REMEDIAL INVESTIGATION
FEASIBILITY STUDY (RI/FS)
LUSON CLEANERS, INC.
d/b/a RAILROAD CLEANERS
OCEANSIDE, NEW YORK
NYSDEC SITE NO. 1-30-066

Prepared for:

RAILROAD DRIVE-IN CLEANERS, INC.
3180 LAWSON BOULEVARD
OCEANSIDE, NEW YORK

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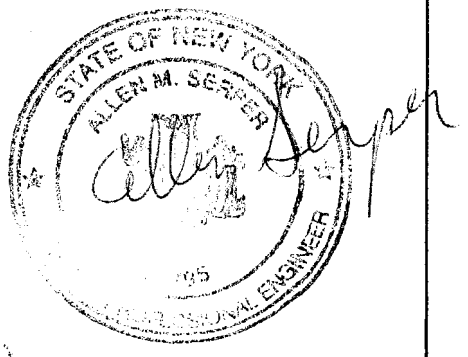

Project: 02730

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I. OBJECT OF THE RI/FS

The purpose of the RI/FS field investigation is to obtain valid data to evaluate and define the potential sources of contamination, the nature, depth, and extent of contamination resulting from the past operations at the property, if any. In addition, the investigation will attempt to define the extent of the contamination due to the operation of the adjacent property.

The data generated during the field investigation will be used to determine what risks, if any, the contamination resulting from the past operations at the Railroad Cleaners site presents to public health and to the environment. Based on these data, it will be determined whether the contaminants are of sufficient concentration to warrant a remedial action. Finally, the data will be used to evaluate feasable remedial response alternatives for the site. A feasibility study evaluating on and off site remedial actions to the extent feasible will be performed. Alternatives will evaluate mitigation measures to eliminate all significant threats to the public health and environment presented by hazardous waste disposal at the site.

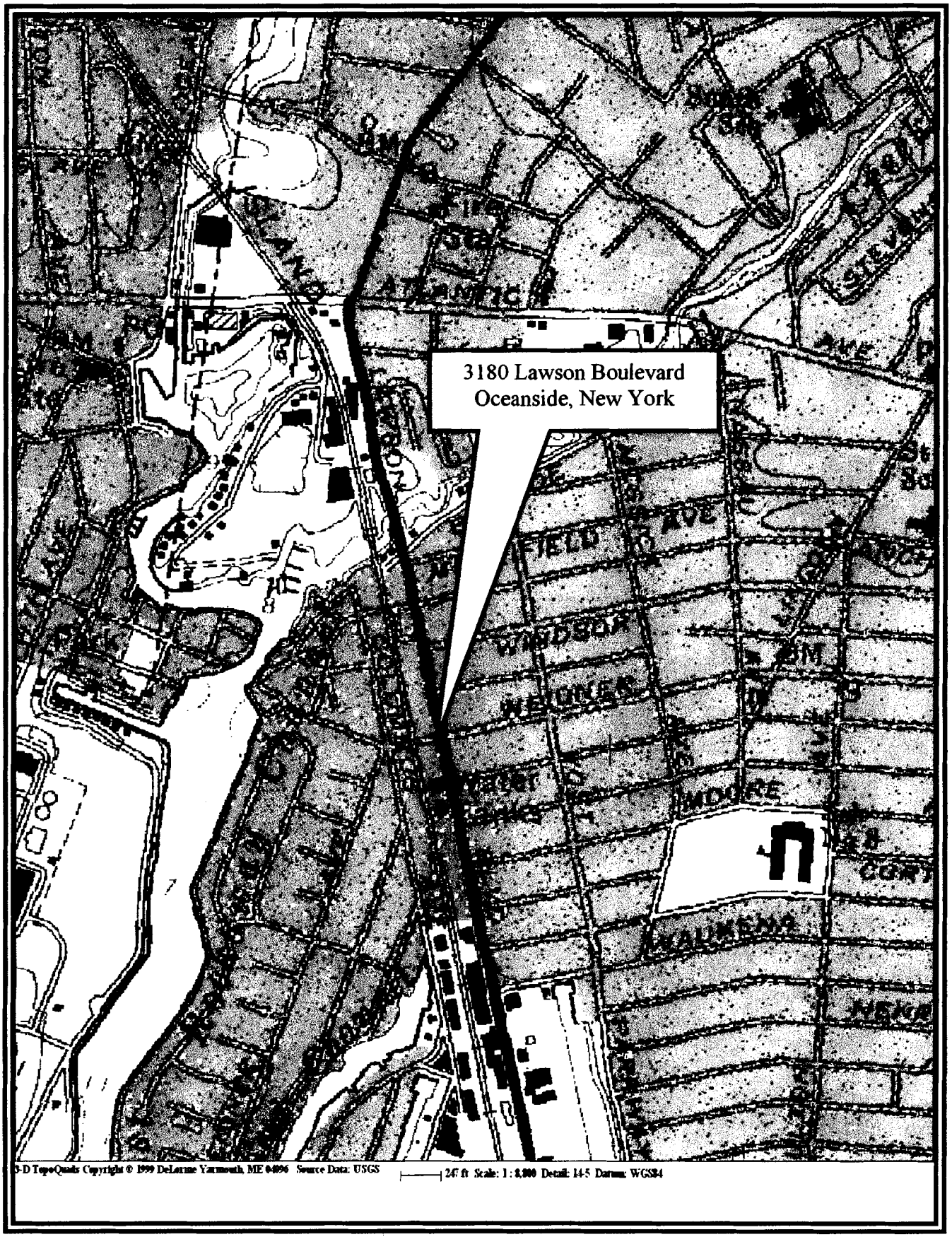
II. SITE DESCRIPTION AND LOCATION

The property is located at 3180 Lawson Boulevard, at the corner of Lawson and Weidner Avenue in Oceanside, New York (see Figures 1 and 2). The property is 3,500 sq/ft, approximately 100 feet by 35 feet. The property is bound by Weidner Avenue on the north, the Long Island Railroad tracks to the west, Lawson Blvd to the east and the adjacent property Hercules Machine Sales Corporation to the south. Hercules was a supplier and repairer of dry-cleaning machines and is also a possible source of groundwater contamination.

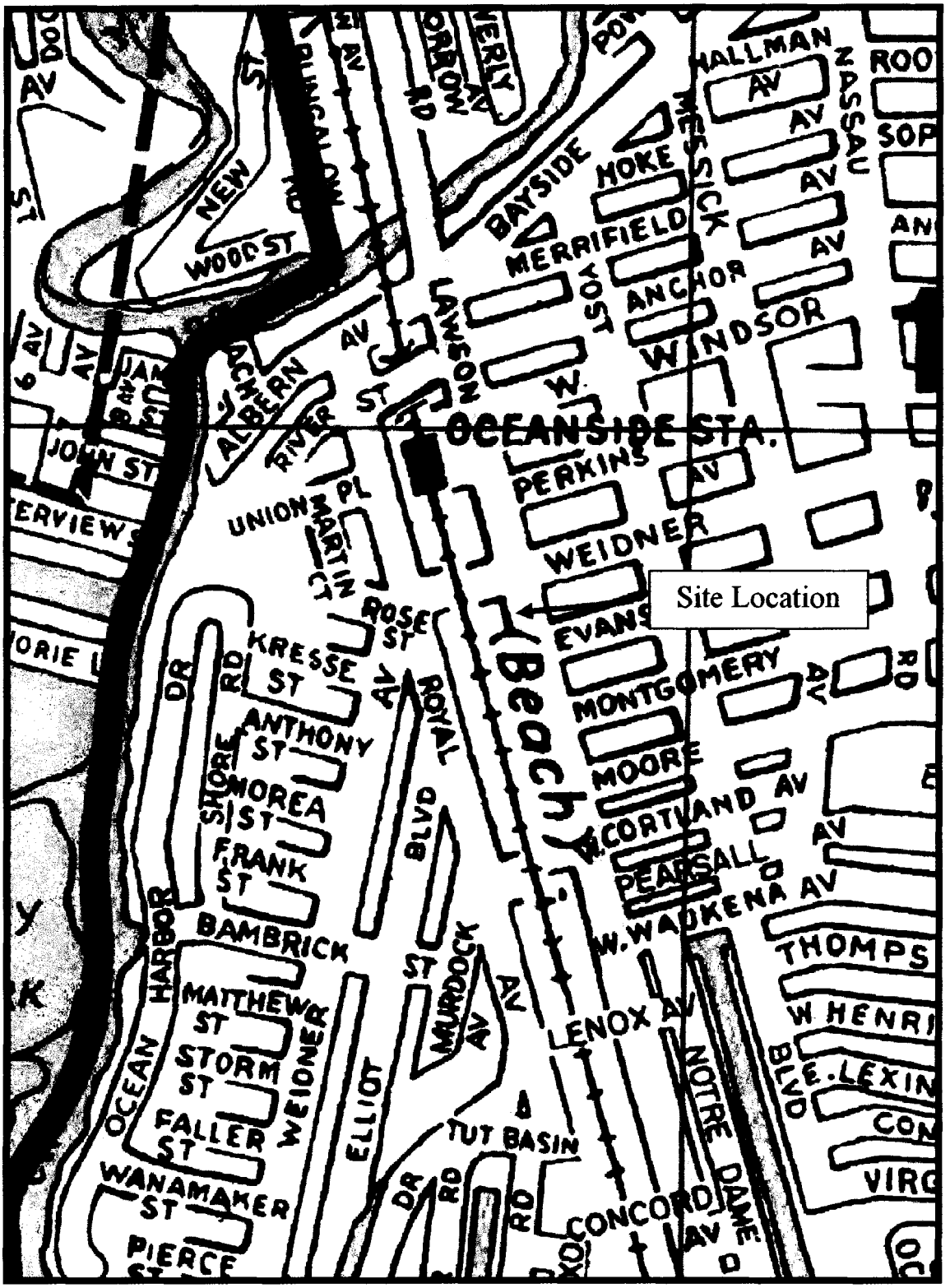
III. DESCRIPTION OF LOCAL HYDROGEOLOGICAL CONDITIONS

- Site Soils/Site Stratigraphy

The subsurface exploration determined that unconsolidated sediments underlie the subject site. These sediments originated from glacial outwash plain materials deposited by glacial melt waters during the Pleistocene geologic time period. The glacial outwash plain deposits consist primarily of sands, mixed with varying amounts of gravels, with lesser amounts of silt-sized sediments.



Subject Property Locations
USGS Topographic Map (Lynbrook Quad) *Figure 1*



Subject Property Location
Hagstrom Map

Figure 2

- Aquifer Characteristics

Glacial outwash plain deposits typically are highly to moderately permeable and contain large volumes of water. Porosities within such deposits, medium to coarse grained sands with gravel, can be as high as 30 to 40 percent (Veatch et al., 1906). Hydraulic conductivities of 1.92×10^3 gpd/ft^2 and 1.9×10^3 gpd/ft^2 are common. Hydraulic conductivity is defined as a water bearing formation's capacity to transmit water through a cross-section of one square foot under a gradient of one foot per foot. Hydraulic conductivity in southeastern Nassau County is given as 1,900 gpd/ft^2 (U.S. Geological Survey Professional Paper 627-E, 1972). Groundwater velocities, horizontally, through glacial outwash plain materials have been found to range from one to four feet/day (McClymonds & Franks, 1972). It is anticipated that groundwater will be encountered at 5 to 8 feet below grade.

- Groundwater Flow Direction

The groundwater flow direction was determined to be northwesterly based on information contained in the Galli report (Appendix A). Information from other property investigations completed by EEA, Inc. within one mile of the subject site indicated groundwater flow to be in a northwesterly direction. Local surface groundwater flow in this area appears to flow towards and into the nearest back bays and waterway channels.

IV. SITE HISTORY AND RECORDS SEARCH

EEA has performed historical record research on the subject property. The subject property has been operated as a dry-cleaner and shirt laundry since 1963-1964. In June 1988, a 550-gallon fuel oil UST was removed from the rear of the property. This tank was located five feet north of the property line with the adjacent property Hercules Machine Sales Corporation. Confirmatory endpoint soil samples were collected by Nassau County Department of Health (NCDH) personnel. Results of this sampling revealed the presence of Tetrachloroethylene (2,600ug/kg). This sample is suspected to have been collected at the soil/groundwater interface, and, thus, likely was a groundwater sample. The immediately adjacent property is known as Hercules Machine Sales Corporation. Hercules Machine Sales Corporation was a supplier and repairer of dry-cleaning machines and took possession of and decommissioned used dry-cleaning machines. It is important to discuss both properties because records show they were once operated as one single property that was divided. They also share the rear portion of the property.

In July 1989, Richard D. Galli, P.E. prepared and submitted a Remedial Investigation Work Plan. The proposed work was performed in January 1990. The work consisted of the installation of three groundwater monitoring wells and several soil samples. The monitoring wells were placed in upgradient and downgradient locations. The soil samples were collected in the vicinity of the former fuel oil tank in the rear of the building and along the property line with Hercules. A copy of a portion of these reports along with other historical records is attached. No other information regarding the site was available to EEA. Presently there are no sanitary disposal systems, floor

drains or drywells on the property. All discharges are to the municipal sewer system and have been since the building's construction and was connected to the sewer at all times that Railroad Cleaners occupied the property.

- Records Search Performed by EEA

Freedom of Information Law (FOIL) letters were filed with the Nassau County Fire Marshal, the Town of Hempstead Buildings Department and the NCDH for information on the history of Railroad Cleaners, located at 3180 Lawson Boulevard, and Hercules Dry Cleaning Equipment, located at 3188 Lawson Boulevard. In conjunction with the FOIL requests, phone interviews with the Nassau County Sewer Department were also employed as a method for gathering information on the historical method for disposing wastewater and date of connection to the municipal sewer system.

- Town of Hempstead Buildings Department

The Town of Hempstead Building Department records for the properties located at 3180 and 3188 Lawson Boulevard were made available upon request. Hercules Dry Cleaning Equipment currently occupies the immediately adjoining property located at 3188 Lawson Boulevard. The businesses share a common dividing wall and rear yard area. Railroad Cleaners is located to the north of Hercules. The records in this file date from 1947 until approximately 1963. From this information, it can be inferred that the properties occupied currently by Railroad Cleaners and Hercules Dry Cleaning Equipment were one parcel of land before 1963.

- Hercules Site: The records that were gathered for 3188 Lawson Boulevard include 1947 building plans. A plot diagram shows that the proposed building would be approximately 20 ft. by 40 ft. The building plans include building specifications for a 500-gallon per day septic system. The septic system was located west of the proposed building and east of the Long Island Railroad. The septic system was attached to the proposed building by a 4-inch cesspool drain located in the back of the building by the bathrooms. An interview with operators at this property permitted EEA to inspect the interior of this building. Several floor drainage structures were identified within the building. There is no record available of Hercules having ever abandoned the septic system.

- Railroad Dry-Cleaners: The records that were gathered for 3180 Lawson Boulevard include 1963 plans to build a Dry Cleaners and Shirt laundry. The 1963 proposed building is located south of Weidner Avenue and was considered an extension of the existing warehouse (Hercules) to the south. The plans show that to the west of the proposed building is a parking lot with two drywells. Also available in the building records is an Application for Permit to "Do Sewer Work." This application applied for in 1963, was to work on the sanitary toilets of the facilities located at Section 43, Block 209 and Lots 37 through 40 (subject properties). After further conversation

with the Nassau County Sewer Department, it was determined that the application, although not specifically stated, was for sewer connection. In addition to the application for the sewer connection, the building plans also show that the cesspools were plugged around the time of the construction in 1963. Review of the building plan indicates the current Railroad Cleaners building may have been built entirely or partially over the old sanitary disposal system for the Hercules site.

To summarize the Building Department records, EEA found that the subject property and adjacent property (Hercules) were once one parcel. The original building, which was once operated by Hercules, had been originally connected to an on-site sanitary disposal system. This system was in operation from 1947 until 1963 when an application to construct a building extension (Railroad Cleaners) was filed. The original building (Hercules) and new extension (Railroad Cleaners) were then connected to the municipal sewer system at the same time. The records indicate that there may have been two separate septic systems for each site (Hercules and Railroad Cleaners).

- Nassau County Health Department

FOILs for Railroad Cleaners were filed with the NCHD on September 17, 2002 and for Hercules Dry Cleaners Equipment on September 19, 2002. On October 23, 2002, correspondence was received. Historical files were found for the Railroad Cleaners and Hercules sites. An appointment was made for review of the files (October 28, 2002).

- Railroad Dry-Cleaners: Review of the files indicated that a 550-gallon fuel oil tank was removed in 1988. Further investigation of the records indicated that the soil excavated from the hole had elevated levels of Tetrachloroethylene, Toluene, Xylene and Ethylbenzene. Note that groundwater at this location is found at 2 to 3 feet below surface grade. Therefore, it is unclear whether the sample collected represented a soil or groundwater quality condition. Groundwater on-site was determined according to previous reports to be northwesterly, which places this location directly down gradient of the Hercules former sanitary disposal system. Also included in the file was a hand drawing of floor drain/sewer cleanouts. In a report written by the NCHD in December of 1997, the inspecting agent located the floor drain/cleanout in the rear of the building, approximately 6-feet from the wall by the Dry Cleaning Machine. The inspector indicated that the floor drain/sewer cleanout had a steel plate covering it and that sand was observed in the drain. Other information from the United States Environmental Protection Agency (EPA) indicates that in July of 1998, the EPA no longer required an injection well permit application or closure plan for the inspected drain. This structure has since been removed and closed. No sampling of this area has been completed to date.

- Hercules Machine Corporation: Records indicated that in 1995, a NCHD site inspection found an "activated carbon spill" and on-site disposal of pelletized and powder carbon residual wastes in the unpaved portions in the rear yard of the

property. This area is 10 to 12 feet south and upgradient to groundwater flow from the area of the former fuel oil tank at the Railroad Cleaners site. The NCHD tested the material and found it to contain 1,400,000 ug/kg of Tetrachloroethylene. Surface soil samples (0 – 4 inches) were collected at four locations in 1995 in this area. Soil samples ranged from 60,000 to 440,000 ug/kg. The NCHD ordered Hercules to "clean up" the area and surface soil "ASAP." Records indicate that the carbon and 4 inches of surface soil were removed in May 1995. No other information regarding additional testing or remediation was found.

- Nassau County Fire Marshal

FOILs for Railroad Cleaners were filed with the Fire Marshal on September 17, 2002 and for Hercules Dry Cleaners Equipment on September 19, 2002. On October 4, 2002 correspondence was received by the Fire Marshal on the above-mentioned sites, stating, "no records were maintained by that department" for the two sites.

- Nassau County Sewer Department

Phone interviews were conducted with the Nassau County Sewer Department on several different dates during the months of September and October. The purpose of these calls was to locate information on the date that Railroad Cleaners was connected to the County's sewer system. No formal or written records were found; however, the Sewer Department indicated that the area of Lawson Boulevard in Oceanside was available for sewer hook-up in 1955. Information gathered from the Building Department indicated that the building known as Railroad Cleaners was connected to the municipal sewer system since its construction in 1963.

V. PAST INVESTIGATION (Richard Galli)

A subsurface investigation was conducted by Richard Galli, P.E. in March of 1990 (see Appendix A - partial report).

Three monitoring wells were installed at the property. Four soil borings were conducted. The conclusions of the investigation are as follows (see Appendix A).

Soil contamination was found at a depth of four feet in the vicinity of the former fuel oil storage tank. Contaminants identified consisted of: Toluene, Ethylbenzene, and Total Xylenes, as well as Tetrachloroethylene.

Contamination was also found in all three monitoring wells. Benzene, as well as Tetrachloroethylene at a level of 10,000 ppb was identified in the report. The complete report was not made available to EEA and has not been found in the records of the New York State Department of Environmental Conservation (NYSDEC).

VI. REMEDIAL INVESTIGATION SCOPE OF WORK

- Summary of Investigation

Using a Geoprobe Drill Machine a total of twelve (12) locations will be investigated. Soil gas will be collected from a depth below any surface pavement to above the water table at twelve (12) locations. At Five (5) of these locations soil and groundwater profile samples will be performed. The exact location of the soil/groundwater profile samples will be based upon the results of the soil gas survey. Two (2) soil samples will be obtained from the unsaturated soils above the water table. Groundwater samples will be obtained at the groundwater interface and at 20-foot intervals below grade. Groundwater samples will also be collected from three permanent groundwater monitoring wells existing on the site. Groundwater elevations will be taken and on-site groundwater flow will be established and presented. Each groundwater and soil sample collected will be sent to the laboratory for analysis by USEPA Method 624 CLP protocol, Volatile Organic Compounds. The appropriate QA/QC will also be obtained. Measures will be followed by EEA and the contracted laboratory.

- Soil Gas Survey

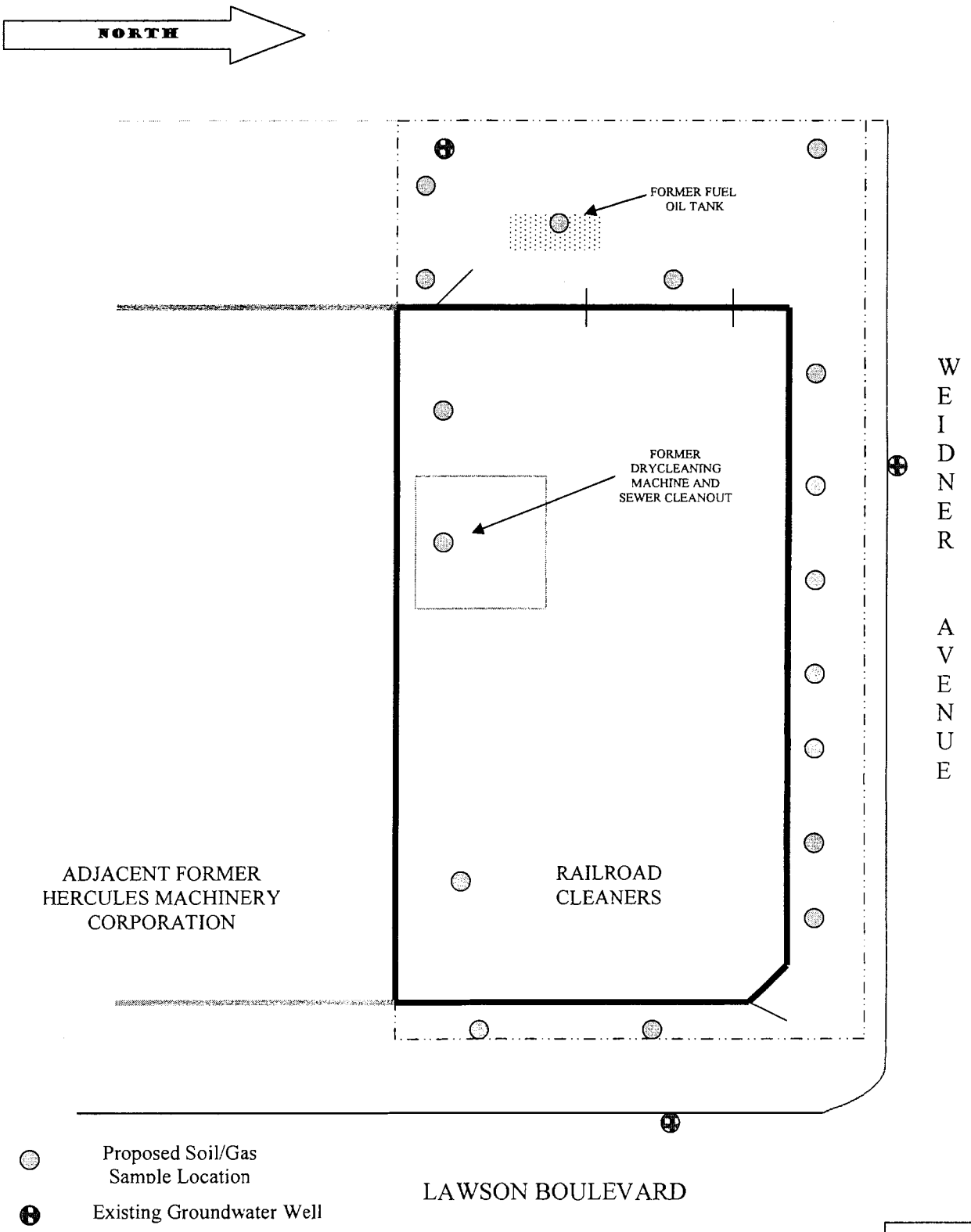
At twelve locations outside, around the perimeter of the building, a soil gas survey will be conducted. A remote access Geoprobe LT-54 will be used to obtain access in tight areas within the building. A flame-ionization OVA detector and a Photo-ionization detector using a 11.7eV lamp will be used together to obtain total OVA levels. The soil gas locations are shown in Figure 3.

- Soil Sampling

At five (5) of the locations were the previous soil gas survey was conducted, two soil samples will be collected, one at 0-2 inches and one other in the unsaturated zone above the water table. The locations will be selected based upon elevated soil gas readings, proximity to relevant structures, and/or on-site observations. A Geoprobe will be used to collect the soil samples using the (*Macrocore sampler*). The potential locations of the soil borings are shown in Figure 3.

- Determine the Depth at Which the Gardiners Clay Is Encountered

Continuous split spoon sampling will be performed at the subject property to determine the depth at which the Gardiners clay layer is encountered. Each soil sample will be examined by EEA's Hydrogeologist who will identify the Gardiners clay layer. The sampling will continue until one of the following is encountered: 1) 20-foot clay layer; 2) Gardiners clay; 3) 80 feet or refusal. A full-sized mobile drill rig will be utilized for this purpose.



Scale 1. : 20

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SAMPLE COLLECTION LOCATIONS

Figure 3

- Groundwater Sampling

At each location, the Geoprobe shall be advanced until one of the following conditions is encountered: 20-foot clay layer, Gardiners clay, or refusal. The consultant is expected to utilize a direct push rig capable of drilling to 60 to 80 feet below ground surface (bgs) in typical Long Island geology. Groundwater samples shall be obtained at the water table and at 20-foot intervals to the bottom of the hole. Samples will be analyzed by EPA Method 624. Groundwater sampling locations may differ from soil sampling locations.

The groundwater elevation measurements will be surveyed at the three existing monitoring wells. The on-site groundwater flow will be established using the groundwater elevation data gathered from the existing monitoring wells. The groundwater flow will be presented on a scaled site drawing.

Each groundwater sample will be sent to the laboratory for analysis by USEPA Method 624 CLP protocol, Volatile Organic Compounds.

The groundwater profile samples will be obtained at two locations in the building and at three locations in the rear of the property. The proposed groundwater sample locations are shown on Figure 3.

The following is a tabulation of the anticipated number of soil and groundwater samples to be sent to the laboratory.

Matrix	Investigative Samples	MS	MSD	Dup	Equipment Blank	Trip Blank	Total
Volatile Organic Compounds USEPA Method 624, Groundwater	20	2	2	2	2	2	30
Soil Sample USEPA Method 8260	10	1	1	1	1	1	15

One soil and four water samples will be collected for submission to the environmental laboratory for analysis from five of the original 12 soil gas sample locations. The soil gas sampling locations are shown on Figure 3. The soil and groundwater profile sampling collection locations will be selected based upon a review of the soil gas survey results. Locations where the most elevated positive readings are found will be selected. If no readings are found, then areas will be selected based upon areas determined to be suspected potential discharge locations such as the former dry-cleaning machine and sewer cleanout traps, front and rear door areas, former unpaved areas, etc.

Groundwater is found at a depth of approximately two to four feet over the entire site. This area is prone to flooding from stormwater and tidal surges, therefore the surface water table

(groundwater zone) frequently ranges in depth from the surface to a depth of approximately 4 feet. This could have created a significant "smear zone" where contaminants found in the groundwater from a remote source location could be driven up into previously unsaturated soils, thus causing contamination of the soil. Therefore, if soil contamination is found in soils above the water table, it may not necessarily indicate a contaminant source area.

- Laboratory Analysis

The analytical methods, containerization, preservation techniques, and maximum holding times for the above parameters shall follow the requirements of the NYSDEC. The laboratory analyses will be performed by a NYSDOH ELAP CLP certified laboratory. The laboratory will follow NYSDEC ASP 95-1 Rev. 1, Methods with Category B reporting and deliverables. The samples will be sent to the laboratory within eight hours. All samples will be maintained at 4° C during the delivery period. The laboratory will perform the extraction within the 7-day maximum holding time.

The groundwater samples will be placed in 40-ml septum vials filled to the top to prevent gas bubbles from forming. Each sample will be labeled, sealed, and refrigerated at approximately 4°C for shipment to the laboratory. Field decontamination procedures for groundwater sampling equipment will be as described. A chain-of-custody will be maintained throughout the field sampling, transport of samples to the laboratory, and during laboratory analysis (see Appendix B - Quality Assurance/Quality Control).

VII. PROTOCOLS

The Quality Control QA/QC Plan is presented in Appendix B.

- Soil Sampling Protocol

The soil sampling will be conducted using a Geoprobe drilling rig. Employees will collect samples using a *Macrocore* soil sampler. Soil samples will be obtained every two feet. Each sample will be screened in the field by utilizing an OVA portable gas analyzer. The sample exhibiting the highest on-methane organic vapor reading will be sent to the laboratory for analysis. If the OVA readings are negative, the end-point soil sample will be sent to the laboratory for analysis. Other criteria used to determine which samples are sent to the laboratory for analysis are based upon examination of the soil samples (e.g., odor, discoloration) (see Quality Assurance/Quality Control Plan, Appendix B).

- Groundwater Protocol

A water sample will be obtained using a Geoprobe screen point groundwater sampler. A 24-inch long screen point sampler is driven into the subsurface to the desired sampling depth. The point

is then opened to expose the screen to the saturated zone to be sampled. Groundwater samples are recovered using a tubing/check valve arrangement, which is oscillated up and down to push the water sample to the surface. The water sample is poured into a vial for shipment to the laboratory. This will be performed at each depth.

- Surveying the Location of the Existing Wells

The integrity of the three existing wells will be checked visually utilizing a flashlight. The location of the monitoring wells will be surveyed. A drawing will be prepared showing the surveyed locations of all monitoring wells, including the new well to be installed. The elevation of each well will be determined to $\pm$ .01 feet, and the horizontal measurements to $\pm$ .5 feet.

- Soil Gas Vapor Survey (SGS)

A Soil Gas Survey (SGS) is an analytical field technique used to evaluate the presence and extent of volatile organic compounds (including methane) in the interstitial spaces of the soil. The technique is a rapidly applied first step assessment tool that can be used to generate a large number of soil gas samples in a relatively short period of time. The potential presence of methane gas and (to the extent possible) non-methane volatile organic compounds (VOCs) will be investigated using an Organic Vapor analyzer (OVA). The OVA incorporates a flame ionization detector (FID) for the detection of both methane and VOCs. To summarize the technique, a gas sample is injected into the OVA to obtain a concentration reading from combined methane and total VOCs. The sample is re-injected through a carbon trap (to remove VOCs only) and into the OVA to obtain the methane concentration. The VOC concentration is then calculated by the difference in the two concentrations. The detection limit of VOCs achievable with the OVA is highly dependent upon the concentration of methane relative to the total VOC concentrations. The response of the OVA does not identify specific compounds; only the use of the carbon trap distinguishes the methane response from the total VOC response. A photoionization detector using a 11.3 eV lamp will also be used to detect the possible presence of volatile organic compounds. Reading from both instruments will be used to determine which areas will need to be further investigated.

The soil gas sampling apparatus consists of the stainless steel pointed rod, slotted near the tip, which is driven into the soil at the identified sample locations. At each soil gas location, the sampling position will be just below the pavement to a two-foot depth. The vacuum system is connected and the apparatus purged and made ready for the next sample location.

At the soil gas location where the two highest field readings are observed, the soil gas will be adsorbed on a carbon/(por pack) cartridge. A calibrated sampling pump will be used to draw the gas through the carbon filter. The cartridge will be desorbed and analyzed for Volatile Organic Compounds by USEPA Method 8260 (see Appendix D) for procedure. If no readings are found, then two locations will be selected for confirmation purposes.

VIII. COMMUNITY AIR MONITORING PROGRAM (CAMP)

- **VOC Monitoring, Response Levels and Action**

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using a Foxboro OVA 128 FID to measure the VOCs (primarily PCE and TCE) that may be generated by the activities at the site. The OVA will be calibrated at least daily for the contaminants TCE and PCE. The unit will be used to calculate 15-minute running average concentrations, which will be compared to the levels specified below.

If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background, but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

- **Particulate Monitoring, Response Levels and Actions**

Particulate concentrations should be monitored **continuously** using a MINRAM Model PDM-3 with R-cyclone to measure PM-10 at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an

audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

IX. DATA EVALUATION AND REMEDIAL INVESTIGATIVE REPORT

- Data Evaluation

The purpose of the data quality evaluation is to assure that data obtained during the implementation of the Work Plan are adequate in quantity and quality, and applicable to project objectives. In order to make this determination, the body of data must be reviewed for the quality of data coverage, compatibility of data collection methods, and completeness, with respect to meeting project objectives.

To facilitate the interpretation of data generated during the RI field activities, the data will be tabulated in the form of appropriate data summary tables. Figures showing sampling locations with the corresponding analytical results will be prepared to enhance the overall understanding of site conditions in regard to the magnitude and location of contamination. The results, along with supporting documentation, will be supplied to the NYSDEC in the form of a RI summary report. The RI report will contain a description of the source, geologic and hydrogeologic, and water quality characterizations. A data usability report will be prepared (see Section X).

- Source Characterization

Source characterization will be based on laboratory results for soil and groundwater samples, as well as pathway transport mechanisms, to define the possible location, magnitude and types of sources of contamination.

- Geologic/Hydrogeologic and Water Quality Characteristics

Geologic and hydrogeologic characterization will incorporate the results of subsurface evaluation and sampling activities, groundwater sampling and monitoring activities, as well as general hydrogeologic and hydraulic features of the site. The characterization will set forth conclusions regarding the direction, gradients, and potential fluctuations or anomalies of groundwater in the immediate vicinity of the site (shallow groundwater).

- Identification of Applicable Guidelines

The cleanup of hazardous waste sites is governed by Federal Applicable or Relevant and Appropriate Requirements (ARARs) and State Promulgated Standards and Guidance Documents (SPSAGDs). These requirements fall into two categories that are considered during the RI/FS process: first, applicable or relevant and appropriate requirements, and second, criteria, advisories and guidance to be considered.

- Applicable Requirements are those federal and state promulgated requirements that are legally applicable to a response action.

- Relevant and Appropriate Requirements are federal and state requirements that are not directly applicable, but are designed for problems sufficiently similar to those encountered during remedial activities to make their application appropriate. Relevant and Appropriate Requirements are intended to have the same weight and consideration as Applicable Requirements. Therefore, once a requirement is identified as relevant and appropriate, it is applied in the same manner as an Applicable Requirements.

- Implementation of Guidelines

ARARs and SPSAGDs will be used as guides in evaluating the appropriate extent of site cleanup, scoping and developing remedial action alternatives, and governing the implementation and operation of the selected action. ARARs and SPSAGDs will be identified and considered so that remedial actions are consistent with pertinent state and federal environmental regulations. In the absence of regulations that address a site-specific condition, federal or state guidance and criteria may be considered and used as appropriate.

A preliminary list of potential site remediation regulations is presented in Table 1. The regulations on the list will be evaluated against the analytical results obtained during the implementation of the field investigation.

- Additional Field Investigations

Additional field investigations may be required upon completion of the RI scope of work. Conditions that would warrant additional investigation include: data gaps, further delineation of groundwater or soil contamination, or additional data necessary to evaluate or determine the effectiveness of a potential remedial alternative technology.

If additional investigation is required, a supplemental work plan will be prepared and submitted to NYSDEC for review and approval.

- Interim Remedial Measures

Prior to the selection of the remedial alternative, an interim remedial measure (IRM) may be proposed to address unacceptable or imminent risks. Preliminary results from the RI will be used to evaluate the necessity for an immediate response associated with a particular medium, route of exposure, or potential sensitive receptor. The IRM will be selected with the understanding that the measure should be compatible with the overall project objectives and long-term remedial action goals.

If an IRM is deemed necessary, a work plan will be submitted to NYSDEC, which describes the proposed measure, justification for its selection, and a schedule for the activities associated with its implementation. Depending on specific circumstances and conditions at the site following complete implementation of IRMs, the activities associated with the IRMs may be determined to constitute complete remediation.

- Remedial Investigation Report

Upon completion of the RI activities, a Remedial Investigation report will be generated which includes all data, information, evaluations, interpretations, and recommendations developed during the implementation of the NYSDEC-approved RI/FS work plan. The Remedial Investigation Report will have a certification by the individual with primary responsibility for the daily supervision of the RI that all activities that comprised the RI were performed in accordance with the NYSDEC-approved RI/FS Work Plan.

X. DEVELOPMENT OF ALTERNATIVES (FEASIBILITY STUDY)

The basis for the Feasibility Study (FS) and possible selection of a remedial alternative will be generated from information obtained during the implementation of this Work Plan. Potential remedial alternatives will be compiled from appropriate available technologies and will be evaluated in the next phase of work. The possible alternatives will include active remediation, but may also include alternatives for groundwater monitoring, or no further action. The alternatives will be

presented to the NYSDEC for comment and approval. The alternatives will also be detailed in a format consistent with the Citizen Participation Plan for presentation during public meetings.

- Scoping the Feasibility Study

The FS will be prepared using reference documents including, but not limited to, USEPA Guidance on Feasibility Studies Under CERCLA, National Oil and Hazardous Substances Pollution Contingency Plan, Remedial Action Costing Procedures Manual; Interim Guidance on Superfund Selection of Remedy, and any relevant technology guidance and evaluation documents that may be appropriate. As additional guidance documents become available, or are updated, they will be incorporated into the FS process.

- Objectives of the Feasibility Study

The overall objective of the FS is to develop and evaluate remedial alternatives for the selection of a remedial action. The selected remedial action will exhibit the following characteristics:

- Protection of public health and the environment;
- Attains federal and state public health and environmental requirements identified for the site (ARARs and SPSAGDs);
- Utilizes permanent solutions and alternative treatment technologies to most practical extent within proven technological feasibility and availability;
- Utilizes treatment to permanently reduce the toxicity, mobility, volume, implementability, or extent of contamination;
- Short-term and long-term effectiveness; and
- Performance and cost

The remedial alternatives considered will have the aforementioned characteristics. The remedial action selected will have the best combination of these characteristics as determined by the NYSDEC, EEA, the owner of the property, and other interested parties.

- Remedial Alternative Sources

Based on the findings of the remedial investigation and the target remedial action levels (based on the ARARs and SPSAGDs), a list of applicable technologies will be developed for this site. Sources utilized during the screening of initial technologies will include, but not be limited to, the following:

- Remedial Action at Waste Disposal Sites Handbook (Revised), USEPA, October 1985;

- Handbook for Evaluating Remedial Action Technology Plans, USEPA, September 1984;

- Review of In-Place Treatment Technologies for Contaminated Surface Soils: Volume I Technical Evaluation, USEPA, September 1984;

- Technologies Applicable to Hazardous Waste, USEPA, May 1985; and

- Handbook for Stabilization/Solidification of Hazardous Wastes, USEPA, June 1986.

• Remedial Alternative Options

Remedial alternative technologies will be screened on the basis of effectiveness, technical feasibility, practicality, demonstrated performance, and availability of equipment. The remedial alternative technologies will be evaluated on each technology's ability to reduce the mobility, toxicity or volume of contaminants. A containment option involving little or no treatment and a no-action alternative will also be developed.

• Source Control

To the extent that it is both feasible and appropriate, treatment alternatives for source control remedial actions will be developed. Alternatives that contain treatment technologies, which permanently reduce the toxicity, mobility, or volume of contamination will be highlighted.

• Migration Control

To the extent that it is both feasible and appropriate, treatment alternatives that address the management of migration will be developed. For groundwater remediation, remedial alternatives that provide varying degrees of treatment, in terms of restoration levels and rates of cleanup, will be evaluated.

• Containment

An alternative that involves containment of waste, but provides protection of public health and the environment, will be developed. Although containment provides little or no treatment, it reduces the exposure potential by reducing the mobility of the waste.

- Waste Removal

An alternative, which involves the off-site transportation and disposal of waste will be developed. Under SARA, the off-site transportation and disposal of waste without treatment should be the least favored alternative remedial action if practical treatment technologies are available.

- No-Action

A no-action alternative will also be developed.

- Preliminary Screening of Alternatives

The remedial action alternatives will be screened to narrow the number of alternatives for a more detailed feasibility analysis. The screening will eliminate remedial alternatives that are not technically feasible, practical, or cost-effective, while retaining a range of treatment options. Reasons for elimination of technologies are as follows:

- Alternatives which are not technically reliable, do not effectively and adequately protect human health and the environment, or do not attain ARAR/SPSAGD action levels;

- Alternatives that are not technically feasible or available, or require significant regulatory or administrative effort during implementation or operation; and

- Alternatives that are significantly more costly than other alternatives, but fail to achieve greater reliability, effectiveness, or environmental/health benefits.

The FS report will document the selection process and rationale for elimination of remedial alternatives.

- Evaluation of Alternatives

  - Treatability Studies

Additional investigation may be required to evaluate remedial alternatives selected for the site. Field investigations may require bench scale or pilot scale testing to determine feasibility of various treatment technologies being considered for the site. Computer modeling may be used to enhance field studies, or in limited cases will be applied when field studies are not feasible. The treatability studies would only be performed for those technologies, which require testing of site-specific materials to document effectiveness or feasibility. Examples of technologies that may require field studies are: vapor extraction, biological treatment, thermal or chemical oxidation, and solidification.

Work plans will be prepared, if required, for each of the treatability studies. The exact technologies to be tested, the extent of testing, and the types of testing, will be determined by the technologies to be tested. The tests will be designed to determine the following information:

- Recovery, removal, or destruction efficiency for contaminants;
- Effluent or residual materials contamination levels;
- Major equipment and utility requirements; and
- Capital and operating costs.

• Analysis of Alternatives

The relevant information regarding each selected remedial alternative will be analyzed to facilitate selection of the site remedial action. The specific requirements that will be addressed for each remedial alternative include protectiveness of human health and the environment; attainment of ARARs and SPSAGDs; reduction of mobility, toxicity and volume of hazardous contaminants; implementability; and cost effectiveness.

The analysis of each alternative includes a detailed description of the alternative. The description contains a projected length of system operation; bench or pilot scale test results or supporting data from a literature review; and projected short-term and long-term impacts, effectiveness and performance. The feasibility study will specify important engineering parameters (pumping rates, excavation volumes, etc.) for each alternative and include calculations to justify these parameters.

• Comparison of Alternatives

Upon completion of the detailed analysis of each alternative, the alternatives will be compared to each other using the information collected and factors described above. The effectiveness of the alternatives, which achieve the same relative degree of protection of human health and the environment will be compared on the basis of cost. The alternatives which achieve the same relative degree of protection of human health and the environment will be favored over those alternatives which attain the same effectiveness at a higher cost. A five percent annual rate of return will be used to calculate the present worth for each alternative.

• Recommendation of Remedial Action (FS Report)

Upon completion of the evaluation of alternatives, a recommendation will be presented for the selection of the remedial action alternative for each area of concern at the site. The recommendations will be presented at a meeting with the NYSDEC and Railroad Cleaners.

The results, findings and recommendations of the FS phase of work will be presented and discussed in the FS report. The FS report will document the approach and methodology used to select the recommended remedial action alternative. The FS report will be prepared in accordance with the NYSDEC-approved RI/FS Work Plan and in a manner consistent with CERCLA, the NCP and other pertinent guidance documents. The FS will have a certification by a New York State licensed professional engineer that the Feasibility Study was conducted in accordance with the NYSDEC-approved RI/FS Work Plan.

- Selection of Remedial Action

The results of the detailed evaluation, with additional comments from the NYSDEC, public, and any other parties, will be reviewed. Based on this review, a remedial action alternative, which best achieves the selection criteria will be selected in a Record of Decision (ROD). The selected remedial action will be further developed into an engineering design.

XI. COMMUNITY INFORMATION PROGRAM

The Consultant will provide personnel and materials to assist the NYSDEC in providing the community with information relating to the on-going studies at the Railroad Cleaners site. The Consultant will:

- Establish a Community Information Repository at the local library, or other community center
- Participate in public meetings that the NYSDEC deems necessary to apprize the community of the current or proposed activities
- Identify public and elected officials who may have a need to be informed
- Identify the affected or interested public.

A description of the plan is presented below.

DESCRIPTION OF CITIZEN PARTICIPATION ACTIVITIES

This section describes the specific citizen participation activities that are to be carried out during the implementation of the RI/FS.

Citizen Participation Plan

The Citizen Participation Plan (CPP) will be deposited in the designated document repository. In addition to the CPP, previously prepared documents, such as the Phase I report, Phase II report, Consent Order, and Health and Safety Plan (HASP), will be deposited in the repository.

RI/FS Work Plan

Upon completion of the Draft Final RI/FS Work Plan, a New York State Department of Environmental Conservation (NYSDEC) press notice will be distributed to media on the contact list to announce the work. A fact sheet, which briefly describes the work plan, will be mailed to interested parties, along with a copy of the work plan. The above notification will also inform the public that an informal meeting will be held to discuss the Work Plan. The Draft/Final and Final Work Plan will be placed on file in the document repository as well.

Feasibility Study Report

The feasibility study report will be finalized without public comment. The Department will then prepare a Proposed Remedial Action Plan (PRAP) containing a proposed remedy. A fact sheet will then be sent out to the public and a press release will be issued. A public meeting will be held and the public will be given an opportunity to comment on the PRAP. After the comment period, the NYSDEC will issue the final remedy in the Record of Decision.

The NYSDEC will also create a public mailing list which includes local residents, public officials, elected representatives, and local media. The list of local residents will cover a one-quarter mile radius.

XII. QUALITY ASSURANCE OFFICER AND DATA USABILITY REPORT

The Quality Assurance Officer for the project will be Nicholas Recchia, CPG. His qualifications are presented in Appendix C.

Mr. Recchia will prepare the Data Usability Report that will meet the NYSDEC definition of a Data Usability Report, as presented in Appendix F. This Data Usability Report will be submitted with the final results of the investigation.

XIII. SCHEDULE

Within two weeks of the approval of the Work Plan, the investigation will commence. The well installation and soil sampling are anticipated to be completed in a three-week period. The laboratory analyses will be available within four weeks (after sampling). The final report will be

completed in four weeks after the laboratory analyses has been completed. Thus, the initial test program will be completed within a twelve-week period.

XIV. HEALTH AND SAFETY PLAN

The Health and Safety Plan is presented in Appendix B.

TABLE 1

POTENTIAL SITE REMEDIATION REQUIREMENTS

RAILROAD CLEANERS SITE
OCEANSIDE, NEW YORK

Federal ARARs

Groundwater

- Safe Drinking Water Act (40 CFR 141) Maximum Contaminant Levels
- Safe Drinking Water Act (40 CFR 141) Maximum Contaminant Goals
- RCRA (CFR 264) Groundwater Protection Standards
- Clean Water Act (CFR 120) Ambient Water Quality Criteria
- USEPA Groundwater Protection Strategy Guidelines for Groundwater Classification
- USEPA Reference Doses
- USEPA Health Assessment

New York SPSAGDs

- 6 NYCRR Part 703 Groundwater Quality Standards and Criteria
- NYSDOH Part 5 State Sanitary Code Drinking Water Supplies
- Division of Water - Technical and Operations Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values
- NYSDEC Draft Cleanup Policy and Guidelines (Vol. II, Appendix B)

Soil

- NYSDEC Determination of Soil Cleanup Levels 12/20/00
- NYSDEC TAGM 4046, Contamination Criteria for Environmental Media. January 24, 1994
- STARS Memo #1 Soil Guidance Policies. August 1992

Appendix A

Remedial Investigation Work Plan
Prepared by: Richard D. Galli, P.E., P.C.

REMEDIAL INVESTIGATION
WORK PLAN

PHASE II

SUBMITTED FOR:

RAILROAD DRIVE-IN CLEANERS

3180 LAWSON BLVD.
OCEANSIDE, NY 11752

PREPARED BY:

RICHARD D. GALLI, P.E., P.C.

52 BROADWAY
GREENLAWN, NY 11740

JULY, 1989

KENNETH L. BROOKS, P.E.

27/1/JH

1.0 BACKGROUND

Railroad Drive-In Cleaners is a dry cleaning establishment operating at 3180 Lawson Blvd. in Oceanside, NY since 1966. The building was constructed in 1963.

On or about June 1988, personnel from OSI Oil Services removed a 550 gallon underground storage tank that had contained #2 fuel oil. This tank was located in the area behind the building as shown on the site plan. Soil from the excavation was moved onto a tarp at the request of NCDH and later placed into drums. This material will be sampled as part of this phase so that proper disposal may be arranged. The excavation was filled in with clean fill. The tank was dismantled by Gershow recycling and disposed of as scrap.

A site inspection conducted by the Nassau County Department of Health (NCDH) on July 6, 1988 indicated the presence of an unpermitted liquid discharge to the soil to the rear of the building. The discharge was discovered during the removal of an underground tank behind the building that had been used for storage of #2 fuel oil used for building heating purposes. Soil removed from around the tank was composited and sampled by Nassau County Dept. of Health personnel on July 6, 1988 as a matter of routine procedure. Results of this sampling later showed the presence of

tetrachloroethylene (2,600 parts per billion), xylenes (590 ppb) ethylbenzene (260 ppb) and toluene (95 ppb).

Inquiries indicate that no sanitary disposal systems or drywells are located on the premises. All discharges are sewered.

2.0 PHASE I RESULTS

Sampling conducted according to the approved Phase I work plan confirmed the presence of the solvents found by Nassau County Department of Health as well as smaller amounts of trichloroethylene. Tetrachloroethylene concentrations ranged form 10 to 1,100,000 ppb. Highest concentrations were found at the sampling locations lying to the South. The strongest concentrations, obtained at location B-4, indicated that the concentration increased with increasing sampling depth.

A copy of the lab report is attached as Appendix A. Phase I and Phase II sampling locations are shown in Drawing 2.

RICHARD D. GALLI, P.E., P.C.
52 BROADWAY, GREENLAWN, N.Y. 11740

(516) 754-0396
FAX: (516) 754-7408

SOILS & GROUNDWATER INVESTIGATION

RAILROAD DRIVE-IN CLEANERS

3180 Lawson Blvd.
Oceanside, NY 11752

Prepared by:

RICHARD D. GALLI, P.E., P.C.

KB:KLB1
88-069-01

5.0 GROUNDWATER QUALITY

On January 31 and March 28, 1990, RDG personnel completed the collection of groundwater samples from the three (3) site monitoring wells. The groundwater samples and a field bank were analyzed by a New York State certified laboratory for volatile organics according to EPA Method 601/602.

All samples were collected using PVC bailers. All bailers were decontaminated in the following manner:

- Alconox detergent wash
- Rinse with potable water
- Rinse with methanol
- Final rinse with distilled water

Contaminants likely to be found as constituents of fuel oil (i.e., toluene, ethylbenzene, and total xylene) were detected at soil boring B-4 at the four foot depth at levels of 210,000 , 42,000 , and 140,000 ppb, respectively. Benzene was found in groundwater on 1/31/90 (MW-3, 126 ppb) and 3/28/90 (6 ppb in MW-1 and 150 ppb in MW-2). The highest concentration of benzene was found in MW-2, the upgradient well. FOIL inquiries have been submitted to evaluate the possibility or likelihood of any contamination reaching the subject site from several of the oil companies operating terminals to the south. These results will be forwarded with appropriate comments when they become available.

Whereas, 1) three calculations yielded generally westerly flow directions; and 2) this general flow direction is consistent with

that expected when local geography is considered; and 3) the highest concentration was found in the well placed at the former tank location, we are taking the representative flow direction to be to the west. Thus, MW-2 serves as the upgradient well and well MW-1 appears to be placed slightly laterally. MW-3 appears to be located centrally within an area of contamination.

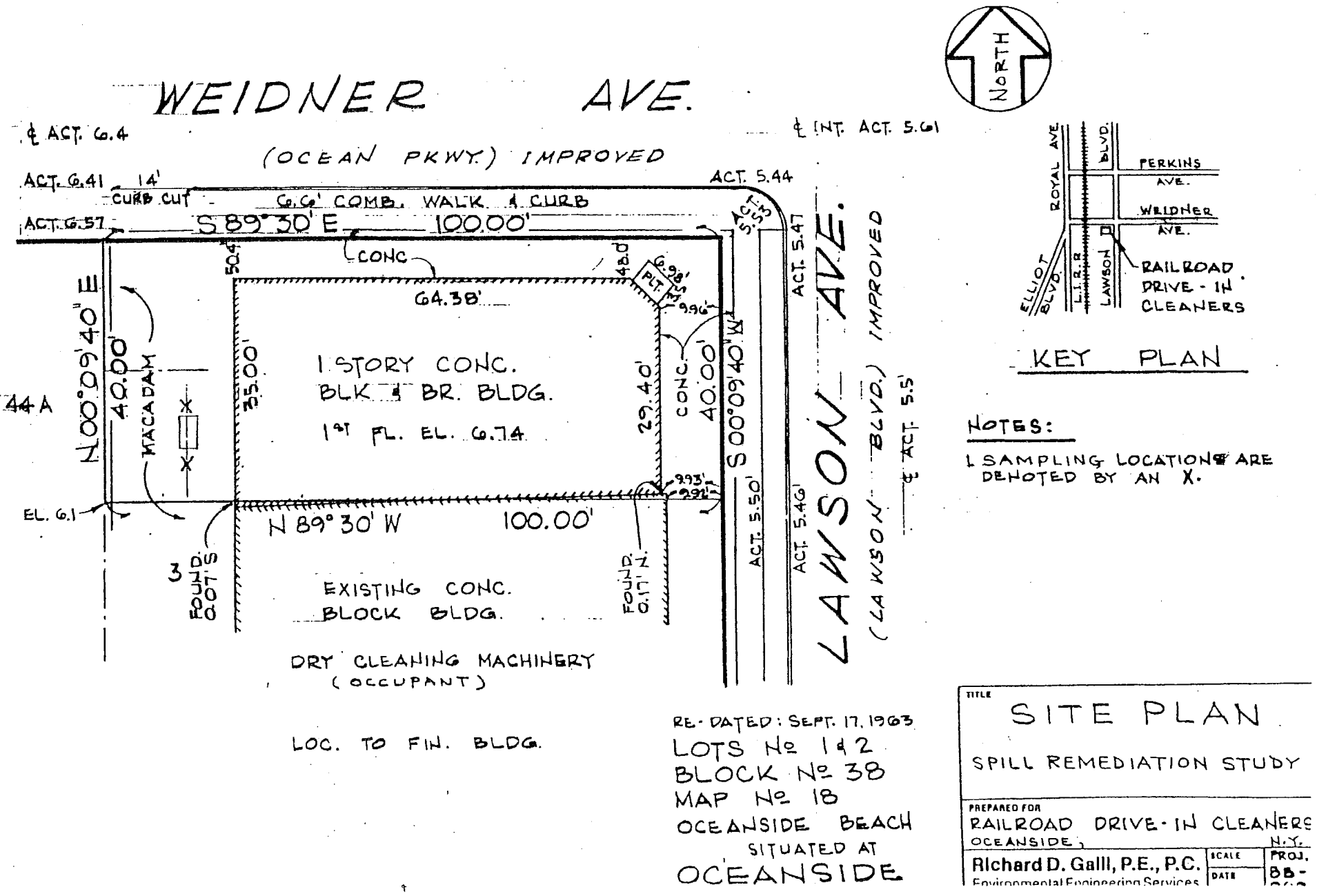
The volatile organic analyses indicate that tetrachloroethylene was found in wells MW-2 and MW-3 at levels in excess of any likely background level.

6.0 CONCLUSIONS

Based on the environmental investigation completed at the subject site, RDG has come to the following conclusions:

- The Phase I investigation identified contamination of the soil in the immediate vicinity of the former fuel oil storage tank in the rear with tetrachloroethylene and fuel oil components.
- Groundwater flows generally to the west, toward East Rockaway Channel.
- Groundwater contamination in the upper Glacial Aquifer has been observed at levels up to 10,000 ppb tetrachloroethylene. Highest concentrations were found in the well at the former location of the fuel oil UST.


MALVERNE
LYNBROOK
ROCKVILLE CENTRE
EAST ROCKAWAY
Oceanside
Hempstead Lake
South Pond
Smith Pond
Schodack Pond
Rockville Country Club
Rockville Cem
Tanglewood Preserve
Medical Center
South Nassau Communities Hospital
Middle Bay Country Club
Bay Park
Sewage Disposal
Hewlett Bay
Tidal Flat
Golf Course
Mill River
Powell Creek
Rockaway Channel
Woodfield Road Sch
Herber Jr High Sch
South Side Jr High Sch
Sunrise Highway
Merrick Rd
Atlantic Ave
Long Beach Road
Foxhurst Rd
Waukena
Henrietta
160 000
150 000
4500000m. N
2 090 000
40'
615000m. E.
2 100 000
40°37'30"
73°37'30"
DIVISION OF



RE-DATED: SEPT. 17, 1963
LOTS Nº 1 & 2
BLOCK Nº 38
MAP Nº 18
OCEANSIDE BEACH
SITUATED AT
OCEANSIDE

NOTES:

1. SAMPLING LOCATIONS ARE DENOTED BY AN X.

TITLE

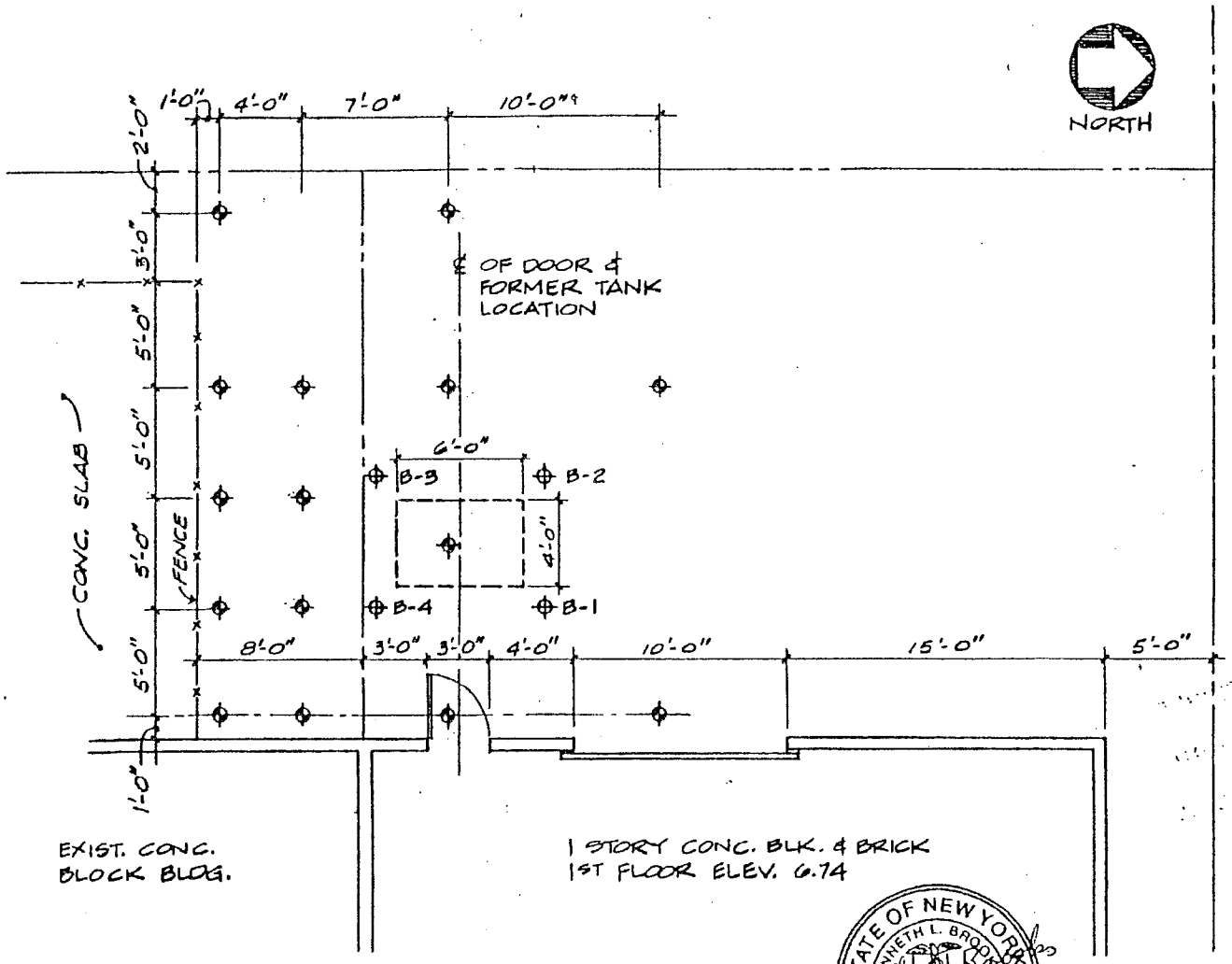
SITE PLAN

SPILL REMEDIATION STUDY

PREPARED FOR
RAILROAD DRIVE-IN CLEANERS
OCEANSIDE, N.Y.

Richard D. Galli, P.E., P.C.
Environmental Engineering Services

SCALE
DATE
PROJ. BB-



LEGEND

- ⊕ PHASE I SAMPLE LOCATION
- ⊕ PHASE II SAMPLE LOCATION

STATE OF NEW YORK
KENNETH L. BROOKS
No. 64922
LICENSED PROFESSIONAL ENGINEER

JOB NO. 88-069-02

RAIL ROAD DRIVE-IN CLEANERS

PHASE II SAMPLING LOCATIONS

RICHARD D. GALLI P.E.,P.C.
52 BROADWAY - GREENLAWN, NY 11740

DR. AXC	SCALE 3/16"=1'-0"	DWG NO. 2
CKD KLB	DATE 7-11-89	
APPD KLB		

SORATORY WORKSHEET

EMICAL EXAMINATION FOR TRACE ORGANIC
NSTITUENTS IN WATER, HAZARDOUS WASTES
)) OLID WASTES

ler for Laboratories and Research

sau County Department of Health

1 ☑ Routine
2 ☐ Resample
3 ☐ Special
4 ☐ Complaint
5 ☐ Other

No. 900435

D

Field No. P45

N No. (Public Water Supply Only)

rce Information (Please Print)

mises Roll Road Cleaners

ress 3180 Lawson Blvd

wn Oceanside

lection Point Lawson Blvd Well No. MW-2

	Month	Day	Year
Date Collected	3	28	90
Date Received	MAR	28	1990
Date Reported	APR	05	1990
Collection Time	10:40 AM		
Collected By:	Peter T. Paul		

pler's Comments:

Sample on ice
Split w/Gali

Bureau
1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

	AQUEOUS				NON-AQUEOUS	
	Community Well	6	Surface Water	1	Soil	
	Non-Community Well	7	Waste Water	2	Sludge	
	Private Well	8	Industrial Effluent	3	Waste Solvent	
	Monitoring Well	9	Raw Supply Water	4	Oil	
	Drinking Water	10	Distribution Water	5	Other (specify)	

ANALYSIS TYPE

	Purgeable Organic compounds
	Other (specify)

Examiner's Comments:

NASSAU COUNTY HEALTH DEPARTMENT
CENTER FOR LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 900435
Source: RAIL ROAD CLEANERS, 3180 LAWSON BLVD, OCEANSIDE
Matrix: MONITORING WELL
Site: WELL #MW-2
Date Sampled: 03/26/90
Date of Report: 04/05/90

VOLATILE HALOGENATED	MRC (ug/l)		RESULT (ug/l)
VINYL CHLORIDE----------(WA24)----------	1	-------	53
TRICHLOROFLUOROMETHANE-----(WA01)----------	1	------- <	1
1,1-DICHLOROETHYLENE-------(WA15)----------	1	------- <	1
METHYLENE CHLORIDE---------(WA02)----------	1	------- <	1
t-1,2-DICHLOROETHYLENE-----(WA16)----------	1	-------	1
1,1-DICHLOROETHANE---------(WA04)----------	1	------- <	1
c-1,2-DICHLOROETHYLENE-----(WA17)----------	1	-------	91
CHLOROFORM-----------------(WA05)----------	1	-------	5
1,1,1-TRICHLOROETHANE------(WA06)----------	10	------- <	10
CARBON TETRACHLORIDE-------(WA07)----------	1	------- <	1
1,2-DICHLOROETHANE---------(WA19)----------	1	------- <	1
TRICHLOROETHYLENE----------(WA08)----------	1	-------	31
1,2-DICHLOROPROPANE--------(WA20)----------	10	------- <	10
BROMODICHLOROMETHANE-------(WA09)----------	10	------- <	10
c-1,3-DICHLOROPROPENE------(WA22)----------	1	------- <	1
t-1,3-DICHLOROPROPENE------(WA23)----------	1	------- <	1
1,1,2-TRICHLOROETHANE ----(WA18)----------	1	------- <	1
TETRACHLOROETHYLENE -------(WA13)----------	1	-------	190
DIBROMOCHLOROMETHANE-------(WA10)----------	10	------- <	10
BROMOFORM -----------------(WA14)----------	10	------- <	10
1,1,2,2-TETRACHLOROETHANE-(WA21)----------	1	------- <	1

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SOLICITED
PPB: AIR - ng/l WATER - ug/l SOIL - ng/g

APR - 6 1990

NASSAU COUNTY HEALTH DEPARTMENT
CENTER FOR LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 900435
Source: RAIL ROAD CLEANERS, 3180 LAWSON BLVD, OCEANSIDE
Matrix: MONITORING WELL
Site: WELL #MW-2
Date Sampled: 03/28/90
Date of Report: 04/05/90

VOLATILE AROMATICS	MRC (ug/l)		RESULT (ug/l)
BENZENE ----------(WC01)----------	0.5	-------	160.(
TOLUENE ----------(WC02)----------	1	-------	1
CHLOROBENZENE ----------(WC03)----------	1	------- <	1
ETHYLBENZENE ----------(WC04)----------	1	-------	1
XYLENE (o,m,p) ----------(WC05)----------	1	------- <	1
BROMOBENZENE ----------(WC09)----------	1	------- <	1
CHLOROTOLUENE ----------(WC10)----------	1	------- <	1
DICHLOROBENZENE (o,m,p) --(WC06)----------	1	------- <	1
BUTYL BENZENE(tert,sec,n)-(WC08)----------	1	------- <	1

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - ng/l WATER - ug/l SOIL - ng/g

APR 6 1990

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES & SOLID WASTES

Center for Laboratories and Research

Nassau County Department of Health

1 ☑ Routine
2 ☐ Resample
3 ☐ Special
4 ☐ Complaint
5 ☐ Other

L No. 900436

Field No. P46

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises: Rail Road Cleaners
Address: 3180 Lawson Blvd
Town: Oceanside
Collection Point: Rear of Dry Cleaner
Well No. MW-3

	Month	Day	Year
Date Collected	3	28	90
Date Received	MAR	29	1990
Date Reported	APR	05	1990
Collection Time	11:20 AM		
Collected By:	Peter F. Paul		

Sampler's Comments:

Sample on ice
Split with Gali

Bureau
1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

	AQUEOUS			NON-AQUEOUS	
	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable Organic compounds
B	Other (specify)

Examiner's Comments:

NASSAU COUNTY HEALTH DEPARTMENT
CENTER FOR LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 900436
Source: RAIL ROAD CLEANERS, 3180 LAWSON BLVD, OCEANSIDE
Matrix: MONITORING WELL
Site: WELL #MW-3
Date Sampled: 03/28/90
Date of Report: 04/05/90

VOLATILE HALOGENATED	MRC (ug/l)		RESULT (ug/l)
VINYL CHLORIDE----------(WA24)----------	1	--------	43
TRICHLOROFLUOROMETHANE-----(WA01)----------	1	-------- <	1
1,1-DICHLOROETHYLENE------(WA15)----------	1	-------- <	1
METHYLENE CHLORIDE--------(WA02)----------	1	-------- <	1
t-1,2-DICHLOROETHYLENE----(WA16)----------	1	--------	27
1,1-DICHLOROETHANE--------(WA04)----------	1	-------- <	1
c-1,2-DICHLOROETHYLENE----(WA17)----------	1	--------	3000
CHLOROFORM----------(WA05)----------	500	-------- <	500
1,1,1-TRICHLOROETHANE-----(WA06)----------	500	-------- <	500
CARBON TETRACHLORIDE------(WA07)----------	500	-------- <	500
1,2-DICHLOROETHANE--------(WA19)----------	500	-------- <	500
TRICHLOROETHYLENE----------(WA08)----------	1	--------	850
1,2-DICHLOROPROPANE--------(WA20)----------	500	-------- <	500
BROMODICHLOROMETHANE------(WA09)----------	500	-------- <	500
c-1,3-DICHLOROPROPENE-----(WA22)----------	1	-------- <	1
t-1,3-DICHLOROPROPENE-----(WA23)----------	1	-------- <	1
1,1,2-TRICHLOROETHANE ----(WA19)----------	1	-------- <	1
TETRACHLOROETHYLENE ------(WA13)----------	1	--------	20000
DIBROMOCHLOROMETHANE------(WA10)----------	NR	--------	NR
BROMOFORM ----------(WA14)----------	500	-------- <	500
1,1,2,2-TETRACHLOROETHANE-(WA21)----------	500	-------- <	500

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
RES: AIR - mg/l WATER - ug/l SOIL - ng/g

APR - 6 1990

ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER: B-4

B-4
Deep

Contractor: NYTEST ENVIRONMENTAL INC.
Lab Sample ID No: N9-4757
Sample Matrix: Soil
Data Release Authorized By: O'Sheel

Project No: 89-15663
Date Sample Received: 4/12/89

VOLATILE COMPOUNDS

Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: NA
Date Analyzed: 4/17/89
Conc/Dil Factor: 6250
Percent Moisture Not Decanted: 17

CAS Number		ug/kg Dry Wt. Basis
74-87-3	Chloromethane	75301.0 U
74-83-9	Bromomethane	75301.0 U
75-01-4	Vinyl Chloride	75301.0 U
75-00-3	Chloroethane	75301.0 U
75-09-2	Methylene Chloride	180000.0 B
67-64-1	Acetone	470000.0 B
75-15-0	Carbon Disulfide	37651.0 U
75-35-4	1,1-Dichloroethene	37651.0 U
75-34-3	1,1-Dichloroethane	37651.0 U
540-59-0	Total-1,2-Dichloroethene	37651.0 U
67-66-3	Chloroform	37651.0 U
107-06-2	1,2-Dichloroethane	37651.0 U
78-93-3	2-Butanone	75301.0 U
71-55-6	1,1,1-Trichloroethane	37651.0 U
56-23-5	Carbon Tetrachloride	37651.0 U
108-05-4	Vinyl Acetate	75301.0 U
75-27-4	Bromodichloromethane	37651.0 U

CAS Number		ug/kg Dry Wt. Basis
79-34-5	1,1,2,2-Tetrachloroethane	37651.0 U
78-87-5	1,2-Dichloropropane	37651.0 U
10061-02-6	Trans-1,3-Dichloropropene	37651.0 U
79-01-6	Trichloroethene	60000.0
124-48-1	Dibromochloromethane	37651.0 U
79-00-5	1,1,2-Trichloroethane	37651.0 U
71-43-2	Benzene	37651.0 U
10061-01-5	cis-1,3-Dichloropropene	37651.0 U
110-75-8	2-Chloroethylvinylether	75301.0 U
75-25-2	Bromoform	37651.0 U
591-78-6	2-Hexanone	75301.0 U
108-10-1	4-Methyl-2-Pentanone	75301.0 U
127-18-4	Tetrachloroethene	1100000.0
108-88-3	Toluene	210000.0
108-90-7	Chlorobenzene	37651.0 U
100-41-4	Ethylbenzene	42000.0
100-42-5	Styrene	37651.0 U
	Total Xylenes	140000.0
	Total Dichlorobenzene	225904.0 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

VALUE If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U), based on necessary concentration dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

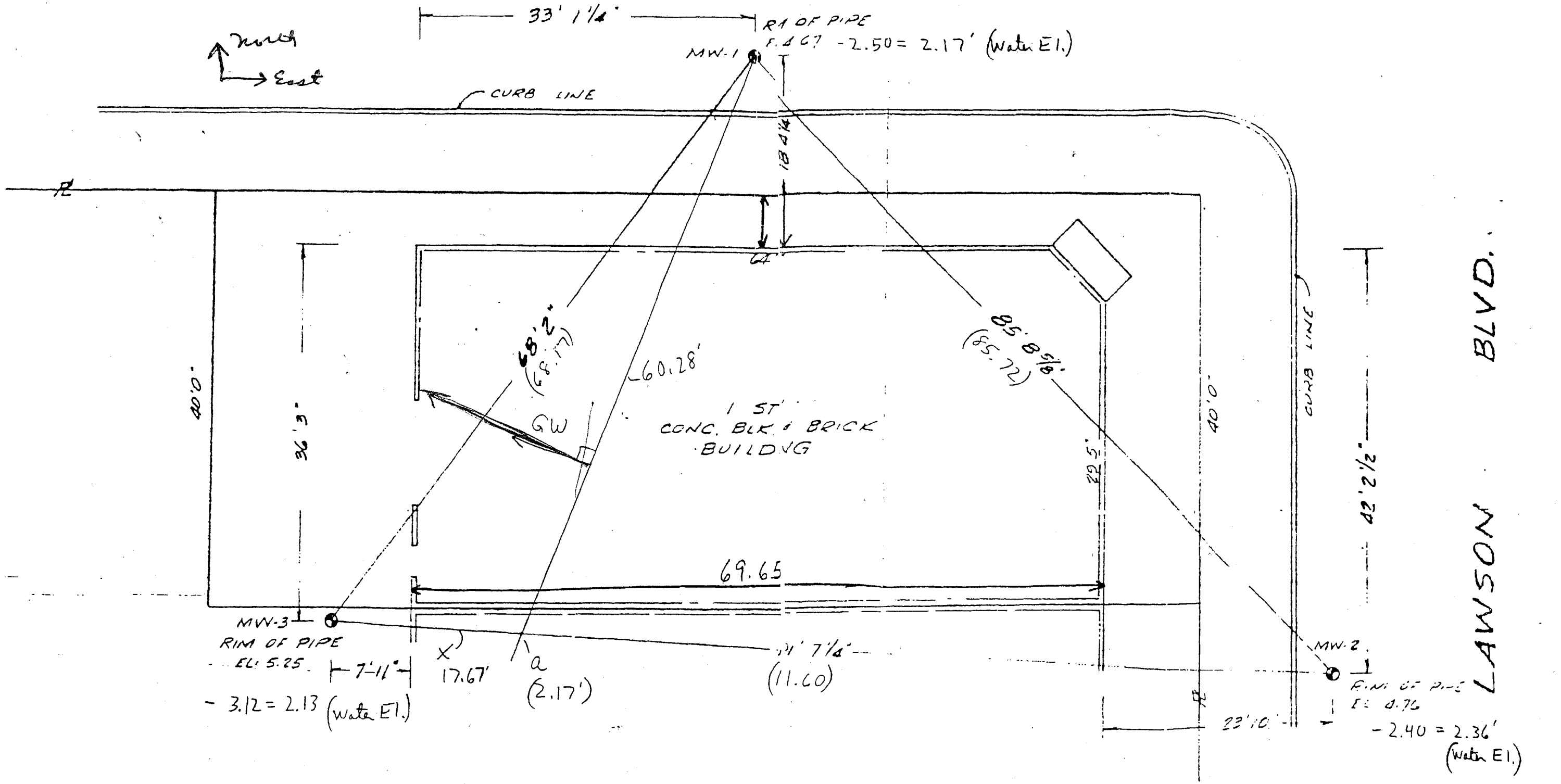
J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g. 10J).

C This flag applies to pesticide parameters where the identification l been confirmed by GC/MS Single component pesticides greater than or equal to 10 ug/l in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warn the data user to take appropriate action.

Other specific flags and footnotes may be required to properly defir the results. If used, they must be fully described and such descri tion attached to the data summary report.

00025


33' 1 1/4"
RIM OF PIPE
MW-1
F.G.G.? -2.50 = 2.17' (Water El.)
North
East
CURB LINE
18.44'
68.2'
(68.77)
60.28'
GW
1 ST.
CONC. BLK & BRICK
BUILDING
85.8 8 1/2'
(85.72)
40'0"
36'3"
22.5'
CURB LINE
42'2 1/2"
69.65
MW-3
RIM OF PIPE
EL: 5.25
- 3.12 = 2.13 (Water El.)
7'-11"
17.67'
(2.17')
34' 7 1/4"
(11.00)
MW-2
RIM OF PIPE
EL 0.76
- 2.40 = 2.36'
(Water El.)
23'10"
LAWSON BLVD.
MON
ELEV
RR
3/29/90

Appendix B

Quality Assurance Plan
Health and Safety Plan

1.0 FIELD AND SAMPLING PROTOCOLS

The field sampling techniques to be employed at the Railroad Cleaner site are detailed below. All efforts will be made to eliminate possible sample contamination and maximize the reliability of the analytical results. These efforts include proper use and cleaning of sampling equipment and sample containers to eliminate sample contamination; the use of standardized sampling procedures including decontamination of equipment; use of a quality assurance program to maximize accuracy and precision of the analytical results; and use of chain-of-custody procedures to track the samples from source to analysis and minimize the opportunity for tampering.

1.1 Cleaning Procedures

1.1.1 Sampling Equipment

All re-usable sampling equipment used for laboratory sample collection will undergo a thorough decontamination process. The following steps outline the field decontamination procedures:

- Non-phosphate soap and tap water wash
- Tap water rinse
- Dilute nitric acid rinse (for samples to be analyzed for metals)
- Tap water rinse
- Methanol rinse
- Hexane rinse
- Distilled water rinse
- Air dry

1.1.2 Monitoring Equipment

Field instrumentation used to monitor site conditions will be decontaminated if the equipment comes in direct contact with soil. Decontamination will consist of tap water rinse, wash with a laboratory grade soap, and a final rinse with deionized water.

1.1.3 Heavy Equipment

Heavy equipment, which includes drill rigs and excavating equipment, will be field cleaned before entering and leaving the site. A high pressure, steam cleaner will be used for field cleaning of heavy equipment. The exterior surfaces and tires will be steam cleaned to prevent the potentially hazardous materials from entering or leaving the site. Drilling equipment that penetrates the ground surface (i.e., hollow stem augers, rods, bits) will be steam cleaned, and if necessary, scrubbed manually to remove soil caking. Steam cleaned down hole equipment will be staged on 4 mil polyethylene sheeting between steam cleaning and use. The staging area will be in an upgradient wind direction and away from areas of potential concern.

1.2 Sampling Methodology

All sample collection activities will be conducted so as to obtain reliable information regarding subsurface conditions and representative soil samples for analysis. EEA geologist/hydrogeologist will implement all soil sampling at the site.

To prevent contamination of sample bottles, each bottle will remain sealed until placed beneath the sampling tool for sample collection. After collecting a sufficient amount of sample, the sample jar will be immediately sealed with a screw cap. Each sample jar will have the following information recorded on it:

- Project Name
- Sample Number
- Name of Sampler
- Time and Date of Sampling
- Depth of Sample
- Analysis

The jar will then be placed in a cooler and kept at 4°C until arrival at the laboratory. This procedure will be repeated at each sample location. Table 1 contains a summary of the field sampling requirements, such as sample containers, preservation, and holding times, for the proposed sampling and analytical activities.

1.3 Soil Sampling Procedures

Soil borings will be performed in the various areas of concern to obtain data regarding subsurface soil conditions. Subsurface boring soil samples will be collected with a 2 foot long split spoon sampler driven ahead of hollow stem augers. The split spoons will be advanced using a falling hammer integral with a portable drill rig.

1.4 Use of Quality Assurance Samples

Travel blanks, field blanks, and one duplicate will be generated in the field to serve as an independent check on the laboratory and on field sampling techniques. These samples will be coded similarly to the other samples to minimize the chance of laboratory identification.

For each day of sampling, the following QA/QC samples will be collected:

- o One travel/trip blank will be submitted for each day of soil sampling.
- o One field (equipment) blank for each parameter submitted for analysis for every twenty samples, or analytical batch of soil.
- o A duplicate sample will be submitted for each day of sampling at a rate of one per twenty samples per soil matrix.

Travel/trip blanks, consisting of distilled water prepared by the laboratory, are required for assessing the potential for contaminating samples with volatile organics during sampling or in transit.

Field blanks, or rinsate samples, are analyzed for all analyses performed on any given day of sampling for the medium of concern. The purpose of the field blank is to assure that decontamination procedures provide adequate cleaning of the sampling equipment. Any contaminants present on the surface of the sampling equipment are assessed by collecting a sample of de-ionized water passed through the sampling equipment following standard decontamination procedures.

Trip and field blanks will be used to determine whether contaminants detected in the soil samples are indicative of actual site conditions, or represent contamination derived from decontamination procedures, sample transport, or sample handling.

A duplicate sample is a split of a sample where both are analyzed for the same parameter. The duplicate sample is coded similarly to the other samples to prevent laboratory identification. Duplicates will be used to evaluate the consistency of laboratory analysis.

1.5 Sample Custody

The purpose of monitoring the chain-of-custody of a sample shuttle is to ensure that proper sample handling requirements have been met for representative samples prior to their analysis, and to document the record of custody from the moment of sample collection to analysis and sample disposal. The handling requirements, as set forth by New York State Department of Environmental Conservation (NYSDEC) and EPA, delineate guidelines, such as sample preservation techniques and sample holding times. A sample Chain-of-Custody Record is shown on the following page.

As per the requirements of the ELAP certified laboratory and the NYSDEC, a Chain-of-Custody Record will be maintained and accompany the laboratory shuttle from the moment of the container's dedication until the time of the corresponding analyses. A laboratory's delivery of a sample container shuttle to the sampler, therefore, requires that a Chain-of-Custody Record be initiated by the authorized laboratory representative relinquishing the shuttle, and the time and date of the transfer documented. The record of this transfer will be proof that the containers which were used for sample storage have been dedicated by the laboratory prior to their delivery, and in accordance with the quality controls governing the analyses of the samples to be collected.

After their collection and storage, the necessary field and quality assurance samples will be properly preserved in the shuttle until their transfer to the laboratory for analysis. The transfer will be accompanied by the same Chain-of-Custody Record, which will be completed to identify the ID numbers, quantities, and physical description of the samples, and the particular analyses requested. The name of the sampler who relinquished the shuttle, the time and date of the transfer, and the laboratory representative assuming responsibility for transporting the shuttle to the laboratory will be recorded. Upon receipt of the samples, the laboratory sample management personnel will inspect the samples to document sample preservation, note discrepancies between the samples and chain-of-custody, and to assign a laboratory identification number and log the laboratory number into the sample inventory system.

2.0 LABORATORY PROCEDURES

2.1 Analytical Laboratory

The samples will be analyzed by STL Laboratories. STL is an ELAP Certified laboratory, located at 128 Long Hill Cross Road, Shelton, Connecticut (NYSDOH ID. No. 10602).

STL Laboratories has been inspected by the EEA QA/QC Manager. The inspection verified that the laboratory is capable of analyzing the samples and producing a data report in a manner consistent with the guidelines and requirements set forth in the New York State Department of Health ELAP Certified Laboratory protocols document. These requirements include proper laboratory certification, holding times, and extraction and analytical methods for the deliverables. The review of the laboratory also entailed a strict attention to the qualifications of the technicians who will handle the samples, and the capabilities, appropriateness and accuracies of the methods and instruments employed during analysis. Finally, the overall Standard Operating Procedures (SOP) of the laboratory was critically examined, and thereby determined to conform to the procedures specified by the New York State Department of Health, as well as the NYSDEC.

3.0 QUALITY ASSURANCE OBJECTIVES

3.1 Overall Project Objectives

The overall objective of the RI/FS is to obtain reliable information regarding the environmental condition of the site in order to develop appropriate courses of action for continued investigation or remediation of the site. Data Quality Objectives (DQO) are qualitative and quantitative criteria which are used to evaluate the data to determine if they conform to the overall project objectives. DQOs set forth the acceptable uncertainty (i.e., error) for each specific task of the field investigation. The target uncertainty for any given activity is zero error, however, scientifically, zero error is not attainable. The overall goal of DQOs is to minimize the uncertainty, so that the data are within acceptable limits.

The two major areas of uncertainty are inherent within sampling and analytical procedures. The overall project objectives and procedures are developed to ensure that sampling and analysis conform to standard operating procedures in an effort to minimize the uncertainty and maximize the confidence of the data. The data collected during implementation of the work plan will be used to determine the distribution of contamination across the site, and to evaluate the risk to human health and the environment. The course of action for the site will be based upon the risks, which therefore requires that the data must be accurate and precise.

Field sampling and laboratory analysis will determine the presence or absence of contamination which is indicative of a qualitative analysis, whereas the actual concentrations of these contaminants are indicative of quantitative analysis.

Parameters that will be used to specify data quality requirements and to evaluate the laboratory analytical performance are precision, accuracy, representativeness, completeness, and comparability (PARCC). These parameters are defined as follows:

- Precision - a measure of the reproducability of measurements under a given set of conditions
- Accuracy - a measure of the bias existing in a measurement system
- Representativeness - the degree to which sample data accurately and precisely represent selected characteristics
- Completeness - a measure of the amount of the valid data obtained from the measurement system compared to the amount that is required
- Comparability - a measure of the confidence with which one data set may be compared with another

3.2 Field Investigation Quality Objective

The objectives, with respect to the field investigation, are to maximize the confidence in the data in terms of PARCC. To assure sample representativeness, all sample collection and analysis will be performed in accordance with the standard operating procedures as set forth in this document. The use of standardized methods of field analysis and sample collection, and adherence to sample preservation methods and holding times will assure a degree of comparability. Comparability of results ensures that observations and conclusions for a given set of data can be directly compared with those of historical data.

In order to maximize comparability, the same sampling team will be used to collect samples to reduce sampling technique inconsistencies. Soil sampling events will be conducted on consecutive days to minimize time difference variables such as weather conditions.

3.3 Internal Laboratory Data Quality Objectives

Laboratory data quality objectives will consist of analytical checks on in-house procedures to ensure that the analyses performed are consistent, reproducible, and within regulatory guidelines. The laboratory will demonstrate analytical precision and accuracy by the analysis of laboratory duplicates, as well as by comparison of response factors for calibration standards. Laboratory accuracy will be demonstrated by the addition and subsequent analysis for internal surrogate compounds. Precision will be presented as relative percent difference (RPD), percent relative standard deviation (% RSD), or percent difference (% D), depending on the number of QC samples analyzed.

The laboratory will be expected to document all problems encountered during the course of sample analysis and reporting. The analytical result packages will be provided by the laboratory in a format consistent with the ELAP Certified Laboratory Protocols.

TABLE 1

ANALYSIS METHODS, HOLDING TIMES AND PRESERVATION PROCEDURES

Type of Analysis	Containerization	Holding Time	Preservation
Volatile Organics USEPA Method 8260	Glass, Teflon-lined cap	7-days-extraction	Cool, 4°C

I. INTRODUCTION

This Health and Safety Plan (HASP) is prepared for performing a subsurface investigation at the Railroad Cleaners site. The work involves performing soil test borings, and the collection of soil and groundwater samples for laboratory analyses. It is anticipated that low levels of contamination may be encountered.

This HASP is prepared to be consistent with the anticipated areas of concern. This is the most recent and available information. If additional pertinent information is made available, it will be used to amend this plan. In addition, the site project manager/safety officer may use this information to increase personal protective measures on the study area site. All workers will be briefed on any amendments made to this plan. All persons entering the work site shall have the OSHA 40 Hour Hazwopper training and certification with an updated medical history.

This HASP assigns responsibilities, establishes personal protection standards, recommends operating procedures, and provides for contingencies that may arise during performance of the assessment at the site. The protocols in this HASP apply to all personnel involved in the work activities including: EEA, Inc., all outside subcontractors, client, or regulatory agencies present during the performance of the work.

II. WORK PLAN

The New York City One-Call Center will be contacted to mark out any underground utilities located on-site prior to the start of field activities. Private markout may be employed in areas undefined by the public utility carriers.

Based on what is already known about the site, it is anticipated that Level D protection will be adequate for all other tasks to be performed at the site.

Level D protection will consist of the following:

- Coveralls
- Gloves
- Boot/shoes, leather
- Hard hat when working in the vicinity of the drill rig
- Safety glasses will be worn when working in the vicinity of the drill rig.

In the event that air monitoring data, either during the preliminary on-site evaluation or during construction of the wells, indicate OVA levels above 10[1] ppm, all personnel will need to convert to Level C protection. Specifically, the following criteria will be used for the selection of Level C. A description of the levels of personnel protection is presented in Table 1.

1. Measured concentration is within the service limit of the respirator's canister.

2. Atmospheric contaminant concentrations do not exceed IDLH levels.

3. Atmospheric contaminants, liquid splashes, or other direct contact, will not adversely affect the small area of skin left unprotected by chemical resistant clothing.

4. Vapor readings of 10 ppm above background as registered on the OVA meters.

Level C protection will consist of the following protective equipment (e.g., in addition to level D): full-face, air-purifying canister equipped respirator (MSHA/NIOSH approved), and chemical resistant coveralls.

The activities required during the proposed investigation may involve the exposure of contaminated soil, therefore contributing to the movement of this material to unaffected areas. In order to control soil from releasing airborne contaminants due to its volatility, or wind-blown due to its disturbance, the following contamination control procedures will be instituted:

a. Establish Exclusion Zone - This is the zone where contamination does or could occur. All people entering this zone must wear prescribed levels of protection. An entry and exit check point must be established at the periphery to regulate the flow of personnel and equipment. The exclusion zone, for the purpose of this investigation, will probably include the area of drilling and, therefore, the outer boundaries will need to be established by use of the OVA readings. The radius of this zone will be determined by the distance it will take for the OVA readings to stabilize between 0 to 5 ppm.

b. Establish Contamination Reduction Zone - This zone provides a transition between contaminated and clean zones. It provides additional assurance that the physical transfer of contaminating substances on people, equipment, or in the air and water is limited through a combination of decontamination procedures. As operations proceed, the area around the decontamination station may become contaminated, but to a much lesser degree than the Exclusion Zone.

---

[1] Corrected for background and methane

On a relative basis, the amount of contamination should decrease due to distance involved and decontamination procedures used.

The use of this zone system, access control points, and exacting decontamination procedures provides a reasonable assurance against the translocation of contaminated soil or water. The site control system described is based on a "worse case" situation. Less stringent site control and decontamination procedures may be utilized if more definitive information is available on the types of substances involved and hazard they present.

As previously mentioned, there are no reasons to believe that this site is unsafe or potentially unsafe, nonetheless, there are certain safety measures and precautions which can be instituted to reduce risk. The following are some of those personal precautions:

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.

2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activities.

3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.

4. No excessive facial hair, which interferes with a satisfactory fit of the mask-to-face-seal, is allowed on personnel required to wear respiratory protective equipment.

5. Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, mud, or other discolored surfaces; kneel on ground; lean; sit; or place equipment on contaminated surfaces, vehicles, or ground.

In addition, the following safety equipment will be maintained on-site for responding to potential emergency situations: portable eyewash, ABC fire extinguisher, and first aid kit. Telephone numbers of emergency response units in the area will also be posted where they can easily be seen by all those working at the site. All personnel who will be working at the site will also be required to receive training in respirator fitting, emergency procedures, equipment decontamination, and specific task procedures. All personnel involved with the collection of soil or water will have successfully completed the 40-hour OSHA Hazardous Materials Training Program.

o Safety Decision-Making Procedures

During the course of this investigation, health and safety procedures will be reviewed daily by the Field Operations Manager (FOM) and the Health and Safety Officer (HASO). If modifications or additional field protection requirements are deemed necessary, such changes will be incorporated into the Health and Safety Plan by the Health and Safety Officer and reviewed by all field personnel prior to their implementation.

In addition, the Health and Safety Officer will monitor near the drillhole with a CGI (Combustible Gas Indicator) and OVA, and scan drill cuttings with the OVA and monitor the spoon upon retrieval. The contents of the spoon will be screened using the OVA when opened and the Site Health and Safety Officer will inform the Site Manager and drill crew supervisor of the readings, and notify the on-site personnel if any changes need to be made in personal protective equipment requirements.

All personnel working at the site will enter their names into the project logbook, which will be kept by the Health and Safety Officer.

Before engaging in the assigned work, all personnel will be briefed on the following:

- Identification of the project Health & Safety Officer.
- Location of first aid and emergency equipment.
- Activities taking place that day.
- Personnel protective equipment requirements and limitations.

In addition all field personnel will be required to review these Health and Safety Procedures and acknowledge such review. The Health and Safety Officer will ensure that all health and safety field procedures are followed, field conditions are regularly reviewed, and any alterations to the Health and Safety Procedures are communicated to all site personnel and implemented when they become necessary. Prior to commencing each day's field activities, the Health and Safety Officer will verbally review all health and safety procedures during a meeting with all field personnel.

All field personnel will acknowledge their review by signing an acknowledgment statement; this statement will be maintained with the daily Health and Safety Log.

TABLE 1

DESCRIPTIONS OF LEVELS OF PROTECTION

Level A Protection

Level A is the highest level of both respiratory and dermal protection, generally requiring a supplied-air respirator and a fully-encapsulating suit. The following equipment are required in the event of a Level A situation:

a. Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH). Respirators may be:

- pressure-demand, self-contained breathing apparatus (SCBA); or,
- pressure-demand, airline respirator (with escape bottle for Immediately Dangerous to Life and Health (IDLH) or potential for IDLH atmosphere).

b. Fully encapsulating chemically-resistant suit.

c. Coveralls (optional).

d. Long cotton underwear (optional).

e. Inner and outer chemically-resistant gloves.

f. Steel toe and shank, chemically-resistant work boots worn over or under a full-body suit.

g. Hard hat.

h. Disposable gloves and boot covers worn over fully encapsulating suit.

i. Cooling unit (optional).

Level B Protection

Level B protection requires the same degree of respiratory protection as Level A, but requires slightly less dermal protection. The following equipment is required in the event of a Level B situation:

a. Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH). Respirators may be:

- pressure-demand, self-contained breathing apparatus (SCBA); or,
- pressure-demand, airline respirator (with escape bottle for Immediately Dangerous to Life and Health [IDLH] or potential for IDLH atmosphere).

b. Chemically-resistant clothing, consisting of overalls, long-sleeved jacket, and either a hooded, one or two-piece disposable, chemical-resistant chemical-splash suit.

c. Long cotton underwear (optional).

d. Coveralls (optional).

e. Inner and outer chemically-resistant gloves.

f. Steel toe and shank, chemically-resistant work boots worn over or under a full-body suit.

g. Hard hat.

h. Disposable gloves and boot covers worn over fully encapsulating suit.

i. Cooling unit (optional).

Level C Protection

Level C protection requires the same degree of dermal protection as Level B, but requires slightly less respiratory protection. The following equipment is required in the event of a Level C situation:

a. Air-purifying respirator, full-face, canister-equipped (MSHA/NIOSH approved).

b. Chemically-resistant clothing, consisting of overall, long-sleeved jacket, and either a hooded, one or two-piece disposable, chemical-resistant chemical-splash suit.

c. Long cotton underwear (optional).

d. Coveralls (optional).

e. Inner and outer chemically-resistant work gloves.

f. Only the inner chemically resistant work glasses are optional.

g. Steel toe and shank, chemically-resistant work boots.

h. Disposable, chemically-resistant, outer boot covers (optional).

i. Hard hat.

Level D Protection

Level D protection does not require any dermal or respiratory protection other than a normal work uniform. The following equipment are required for a Level D situation:

a. Coveralls.

b. Rain gear.

c. Chemically-resistant, rubber work gloves.

d. Chemically-resistant, steel toe and shank work boots/shoes.

e. Safety glasses or chemical splash goggles (optional).

f. Hard or soft work hat (optional).

III. CONTINGENCY PLANS FOR FIELD SAMPLING

This Contingency Plan is written to document and set forth the policies and procedures for emergency response. It incorporates the following items: personnel roles, lines of authority, and communication.

The following are the anticipated causes of emergencies that may be encountered during the site assessment.

o Worker-Related

- Minor accidents (slips, trips, falls)

- Accidents related to the drill rig activities, i.e., physical injuries from flying or falling objects, from mechanical equipment, burns from hot oils.

o Personnel Involved in Emergency Response On-Site

- Site Safety Officer

  Has authority to stop work if any operation threatens worker or public health or safety.

  Knows emergency procedures, and the telephone numbers of the ambulance, medical facility, fire department, and police department.

  Provides emergency medical care on-site

- Field Supervisor

  Notifies emergency support service, if needed, by portable telephone in case rescue operations are required.

  Assists the site safety officer in a rescue if necessary.

  Calls for ambulance, police, or fire department, if needed.

- Off-Site Personnel - individuals at the hospital emergency center, fire department, and the police. Emergency officers will be alerted to the types of emergencies that may arise. This will occur prior to the start of the fieldwork.

o Training, Emergency Recognition and Prevention

All personnel working at the site will have completed the 40-hour OSHA Hazardous Materials Training Program. In addition, all site personnel will be made aware of the hazards and the actions that may trigger them. All employees will know what they are to do in case of an emergency.

On a day-to-day basis, individual personnel will be alert for indicators of potentially hazardous situations and for symptoms in themselves and others that warn of hazardous conditions and exposures. Before passing out daily work assignments, regular tailgate safety meetings will be held, and the following discussed:3

- tasks to be performed
- time constraints (e.g., length of rest breaks)
- hazards that may be encountered (including their effects), how to recognize or monitor them, concentration limits, and other danger signals
- emergency procedures

After daily work assignments are completed, a debriefing session will be held to review the work accomplished and the problems observed.

Dry runs to the hospital emergency center will be conducted prior to the start-up of the field program.

o Communications

A cellular telephone will be used to contact and obtain assistance from the fire department, ambulances, hospitals, and emergency rooms. All personnel will be familiar with the protocol (phone number and emergency code for contacting public emergency aid team, etc.). The following are the telephone numbers and locations of the fire department, police department, ambulance units, and hospitals.

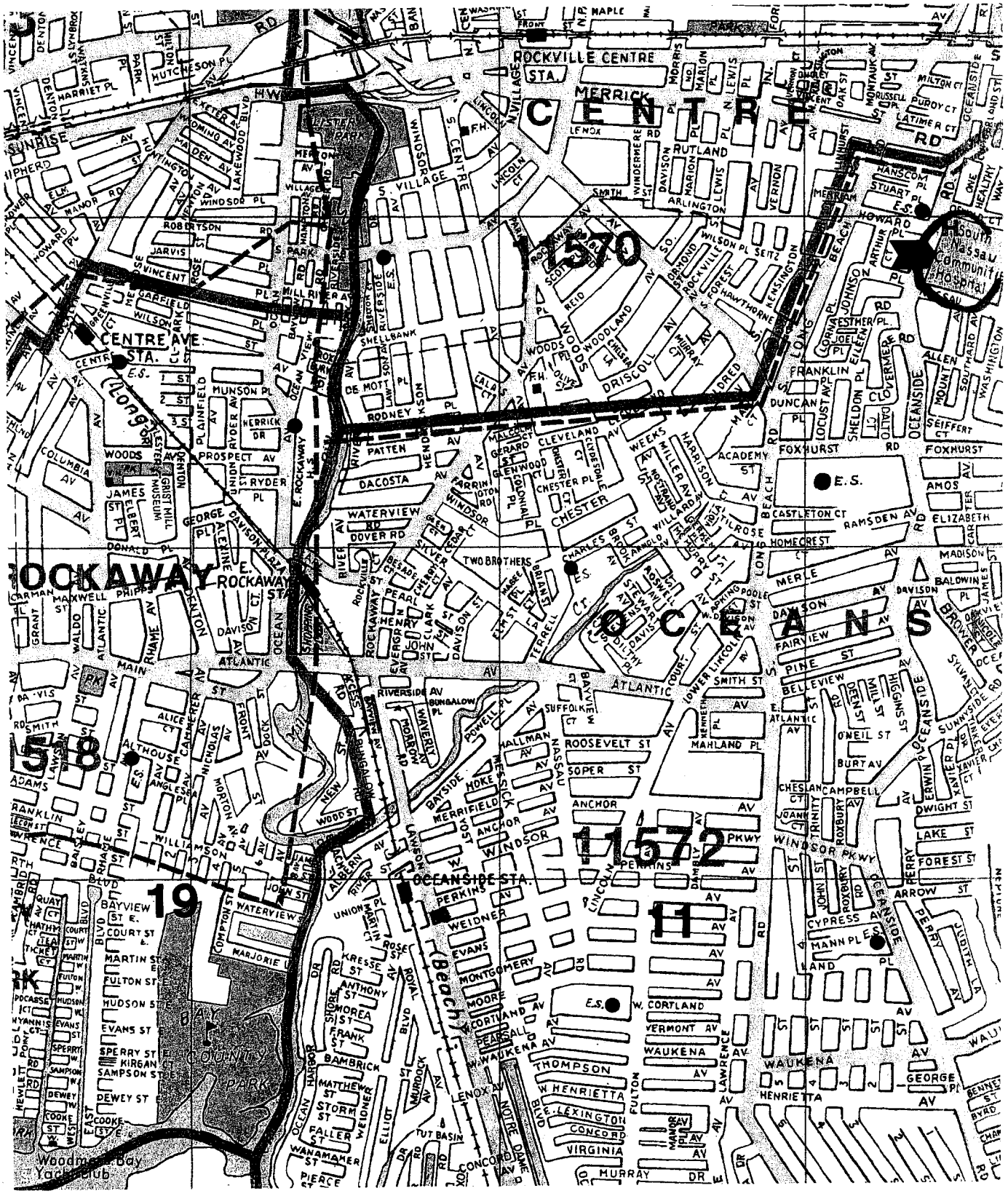
EMERGENCY RESPONSE TELEPHONE NUMBERS AND LOCATIONS

HOSPITALS

The nearest hospital is South Nassau Community Hospital located at the corner of Oceanside Road and Nassau Avenue in Oceanside, new York (see map)*.

EMERGENCY NUMBERS

To call for an ambulance	911
To call the local fire department	911
To call the police department	911
To call General No.	516-632-3000
To call Emergency Room	516-632-3000



South Nassau Communities Hospital

* At no time are injured employees to be driven to the hospital. In the event of an accident, am ambulance will be called for.

IV. FOLLOW UP

Before normal site activities are resumed, personnel will be fully prepared and equipped to handle another emergency. The following will be implemented:

- o Restock all equipment and supplies. Replace or repair damaged equipment. Clean and refuel equipment for future use.

- o Review and revise all aspects of the contingency plan according to new site conditions and lessons learned from the emergency response. When reviewing the information, consider questions, such as the following:

  - What caused the emergency?
  - Was it preventable? If so, how?
  - Were inadequate or incorrect orders given or actions taken? Were these the result of bad judgment, wrong or insufficient information, or poor procedures? Can procedures or training be improved?
  - How does the incident affect the site profile? How are other site cleanup activities affected?

V. DOCUMENTATION (will be as follows)

As soon as conditions return to normal, investigate the incident, putting all findings in writing. This is important in all cases, but especially so when the incident has resulted in personal injury, on-site property damage, or damage to the surrounding environment. Documentation may be used as evidence in future legal action, for assessment of liability by insurance companies, and for review by government agencies. Methods of documenting can include a written transcript taken from tape recordings made during the emergency or a bound field book (not a loose-leaf notebook) with notes. The document must have the following qualities:

- **Accuracy**. All information will be recorded objectively.

- **Authenticity**. A chain-of-custody procedure should be used. Each person making an entry must date and sign the document. Keep the number of documenters to a minimum (to avoid confusion and because they may have to give testimony at hearings or in courts). Nothing should be erased. If details change, or revisions are needed, the person making the notation should mark a horizontal line through the old material and initial the change.

- **Completeness**. At a minimum, include the following:

  - chronological history of the incident;

- facts about the incident and when they became available;
- title and names of personnel and composition of teams;
- decisions made and by whom; orders given (to whom, by whom, and when): and actions taken (who did what, when, where, and how);
- types of samples and test results; air-monitoring results;
- possible exposures of site personnel; and
- history of all injuries or illnesses during or as a result of the emergency.

Appendix C

Resume of Quality Assurance Officer

NICHOLAS J. RECCHIA
SENIOR HYDROGEOLOGIST

Education:

B.S., State University of New York at Oneonta - Geology/Water Resources
M.S., Adelphi University - Earth Science/Hydrogeology

Certifications:

Certified Professional Geologist - Indiana
Certified Subsurface Investigator - New Jersey Department of Environmental Protection
National Groundwater Association - Certified in Monitor Well Construction

Professional Affiliations:

Association of Groundwater Scientists and Engineers - NWWA
Association of Engineering Geologists - AEG
Association for the Environmental Health of Soils - AEHS
Long Island Geologists

RESPONSIBILITIES:

- The development, management, and supervision of hazardous waste site investigations and remedial corrective actions for commercial/industrial and government properties.

- Supervision of field testing and remediation operations, and groundwater monitoring programs, in connection with the investigation and remedial cleanup of contamination at commercial/industrial facilities.

- Evaluation of surface and groundwater impacts of planned developments.

EXPERIENCE:

Mr. Recchia joined EEA in 1989 as a hydrogeologist for hazardous waste testing studies. He has performed Phase II investigations at over 500 sites. He has also completed remedial cleanup actions at over 100 sites since joining EEA.

His past experience included the preparation of work plans, Quality Assurance and Protection Plans, Health and Safety Plans, and environmental assessments for remedial investigations and feasibility studies at various State and Federal Superfund sites. He was also responsible for reviewing monitoring data and technical information to determine the magnitude of environmental impacts posed by hazardous waste sites.

Mr. Recchia is currently involved in the implementation of corrective actions for soil and groundwater restoration at various hazardous waste sites in the New York metropolitan region.

Appendix D

Testing Procedures

APPENDIX D

Testing Procedure

- Utilize a calibrated sampling pump (see Appendix B) with in-line sampling cartridges with the second cartridge used to determine if breakout has occurred (saturation of the carbon adsorption cartridge).

- Prior to sample collection, ensure that the sampling flow rate has been calibrated over a range, including the rate to be used for sampling, with a "dummy" cartridge in place. Calibration is accomplished using a soap bubble flow meter. The flow calibration device is connected to the flow exit, assuming the entire flow system is sealed (see Appendix B, Calibration of Sampling Pump). The flow rate should be checked before and after each sample collection. Start the pump and record the following parameters on an appropriate data sheet: date, sampling location, time, ambient temperature, barometric pressure, relative humidity, flow rate, rotameter reading, cartridge number, and velocity.

- Allow the sampler to operate for the desired time (three hours), periodically recording the variables listed above. Check flow rate at the midpoint of the sampling interval if longer than four hours. At the end of the sampling period, record the parameters listed above, including the flow rate. If the flows at the beginning and end of the sampling period differ by more than 20 percent, the cartridge should be marked as suspect.

- Remove the cartridges (one at a time) and place in the original container (use gloves for glass cartridges). Seal the cartridges in the friction-top can containing a layer of packing material for immediate shipment to the laboratory for analysis. Store cartridges at reduced temperature (0°F) before analysis, if possible, to maximize storage stability. Calculate and record the average sample rate for each cartridge according to the following equation:

$$Q_A = \frac{Q_1 + Q_2 \cdots Q_N}{N}$$

Where:

Q_A = Average flow rate, ml/min
$Q_{1, Q}2, \ldots Q_N$ = Flow rates determined at beginning, end, and intermediate points during sampling

N = Number of flow rate sampling points

Calculate and record the total volumetric flow for each cartridge using the following equation:

$$V_m = \frac{T \times Q_A}{1{,}000}$$

Where:

V_m = Total volume sampled in liters at measured temperature and pressure
T = Sampling time = T_2 - T_1, min
T_2 = Stop time
T_1 = Start time

The total volume (V_s) at standard conditions, 25° and 760 mm Hg, is calculated from the following equation:

$$V_s = V_m \times \frac{P_A}{760} x \frac{298}{273 + t_A}$$

Where:
P_A = Average barometric pressure, mm Hg
t_A = Average ambient temperature, °C

Sample Preparation (at laboratory)

- Place the front and back sorbent sections of the sampler tube in separate vials. Discard the glass wool and foam plugs.

- Add 1.0 ml CS_2 to each vial. The extraction would proceed according to USEPA Method 3550, and the analyses would be performed by USEPA Method 8260.

EEA Inc.
Environmental Consultants
To Industry And Government

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June 30, 2003

Mr. Jeffrey L. Dyber, P.E.
Environmental Engineer 2
Remedial Section B
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7015

Re: Railroad Cleaners Site No. 1-30-066
Addendum to RI/FS Work Plan

Dear Mr. Dyber:

The following is an addendum to the Railroad Dry Cleaners RI/FS Work Plan dated June 2003.

EEA will submit the results of soil gas survey to the Department and the locations for the proposed soil and groundwater sampling to the Department. The sampling will commence only after the Department approves the sampling locations.

If Monitoring Well No. 3, the monitoring well behind the building cannot be sampled, a replacement monitoring well will be installed. If the replacement well is required, EEA will provide installation and development procedures to the Department for approval prior to starting the work.

Figure 3 has been revised and now shows the three soil gas sampling points within the building along the north wall (evenly spaced) and the identification numbers of the three existing monitoring wells.

Very truly yours,

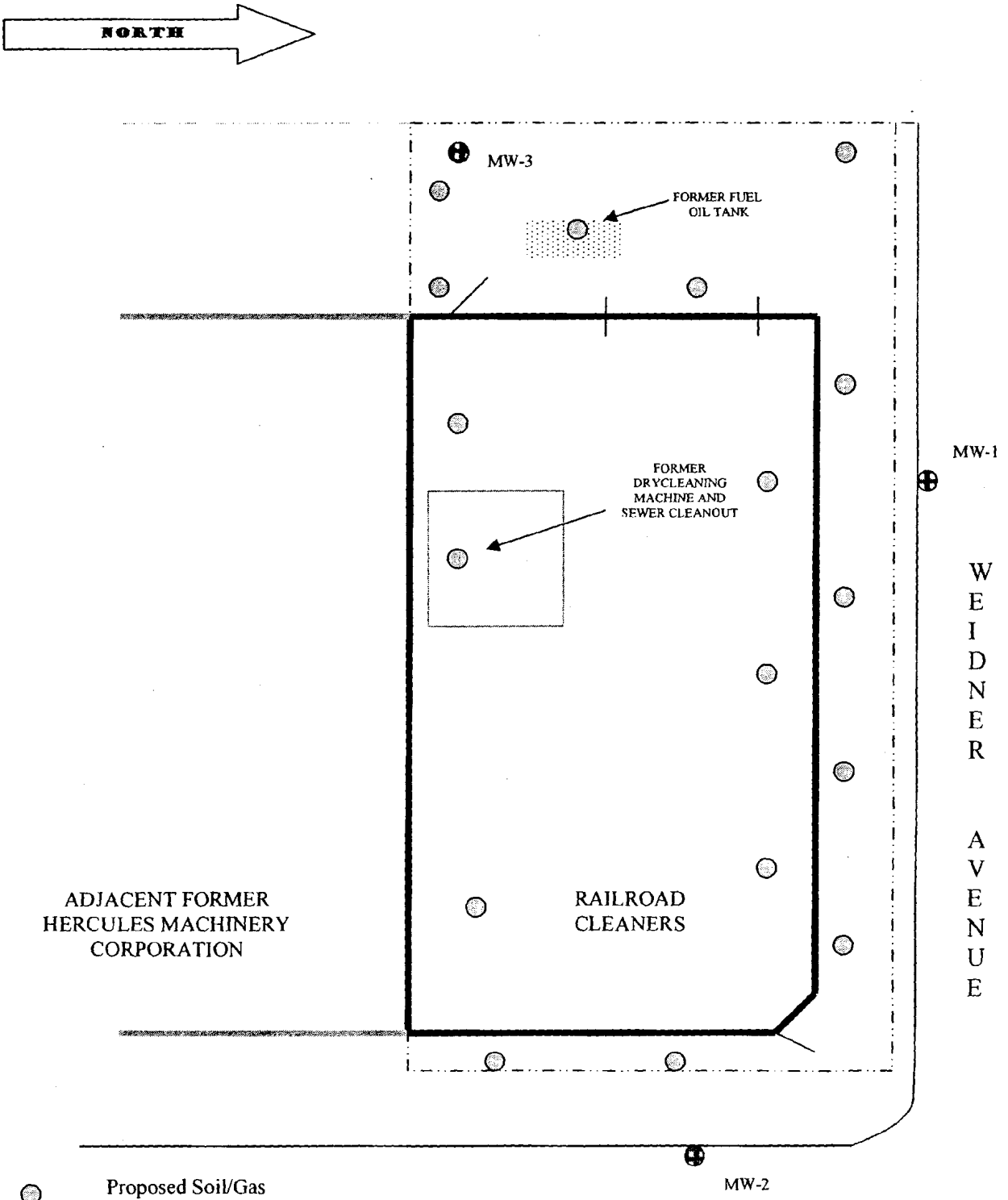
Allen Serper

Allen Serper, P.E.
Vice President

Nicholas J. Recchia, CPG
Senior Hydrogeologist

AS:dv

cc: S. Gitlin
F. Eisenbud, Esq.



Scale 1. : 20

EEA, Inc. *55 Hilton Avenue* *Garden City, New York* *(516) 746-4400*	RAILROAD CLEANERS 3180 Lawson Boulevard Oceanside, New York	SAMPLE COLLECTION LOCATIONS Figure 3