	7061
BARIUM	0.02	MG/L	0.01	6010
CADMIUM	<0.001	MG/L	0.001	304
CHROMIUM, TOTAL	0.010	MG/L	0.001	304
LEAD	<0.001	MG/L	0.001	239.2
MERCURY	<0.001	MG/L	0.001	7471
SELENIUM	<0.005	MG/L	0.005	7741
SILVER	<0.001	MG/L	0.001	7760

*** THIS IS A FINAL REPORT. ***

HOPKINTON INDUSTRIAL PARK

106 SOUTH ST.
HOPKINTON, MA 01748

508-435-6824

Mass. Cont. No. 513 Cont. Cert. No. PH-0515 EPA ID No. MA015
EPA No. 11110

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW-3)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
06/15/90 09:32	06/20/90	06/26/90

FINAL REPORT

TEST	RESULTS	UNIT	DETECTABLE	REMARKS
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*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** SAMPLE PREPARATION

DIGESTION-METALS	6/20/90
DIGESTION-HYDRIDES	6/20/90
DIGESTION-MERCURY	6/21/90

*** TRACE METALS

WATER

ARSENIC	0.008	MG/L	0.005	7061
BARIUM	0.07	MG/L	0.01	6010
CADMIUM	<0.001	MG/L	0.001	304
CHROMIUM, TOTAL	0.030	MG/L	0.001	304
LEAD	0.004	MG/L	0.001	239.2
MERCURY	<0.001	MG/L	0.001	7471
SELENIUM	<0.005	MG/L	0.005	7741
SILVER	<0.001	MG/L	0.001	7760

*** THIS IS A FINAL REPORT. ***

HOPKINTON INDUSTRIAL PARK
100 SOUTH ST
HOPKINTON, MA 01748
508-435-6824
MA 101 No. 313 C-17 Gen. No. PH-0515 EPA ID No. MA055

01709208 001122 E01 1

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW1)

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED 06/15/90
RECEIVED 06/20/90
REPORTED 06/26/90
14:43.

FINAL REPORT

LAB	FIELD	DATE	REPORTED BY	FIELD
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*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** SAMPLE PREPARATION

DIGESTION-METALS	6/20/90
DIGESTION-HYDRIDES	6/20/90
DIGESTION-MERCURY	6/21/90

*** TRACE METALS

	WATER			
ARSENIC	0.009	MG/L	0.005	7061
BARIUM	0.12	MG/L	0.01	6010
CADMIUM	0.007	MG/L	0.001	304
CHROMIUM, TOTAL	0.050	MG/L	0.001	304
LEAD	0.021	MG/L	0.001	239.2
MERCURY	<0.001	MG/L	0.001	7471
SELENIUM	<0.005	MG/L	0.005	7741
SILVER	0.001	MG/L	0.001	7760

*** THIS IS A FINAL REPORT. ***

HOPKINTON INDUSTRIAL PARK
 106 SOUTH ST.
 HOPKINTON, MA 01748
 508-435-6824
 Mass. Cr. No. 315 * Comm. Cert. No. PH-0515 * EPA ID No. MA019
 N.E. E.A. No. 11110

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW4)

REFERRED BY

21E, INC.
 SANDY HEBERT
 330 BOSTON ROAD
 BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
06/06/90 00:00	06/20/90	06/28/90

FINAL REPORT

EST	DATE	DATE OF ANALYSIS	STUDY
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*** GENERAL INFORMATION
 COLLECTOR: 21E INC.

*** SAMPLE PREPARATION

DIGESTION-METALS 6/21/90
 DIGESTION-MERCURY 6/21/90

*** TRACE METALS SOIL

ARSENIC	6.8	MG/KG	0.5	7061
BARIUM	15.0	MG/KG	1.0	6010
CADMIUM	0.1	MG/KG	0.1	7131
CHROMIUM, TOTAL	17.0	MG/KG	0.1	7191
LEAD	3.8	MG/KG	0.1	7421
MERCURY	<0.1	MG/KG	0.1	7471
SELENIUM	<0.5	MG/KG	0.5	7741
SILVER	0.1	MG/KG	0.1	7760

*** THIS IS A FINAL REPORT. ***

106 SOUTH ST.
ROPKINTON, MA 01746
508-435-6824

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW3)

Cell No. 315; Corr. Cell No. PH-0510; EPA ID No. MA054
EPA No. 1111E

REFERRED BY

21E, INC.
SANDY HEBERT
330 BOSTON ROAD
BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
05/30/90	06/20/90	06/28/90
00:00		

FINAL REPORT

COMMENTS

DATE	TIME	LOCATION	DEPTH
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*** GENERAL INFORMATION
COLLECTOR: 21E INC.

*** SAMPLE PREPARATION

DIGESTION-METALS 6/21/90
DIGESTION-MERCURY 6/21/90

*** TRACE METALS SOIL

ARSENIC	3.1	MG/KG	0.5	7061
BARIUM	29.0	MG/KG	1.0	6010
CADMIUM	0.1	MG/KG	0.1	7131
CHROMIUM, TOTAL	17.5	MG/KG	0.1	7191
LEAD	6.7	MG/KG	0.1	7421
MERCURY	<0.1	MG/KG	0.1	7471
SELENIUM	<0.5	MG/KG	0.5	7741
SILVER	0.1	MG/KG	0.1	7760

*** THIS IS A FINAL REPORT. ***

HOPKINTON INDUSTRIAL PARK
 106 SOUTH ST
 HOPKINTON, MA 01748
 508-435-6824
 Mass. Cert. No. 3131 Corp. Cert. No. PH-0115 EPA ID No. MA055
 Lic. ELAF No. 1111E

SAMPLE IDENTIFICATION INFORMATION

90-0505 (MW1)

REFERRED BY

21E, INC.
 SANDY HEBERT
 330 BOSTON ROAD
 BILLERICA, MA

COLLECTED	RECEIVED	REPORTED
05/29/90 00:00	06/20/90	06/28/90

FINAL REPORT

TESTS	RESULTS	UNITS	DETECTION LIMIT	STANDARD
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*** GENERAL INFORMATION
 COLLECTOR: 21E INC.

*** SAMPLE PREPARATION

DIGESTION-METALS 6/21/90
 DIGESTION-MERCURY 6/21/90

*** TRACE METALS SOIL

ARSENIC	3.4	MG/KG	0.5	7061
BARIUM	58.0	MG/KG	1.0	6010
CADMIUM	0.2	MG/KG	0.1	7131
CHROMIUM, TOTAL	24.3	MG/KG	0.1	7191
LEAD	5.0	MG/KG	0.1	7421
MERCURY	<0.1	MG/KG	0.1	7471
SELENIUM	<0.5	MG/KG	0.5	7741
SILVER	0.1	MG/KG	0.1	7760

*** THIS IS A FINAL REPORT. ***

DESCRIPTION: EPA METHOD 624 PURGEABLES
 CLIENT: 21E INC
 LAB ID: 6196
 CLIENT ID: WOBURN MW-4 S1 LIQUID SAMPLE
 DATE RECEIVED: 06/20/90
 DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYLVINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DI BROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

BROMOCHLOROMETHANE	(%)
2-BROMO-1-CHLOROPROPANE	101
1, 4-DICHLOROBUTANE	92
	99

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
 DATE

Bruce A. Bornstein
 BRUCE A. BORNSTEIN
 LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
 CLIENT: 21E INC
 LAB ID: 6199
 CLIENT ID: WOBURN RR3 S1 LIQUID SAMPLE
 DATE RECEIVED: 06/20/90
 DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYL VINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DIBROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

BROMOCHLOROMETHANE	(%)
2-BROMO-1-CHLOROPROPANE	97
1, 4-DICHLOROBUTANE	102
	101

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
 DATE

Bruce B.
 BRUCE A. BORNSTEIN
 LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
CLIENT: 21E INC
LAB ID: 6198
CLIENT ID: WOBURN RR2 S1 LIQUID SAMPLE
DATE RECEIVED: 06/20/90
DATE ANALYZED: 06/21/90

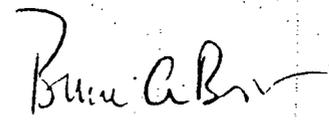
PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYL VINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DIBROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

	(%)
BROMOCHLOROMETHANE	102
2-BROMO-1-CHLOROPROPANE	94
1, 4-DICHLOROBUTANE	96

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
DATE


BRUCE A. BORNSTEIN
LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
 CLIENT: 21E INC
 LAB ID: 6197
 CLIENT ID: WOBURN RR1 S1 LIQUID SAMPLE
 DATE RECEIVED: 06/20/90
 DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYLVINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DI BROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

	(%)
BROMOCHLOROMETHANE	108
2-BROMO-1-CHLOROPROPANE	99
1, 4-DICHLOROBUTANE	93

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
 DATE

Bruce A. Bornstein
 BRUCE A. BORNSTEIN
 LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
CLIENT: 21E INC
LAB ID: 6195
CLIENT ID: WOBURN MW-3 S2 LIQUID SAMPLE
DATE RECEIVED: 06/20/90
DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYL VINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DI BROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

	(%)
BROMOCHLOROMETHANE	101
2-BROMO-1-CHLOROPROPANE	100
1, 4-DICHLOROBUTANE	96

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
DATE

Bruce A. Bornstein
BRUCE A. BORNSTEIN
LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
 CLIENT: 21E INC
 LAB ID: 6194
 CLIENT ID: WOBURN MW-2 S1 LIQUID SAMPLE
 DATE RECEIVED: 06/20/90
 DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYL VINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DI BROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

BROMOCHLOROMETHANE	(%)
2-BROMO-1-CHLOROPROPANE	102
1, 4-DICHLOROBUTANE	97
	104

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
 DATE

Bruce A. Bornstein
 BRUCE A. BORNSTEIN
 LABORATORY DIRECTOR

DESCRIPTION: EPA METHOD 624 PURGEABLES
 CLIENT: 21E INC
 LAB ID: 6193
 CLIENT ID: WOBURN MW-1 S1 LIQUID SAMPLE
 DATE RECEIVED: 06/20/90
 DATE ANALYZED: 06/21/90

PARAMETER	RESULTS (UG/L)	PARAMETER	RESULTS (UG/L)
ACETONE	ND	TRANS-1, 2-DICHLOROETHENE	ND
BENZENE	ND	1, 2-DICHLOROPROPANE	ND
BROMODICHLOROMETHANE	ND	CIS-1, 3-DICHLOROPROPENE	ND
BROMOFORM	ND	TRANS-1, 3-DICHLOROPROPENE	ND
BROMOMETHANE	ND	ETHYLBENZENE	ND
2-BUTANONE	ND	2-HEXANONE	ND
CARBON DISULFIDE	ND	METHYLENE CHLORIDE	ND
CARBON TETRACHLORIDE	ND	4-METHYL-2-PENTANONE	ND
CHLOROBENZENE	ND	STYRENE	ND
CHLOROETHANE	ND	1, 1, 2, 2-TETRACHLOROETHANE	ND
2-CHLOROETHYLVINYL ETHER	ND	TETRACHLOROETHENE	ND
CHLOROFORM	ND	TOLUENE	ND
CHLOROMETHANE	ND	1, 1, 1-TRICHLOROETHANE	ND
DI-BROMOCHLOROMETHANE	ND	1, 1, 2-TRICHLOROETHANE	ND
1, 2-DICHLOROBENZENE	ND	TRICHLOROETHENE	ND
1, 3-DICHLOROBENZENE	ND	TRICHLOROFLUOROMETHANE	ND
1, 4-DICHLOROBENZENE	ND	VINYL CHLORIDE	ND
1, 1-DICHLOROETHANE	ND	VINYL ACETATE	ND
1, 2-DICHLOROETHANE	ND	TOTAL XYLENES	ND
1, 1-DICHLOROETHENE	ND		

RECOVERIES OF INTERNAL STANDARDS

BROMOCHLOROMETHANE	(%)
2-BROMO-1-CHLOROPROPANE	108
1, 4-DICHLOROBUTANE	94
	98

METHOD DETECTION LIMIT = 1 UG/L

06/25/90
 DATE

Bruce A. Bornstein
 BRUCE A. BORNSTEIN
 LABORATORY DIRECTOR