VOLUNTARY CLEANUP PROGRAM REMEDIAL INVESTIGATION WORK PLAN
CARLSON PARK (SITE #V00514; INDEX #B8-0604-12-01)
100 CARLSON ROAD, ROCHESTER, NEW YORK

Submitted To:

Carlson Park, LLC
100 Carlson Road
Rochester, New York

Prepared By:

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, New York

and

S_2C_2 Inc.
5 Johnson Drive, Suite 12
Raritan, New Jersey

October 2004

GeoQuest

TABLE OF CONTENTS **PAGE**

TABLE

FIGURES

APPENDICES

1.0 INTRODUCTION

On behalf of 100 Carlson Road, LLC, GeoQuest Environmental, Inc. (GeoQuest) and S_2C_2, Inc. (S_2C_2), collectively referred to as the "Consultant Team", are pleased to submit this work plan to conduct Remedial Investigation (RI) activities pursuant to the Voluntary Cleanup Agreement for Carlson Park (Site #V00514-8). This Voluntary Cleanup Program Remedial Investigation Work Plan (Work Plan) has been prepared for further investigation at the Carlson Park property located at 100 Carlson Road, Rochester, New York (Site). The Site location and surrounding area is shown on Figure 1 – Site Vicinity Map. This Work Plan presents the approach, procedures, sampling requirements, and scope of work for the next phase of additional remedial investigation activities to be conducted within shallow unconsolidated soils and the uppermost water-bearing zone at exterior locations at the Carlson Park Site. Potential future indoor project work and/or deeper remedial investigation activities will be the subject of a subsequent phase of work, and may be addressed by an addendum to this work plan or subsequent work plans. Implementation of this work plan will allow for further evaluation of potential environmental impacts to shallow soil and/or groundwater quality.

It should be noted that the contemplated future use of the subject Site is for similar uses to those that currently exist at this multiple tenant facility. This includes commercial office, warehouse, and light industrial uses. There are no plans to use this site for school or childcare programs.

1.1 Physical Setting

The Site consists of approximately 39 acres, of which approximately 35 acres are improved with the former manufacturing buildings (Site buildings) and parking areas (See Figure 2). Facility improvements include Site buildings, parking areas, and landscaped areas that are currently used by several tenants. Current tenant operations include commercial distribution, warehouse, office space and light industrial uses such as assembly of disposable cameras. The area of the Site currently occupied by buildings is approximately 800,000 square feet. The majority of the areas adjacent to these buildings are paved parking lot areas with some landscaped areas that are primarily lawns. The remaining areas to the south of the buildings are primarily lawns. The area at the south end of the Carlson Park facility is fenced. A tank removal contractor and a general contractor currently utilize the portion of the parking lot at the southwest corner of the site, see Figure 11 – Property Line and Contractors' Locations. This area is used for storage of various construction equipment and supplies.

Current multiple tenant uses in the site buildings include the following:

Multiple Current Tenant Uses By Building

Building Number	Tenant Use
1	institutional pharmacy and storage
2	shipping/receiving for finished goods with storage of single use cameras
3	light assembly of electrical wire harness
4	office, vacant space, and storage of single use cameras
7	storage of medical records, office, and finished clothing distribution
8	offices
9	On-demand Xerox printer
10	(vacant)

The Site is bounded by Carlson Road and a parking lot to the east, railroad tracks to the south, and commercial/industrial facilities and the Channel 8 WROC News Office to the west. Humboldt Road is located along the north boundary of the site. Land use by adjacent property owners includes an area of mixed residential, commercial, and industrial. See Figure 1.

1.1.1 Geology

SITE OVERBURDEN SOILS

The overburden soils at the Site generally consists of fill and Lacustrine deposits. The fill soils generally consist of coarse to fine sand, little gravel, trace silt and clay with various amounts of brick, glass, metal, wood, cinders, coal fragments, and ash. The fill soils are covered by a topsoil layer that is approximately 6-inches to 1-foot thick. These areas are landscaped with grass or shrubs. The thickness of the fill deposit encountered ranges from approximately 1 to 7 feet. Soil boring P-4 (i.e., location of MW-4) was situated within Monroe County Waste Disposal Site RO-52. The fill at this location was described as CINDERS, gray, brown, and black, damp.

The Lacustrine deposit underlies the fill deposit and generally consists of light brown course to fine sand, some silt, trace fine gravel. The thickness of the lacustrine deposit ranges from approximately 4 to 9 feet. The Lacustrine soils were deposited in post-glacial lake environments.

SITE BEDROCK

The depth to bedrock at the Site is anticipated to range from approximately 8 to 20 feet below ground surface, based on our review of Rochester bedrock maps. The bedrock below the Site is anticipated to be within the Lockport Group.

2.0 BACKGROUND & PREVIOUS INVESTIGATIONS

2.1 Site Background

Historical Site and Industrial Process Review

The Consultant Team has reviewed a variety of historical site information provided by 100 Carlson Road, LLC, and performed a site walkover with representatives of: Carlson Park Associates, the NYSDEC, and the Monroe County Health Department (MCHD). More specifically, the Team has reviewed available historical site industrial process information, reviewed published site and off-site information, and also implemented portions of previous site investigation activities.

Potential Areas of Concern Identified During Department Site Walkover and Review of Environmental Site Assessment Report

Four general areas of concern were identified during the site walkover with the NYSDEC and MCHD that included the following:

- Former 5000 sq. ft. drum storage building and outside storage area
- Former plating areas
- Several former underground storage tank (UST) locations
- Landfill area – City of Rochester Waste Site #52

Industrial Process Review – Waste Generator and Waste Sources

Pursuant to the Department's request, the following sections describe the types of wastes that may have been generated from the various industrial processes believed to have been historically undertaken at the Site. Such processes include the manufacture of Printed Circuit Boards, and Electroplating/Metal Finishing activities. Although no specific waste stream information is available for historic processes conducted at this facility, the following discussion includes a generic description of the types of waste streams that are typically associated with manufacturing of printed circuit boards and electroplating/metal finishing activities. Accordingly, it is important to note that not all the waste streams discussed below are necessarily present at the Site.

Types of Waste Typically Found at Printed Circuit Boards Facilities

Printed circuit boards are typically pattern plated with acid copper and aqueous lead/tin plating baths in a multiple tank plating line. The printed circuit boards then undergo rinsing, cleaning with phosphate solutions, and additional rinsing before being plated. Acid copper baths generally contain $CuSO_4$, sulfuric acid, and chlorides.

A variety of wastes are typically generated during the production of printed circuit boards resulting from the following operations: cleaning and surface preparation, pattern printing and masking, electroplating and electro-less plating, and etching. The types of waste streams that are typically generated from each of the above-mentioned printed circuit boards operations may include: spent acid/alkaline baths, spent stripper and developer solutions, waste rinse waters, and plating bath waste. Chemical compounds generally found in these waste streams include: metals, organic/chlorinated solvents, cyanide, ammonia, acids, alkalies, and sulfate.

Typical Waste Generation in Electroplating/Metal Finishing

- Electroplating and metal finishing waste streams often include: cyanide, acids, and metals used in process lines. Electroplating wastewater may contain chemicals such as heavy metals, (including: cadmium, copper, chromium, nickel, lead and zinc); cyanide; organics (grouped together as total organics); oil and grease.

2.2 Previous Investigations – Phase I Environmental Site Assessments

Phase I Environmental Site Assessments have been completed in the past by potential tenants for due diligence purposes at the Carlson Park Facility. Copies of these documents have been provided to the Department in 2001.

Several areas of concern were identified in a Limited Phase I Environmental Site Assessment (ESA) Report prepared by Galson Consulting and reviewed by Carlson Park's original consultant, AMEC, prior to the completion of previous site investigation activities. A summary of these areas of concern include the following:

- A document prepared by the Monroe County Department of Health (MCDOH) referenced the potential for "subsurface soil/rock/water contamination…need for surveillance of circuit board plating/degreasing/solvent storage area within building" (i.e. volatile organic compounds (VOCs) and metals are suspected contaminants.)

- Three (3) areas of City of Rochester Waste Site #52 are also on Site according to the MCDOH.

This Phase I ESA also indicated that the Site is noted on the following state and federal database lists:

- CERCLIS (Comprehensive Environmental Response Compensation and Liability Information System) – Rochester-Circuits, Inc. NYD 094410586
- FINDS (Facility Index System) – sites regulated or tracked by the US Environmental Protection Agency (EPA) – Rochester Circuits, Stromberg-Carlson, Eastman Kodak Apparatus Division C Plant, Carlson Park Associates.
- RCRA (Resource Conservation and Recovery Act) Large Quantity Generator – 100 kg of hazardous waste per month; Rochester Circuits, Eastman Kodak Apparatus Division C Plant, Carlson Park Associates [NOTE: EPA FOIL review required for additional information].

2.2.1 AMEC Preliminary Site Investigation Data

In 2000, Carlson Park hired AMEC to perform a Preliminary Site investigation (SI) at the Site. As part of that program, AMEC reviewed historical information and industrial processes to identify potential contaminant source areas at the Site and/or from possible off-site sources that may have potentially impacted soil and groundwater quality at the Site. Sanborn fire insurance maps and site plans were reviewed to identify potential source areas that may require subsurface evaluation. The areas of concern included former locations where chemicals were stored, former underground or aboveground bulk storage tank locations, sumps, pits, the site sewer system locations (see Figure 2 – Sanitary Sewer Locations), former manufacturing process transfer lines, former metal plating lines, and former on-site disposal areas.

The review of Sanborn Maps previously conducted by AMEC revealed the following structures and notations in connection with the Site:

- 1938 Sanborn Map: Lab, Waste House, Transformer (see Figure 3 – Operating & Former Transformer Locations), Oil House
- 1950 Sanborn Map: All of the above plus Paint Spray Booths and Acid Storage
- 1971 Sanborn Map: Underground Storage Tank Locations (adjacent off-site property)

This information was used by AMEC to locate monitoring wells and soil sampling locations for the initial evaluation of potential on-site and/or off-site source areas. Monitoring wells were also located along the property fence (property boundaries) at upgradient and downgradient locations with respect to overburden groundwater flow direction (see Figure 4 – Overburden Groundwater Contour Map). As described in more detail below, preliminary analytical data obtained from these wells indicated that overburden groundwater at the site has been impacted with chlorinated solvents.

Soil and Overburden Groundwater Investigation

AMEC's site investigation included the collection of four surface soil samples and 13 subsurface soil samples, the installation of 13 groundwater monitoring wells, and the collection of 10 groundwater samples from these wells to undergo laboratory analysis. As previously presented to the Department, a preliminary site investigation data package was prepared by AMEC to summarize the project data in tables and on figures. A final report was not completed by AMEC for this project work. Therefore, the Consultant Team has summarized the following information from the AMEC data package. Tables 1 through 9 summarize AMEC's soil and groundwater analytical data.

The collection of surface and subsurface soil samples, and overburden groundwater samples were conducted during AMEC's SI. The soil samples were collected from test borings advanced using direct-push methods as part of the installation for each monitoring well. The analytical results were compared to NYSDEC TAGM 4046 for soil sample analytical results and NYSDEC groundwater standards (Class GA) for groundwater results.

Summary of Soil Sample Analytical Results – Volatile Organic Compounds (VOCs)

The AMEC SI soil sample analytical results indicated the detection of volatile organic compounds (VOCs) in 13 subsurface soil samples and four surface soil samples. Methylene Chloride was detected in each of these 17 soil samples, and is believed to be an artifact of laboratory contamination. With the exception of the soil sample from soil boring P-4 (4 - 8 ft.), where Methylene Chloride was reported at a concentration of 130 parts per million (ppm), all reported Methylene Chloride concentrations were below the TAGM guidance level of 100 ppm. Trichloroethene (TCE) was found to be present above laboratory detection limits in eight soil samples, however all of these concentrations were below NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives.

The soil sample results and TAGM 4046 recommended soil cleanup objectives are provided on Table 1 for volatile organic compounds. The following VOCs were reported in site soils at concentrations that are below NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives:

1,1,1-Trichloroethane at location MW-3 soil sample (8 to 10 ft) with a concentration of 0.017 parts per million (ppm).

Cis-1,2-Dichloroethene at location MW-5 soil sample (4 to 6 ft) with a concentration of 0.062 ppm.

Summary of Soil Sample Analytical Results – Semi-Volatile Organic Compounds (SVOCs)

The AMEC SI soil sample analytical results indicate detection of the following semi-volatile organic compounds (SVOCs) from thirteen subsurface soil samples and four surface soil samples. The concentrations of compounds that exceed TAGM 4046 guidance values are presented on Figure 5 – Total Semi-Volatile Organic Compound Distribution in Soil. The soil sample results and TAGM 4046 recommended soil cleanup objectives are provided in Table 2 for semi-volatile organic compounds. The following SVOCs were detected at concentrations that exceed NYSDEC TAGM 4046 recommended soil cleanup objectives:

Benzo(a)anthracene at locations MW-4 (0 to 1 ft) with a concentration of 3.2 ppm, MW-4 (4 to 8 ft) with a concentration of 17 ppm, MW-6 (0 to 4 ft) with a concentration of 0.67 ppm, MW-7 (0 to 0.5 ft) with a concentration of 0.78 ppm, MW-11 (0 to 0.5 ft) with a concentration of 207 ppm, and MW-13 (0 to 4 ft) with a concentration of 13 ppm.

Chrysene at locations MW-4 (0 to 1 ft) with a concentration of 3.4 ppm, MW-4 (4 to 8 ft) with a concentration of 18 ppm, MW-6 (0 to 4 ft) with a concentration of 0.67 ppm, MW-7 (0 to 0.5 ft) with a concentration of 0.83 ppm, MW-11 (0-0.5 ft) with a concentration of 3.2 ppm, and MW-13 (0 to 4 ft) with a concentration of 14 ppm.

Benzo(b)fluoranthene at locations MW-4 (0 to 1 ft) with a concentration of 4.6 ppm, MW-4 (4 to 8 ft) with a concentration of 19 ppm, MW-7 (0 to 0.5 ft) with a concentration of 1.2 ppm, MW-11 (0 to 0.5 ft) with a concentration of 4.3 ppm, and MW-13 (0 to 4 ft) with a concentration of 14 ppm.

Benzo(k)fluoranthene at locations MW-4 (0 to 1 ft) with a concentration of 2.1 ppm, MW-4 (4 to 8 ft) with a concentration of 3.8 ppm, MW-11 (0 to 0.5 ft) with a concentration of (1.6 ppm), and MW-13 (0 to 4 ft) with a concentration of 6 ppm.

Benzo(a)pyrene at locations MW-4 (0 to 1 ft) with a concentration of 3.2 ppm, MW-4 (4 to 8 ft) with a concentration of 12 ppm, MW-6 (0 to 4 ft) with a concentration of 0.55 ppm, MW-7 (0 to 0.5 ft) with a concentration of 0.72 ppm, MW-11 (0 to 0.5 ft) with a concentration of 2.8 ppm, and MW-13 (0 to 4 ft) with a concentration of 10 ppm.

Indeno(1,2,3-cd)pyrene locations MW-4 (4 to 8 ft) with a concentration of 4.5 ppm and MW-13 (0 to 4 ft) with a concentration of 4.3 ppm.

Dibenzo(a,h)anthracene at locations MW-4 (0 to 1 ft) with a concentration of 0.45 ppm, MW-4 (4 to 8 ft) with a concentration of 1.3 ppm, MW-11 (0 to 0.5 ft) with a concentration of 0.44 ppm, and MW-13 (0 to 4 ft) with a concentration of 1.7 ppm.

Summary of Soil Sample Analytical Results – RCRA 8 Metals

The concentrations of RCRA 8 Metals that exceed TAGM 4046 guidance values are presented on Figure 6 – Total RCRA Metals Contaminant Distribution in Soil. The soil sample results and TAGM 4046 soil cleanup objectives are presented on Table 3. The analytical results from 13 subsurface soil samples and 4 subsurface soil samples indicate detection of RCRA 8 Metals with concentrations that exceed NYSDEC TAGM 4046 recommended clean up objectives as follows:

Lead was detected at location MW-3 (8 to 10 ft) with a concentration of 1,100 ppm.

Arsenic at locations MW-3 (8 to 10 ft) with a concentration of 13 ppm and at location MW-4 (4 to 8 ft) with a concentration of 9.8 ppm.

Chromium at locations MW-3 (8 to 10 ft) with a concentration of 59 ppm, MW-4 (0 to 1 ft) with a concentration of 14 ppm, MW-4 (4 to 8 ft) with a concentration of 12 ppm, MW-5 (4 to 6 ft) with a concentration of 15 ppm, MW-7 (0 to 0.5 ft) with a concentration of 11 ppm, MW-9 (4 to 8 ft) with a concentration of 11 ppm, and MW-11 (0 to 0.5 ft) with a concentration of 19 ppm.

Cadmium at locations MW-3 (8 to 10 ft) with a concentration of 12 ppm, MW-4 (0 to 1 ft) with a concentration of 1.7 ppm, MW-4 (4 to 8 ft) with a concentration of 1.2 ppm, and MW-6 (0 to 4 ft) with a concentration of 1.2 ppm.

Barium at location MW-3 (8 to 10 ft) with a concentration of 550 ppm.

Mercury at locations MW-3 (8 to 10 ft) with a concentration of 3.8 ppm, MW-4 (0 to 1 ft) with a concentration of 0.36 ppm, MW-4 (4 to 8 ft) with a concentration of 14 ppm, MW-5 (4 to 6 ft) with a concentration of 0.35 ppm, MW-6 (0 to 4 ft) with a concentration of 0.49 ppm, MW-7 (0 to 0.5 ft) with a concentration of 0.21 ppm, and MW-13 (0 to 4 ft) with a concentration of 0.23 ppm.

Selenium at location MW-3 (8 to 10 ft) with a concentration of 3.1 ppm.

Summary of Soil Sample Analytical Results – Cyanide

Although there is not a specific NYSDEC TAGM #4046 Recommended Soil Cleanup Objective value for Cyanide, the TAGM guidelines indicate that some forms of cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. TAGM #4046 also indicates that Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective. A total of 13 subsurface soil and 4 surface soil samples were analyzed for Cyanide. The soil sample results are presented on Table 4.

Cyanide was detected at locations MW-3 (8 to 10 ft) with a concentration of 4.2 ppm and MW-4 (4 to 8 ft) with a concentration of 1.1 ppm.

Summary of Soil Sample Analytical Results – Polychlorinated Biphenyls (PCBs)

The analytical results for polychlorinated biphenyls (PCBs) indicated that PCBs concentrations were not detected above the laboratory detection limits in the soils samples analyzed. A total of 13 subsurface soil samples and 4 surface soil samples were analyzed for PCBs.

Existing Overburden Monitoring Wells – AMEC SI Monitoring Wells

AMEC installed 13 overburden groundwater monitoring wells as part of their SI. Each of these wells was installed within soil borings previously advanced in order to collect soil samples to undergo chemical analysis. The overburden wells were installed with a geoprobe (direct push) rig until refusal of the down-hole sample equipment. Eight groundwater monitoring wells (MW-1, MW-2, MW-3, MW-7, MW-8, MW-11, MW-12, and MW-13) were located along the property boundary at the approximate locations shown on Figure 7 – Subsurface Exploration Plan. Former building names associated with the former operations are referred to for location of monitoring well purposes.

Upgradient and downgradient monitoring well locations were based on an assumed northeast overburden groundwater flow direction. The groundwater flow direction was subsequently confirmed to be towards the northeast after these wells were installed and groundwater elevations were measured. The number of fence line monitoring wells was selected due to the size of the property (i.e., approximately 40 acres) with approximately 5,000 feet of fence line. A residential neighborhood adjoins the Site to the north and east of the property. Fence line wells were installed to monitor on-site and off-site groundwater quality, while interior wells (i.e., MW-4, MW-5, MW-6, MW-9, and MW-10) were installed to monitor potential contaminant source areas that AMEC identified by their historical review.

The rationale for each monitoring well location is provided in the following table. The approximate locations for each of these wells are shown on Figure 7.

Monitoring Well	Well Diameter/Material	Rational for Overburden Wells with Approximate Location/Historical Use
MW-1	1-inch PVC	Fence line well – west property line, located across from adjacent property where two underground storage tanks (USTs) are shown on Sanborn Map.
MW-2	1-inch PVC	Upgradient fence line well – southwest corner of site.
MW-3	1-inch PVC	Upgradient fence line well – south property line.
MW-4	1-inch PVC	Southwest of Building 7, located within area of disposal/filling indicated on historical aerial photographs.
MW-5	1-inch PVC	Near Building 14, this building was reportedly used for chemical storage.
MW-6	1-inch PVC	Adjacent to the northwest end of Building 4, near an area reportedly formerly used for electroplating.
MW-7	1-inch PVC	Downgradient fence line well – north property line.
MW-8	1-inch PVC	Fence line well – south property line.
MW-9	1-inch PVC	East of former wood working/paint spraying area within Building 7.
MW-10	1-inch PVC	East of former below ground process lines/sumps in Building 2.
MW-11	1-inch PVC	Fence line well – southeast corner of property.

Monitoring Well	Well Diameter/Material	Rational for Overburden Wells with Approximate Location/Historical Use
MW-12	1-inch PVC	Fence line well – east property line.
MW-13	1-inch PVC	Downgradient fence line well – northeast corner of property.

One groundwater sampling event was performed during AMEC's RI. As part of that sampling event, AMEC included the following QC samples: 1 trip blank per daily sample batch analyzed for VOCs (USEPA Method 8260B).

The groundwater samples collected from monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-9, MW-10, and MW-13 were analyzed for VOCs – target compound list USEPA Method 8260B. Groundwater samples collected from monitoring wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-9, MW-10, and MW-13 were analyzed for SVOCs – target compound list USEPA Method 8270C. Groundwater samples from MW-2, MW-3, MW-4, MW-5, MW-6, MW-9, MW-10, and MW-13 were analyzed for RCRA 8 Metals. Groundwater samples collected from monitoring wells MW-3, MW-5, MW-6, MW-9, and MW-10 were analyzed for PCBs in accordance with USEPA Method 8080 and Cyanide. The groundwater samples collected from well location MW-5 were analyzed for the parameters listed above with the exception of SVOCs.

Field parameters were obtained during pre-groundwater sampling activities when enough well water volume was available. Monitoring wells MW-7, MW-8, MW-11, and MW-12 were dry at the time of AMEC's RI groundwater sampling event. Therefore, these wells were not sampled for field parameters or laboratory analysis. Field parameters were obtained for the remainder of the wells and the results are presented in Appendix A – AMEC Field Parameter Results. Turbidity of groundwater samples is particularly important in evaluating metal compounds in groundwater. Light turbidity was observed in groundwater samples collected from MW-1, MW-2, MW-4, and MW-13. The turbidity measured in monitoring wells MW-3, MW-5, MW-6, MW-9, and MW-10 was 999, 374, 354, 43, and 72, respectively.

Summary of Groundwater Sample Analytical Results - Volatile Organic Compounds (VOCs)

The concentrations of compounds that exceed NYSDEC groundwater quality standards are presented on Figure 8 –Volatile Organic Compound Distribution in Groundwater. The groundwater sample results for volatile organic compounds are presented in Table 5. A summary of analytical results for the AMEC SI groundwater samples that indicate the detection of VOCs at concentrations that exceed NYSDEC groundwater quality standards (i.e., class GA water quality standard) is presented as follows:

1,1,1-Trichloroethane in the groundwater samples from monitoring well locations MW-3 and MW-4 with a concentration of 6 and 43 ug/L (ppb), respectively.

Trichloroethene in the groundwater samples from monitoring well locations MW-4 with a concentration of 430 ug/L, MW-5 with a concentration of 27 ug/L, MW-6 with a concentration of 12 ug/L, MW-9 with a concentration of 95 ug/L, and MW-10 with a concentration of 390 ug/L.

Cis-1,2-Dichloroethene in the groundwater samples from locations MW-4 with a concentration of 130 ug/L, MW-5 with a concentration of 57 ug/L, MW-6 with a concentration of 18 ug/L, MW-9 with a concentration of 98 ug/L, and MW-10 with a concentration of 20 ug/L.

Vinyl Chloride in the groundwater samples from locations MW-5 with a concentration of 23 ug/L and MW-6 with a concentration of 17 ug/L.

1,1-Dichloroethane in the groundwater sample from location MW-5 with a concentration of 17 ug/L.

Trans-1,2-Dichloroethene in the groundwater sample from location MW-6 with a concentration of 32 ug/L.

Summary of Groundwater Sample Analytical Results - Metals

The concentrations of compounds that exceed New York State groundwater standards are presented on Figure 9 – Total RCRA Metals Contaminant Distribution in Groundwater. The groundwater sample results for RCRA 8 Metals are presented in Table 6. The groundwater sample analytical results for total cyanide and RCRA metals with concentrations that exceed the NYSDEC groundwater standards include the following:

Cadmium in the groundwater samples from locations MW-3 with a concentration of 0.062 mg/L (ppm), MW-6 with a concentration of 0.013 mg/L, MW-9 with a concentration of 0.020 mg/L, MW-10 with a concentration of 0.007 mg/L, and MW-13 with a concentration of 0.010 mg/L.

Chromium in the groundwater samples from locations MW-6 with a concentration of 0.07 mg/L, MW-9 with a concentration of 0.14 mg/L, and MW-13 with a concentration of 0.06 mg/L.

Lead in the groundwater samples from locations MW-3 with a concentration of 0.7 mg/L, and MW-5 with a concentration of 0.2 mg/L.

Mercury in the groundwater sample from locations MW-3 with a concentration of 0.0027 mg/L.

Silver in the groundwater sample from location MW-3 with a concentration of 0.06 mg/L.

Summary of Groundwater Sample Analytical Results – Semi-Volatile Organic Compounds (SVOCs), PCBs, and Cyanide

The groundwater sample analytical results for SVOCs, polychlorinated biphenyls (PCBs), and Cyanide were not detected above the laboratory detection limits. The groundwater sample results for semi-volatile organic compounds, PCBs, and Cyanide are presented in Tables 7, 8, and 9, respectively.

2.2.2 TCE in Basement Sump of Building 10, and Associated Carbon Treatment System

A sump was installed in the basement floor of Building 10 when that building was constructed in 1958. This sump was installed as a collection point for groundwater control and discharge. It is believed that water collected in the sump was discharged to the stormwater system from the time the sump was installed for approximately the next 40 years. Upon discovering where the sump water was being discharged during the installation of a carbon treatment system in 1999, 100 Carlson Road, LLC modified the sump configuration to discharge collected sump water to the sanitary sewer system instead.

Beginning in June 1998, sporadic sampling of the water being removed from the sump was analyzed for the presence of TCE. A total of nine such sampling events have occurred between June 1998 and March 2004. The concentration of TCE measured during these events has ranged approximately between 1.0 and 5.2 mg/l (ppm). A summary of the measured TCE concentrations from sump water is presented below:

Building 10 Sump Water TCE Concentrations

Sump Test Dates	Concentration of TCE (ppm)
June 16, 1998	4.31
July 17, 1998	5.20
June 29, 1999	1.82
July 12, 1999	3.61
January 5, 2000	2.98
February 5, 2001	2.29
October 15, 2001	1.72
October 10, 2002	1.70
March 29, 2004	1.04

The monitoring of TCE concentrations in the sump water was initiated on June 16, 1998, following a low level detection of TCE in an indoor air sample collected above the basement sump. In response to the air sample result, the water level in the sump was increased to an elevation above the sump intake. The results of additional indoor air tests performed after the elevation of the sump water was increased, indicated no detection of TCE in the air above the sump. On April 7, 1999, a carbon treatment system was installed to remove TCE from the sump discharge water. Sump locations are presented on Figure 10 – Sumps, Pits, Dip Tanks, and Tank Locations.

3.0 PRELIMINARY EVALUATION OF POTENTIAL MIGRATION PATHWAYS

Based upon the analytical results for soil and groundwater samples collected during the SI activities conducted by AMEC, the following potential contaminant migration pathways have been identified:

- Volatilization directly from the ground surface into the air;
- Migration vertically and horizontally through the overburden soil and groundwater;
- Migration horizontally along the overburden/bedrock interface;
- Migration vertically of overburden groundwater into the bedrock; and
- Migration horizontally and/or vertically downgradient within the overburden groundwater and bedrock groundwater systems.

4.0 WORK PLAN RATIONALE

This section presents an identification of additional data required to further evaluate the nature and extent of impacted soil and/or groundwater within shallow unconsolidated geologic material at exterior locations on the site. At the conclusion of the proposed project work, a decision will be made regarding the specific needs to conduct further evaluations at greater depths and/or beneath existing buildings, in order to collect sufficient information to make appropriate remedial decisions. Future RI activities will either be addressed in a subsequent work plan or in an addendum to this work plan. Furthermore, tasks currently being developed with respect to indoor air and/or former interior PCB transformer areas are being addressed under separate cover.

The data requirements identified in this work plan have been developed based on our current understanding of the various uses and operations at the Site, coupled with a review of data generated from a previous investigation at the site (AMEC, 2000). This section also presents the approach for implementation of the Additional Remedial Investigation tasks that have been proposed to meet specific data requirements detailed below.

4.1 Identification of Additional Data Requirements

Additional analytical data is required to further evaluate shallow soil and/or groundwater quality at exterior building locations with respect to volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) – specifically Polycyclic Aromatic Hydrocarbons (PAHs), and heavy metals. These compounds of concern (COCs) were detected in previous samples collected from the Site. Accordingly, such additional data is intended to supplement existing information in order to further evaluate potential impacts to overburden soils and shallow groundwater outside the footprint of the existing facility buildings.

4.2 Work Plan Approach

The overall approach of this Work Plan is to present the methods and procedures for the proposed investigation tasks. The Work Plan has been developed to address specific data requirements at locations where previous data indicates the presence of impacted soil and/or groundwater quality, or where the potential for such impacts may likely exist. The proposed investigations are focused in the vicinity of former known manufacturing operations and landfilled area(s) outside of the existing facility buildings. The additional remedial investigation activities proposed in the sections of this Work Plan were developed to present investigative methods and procedures for addressing each of the identified data requirements and to supplement previous Site data. Overburden investigation activities will include installation of geoprobe soil borings, collection of soil samples, groundwater grab samples from temporary geoprobe boreholes, and collection of limited groundwater samples from selected monitoring well locations.

5.0 ADDITIONAL SITE INVESTIGATION TASKS

This section describes the proposed tasks to be implemented as part of the proposed additional investigation activities at the Site. The tasks to be performed as part of this phase of the investigation are described in the following sections of this Work Plan.

Task 1 – Written Work Plan

This Work Plan is intended to describe the work to be conducted as part of the proposed additional remedial investigation at the Site under the Voluntary Cleanup Agreement (VCA). The proposed Voluntary Cleanup Program Remedial Investigation work at the Site will begin upon NYSDEC's and NYSDOH/MCDOH's approval of this Work Plan.

Task 2A – Adaptive Sampling Approach for Groundwater Delineation of Chlorinated Solvents

Analytical results obtained from previous site investigation activities indicated the presence of dissolved chlorinated solvents in overburden groundwater at several exterior locations at the Site. Such results indicated two exterior locations at the Site with the most significant groundwater quality impacts. These two locations include: (1) a former disposal/fill area southwest of Building 7 in the vicinity of MW-4; and (2) an area adjacent/east of former plating operations within Building 2 in the vicinity of MW-10. The primary purpose of this task is to delineate the extent of chlorinated solvent impacts in shallow groundwater in the vicinity of these two exterior locations. It is anticipated that the information collected will be useful in identifying the potential source(s) of the chlorinated solvents previously identified at these locations. This task will also be used to help define shallow groundwater quality conditions in selected exterior building areas not previously evaluated.

If potential source area(s) are identified as a result of the subject shallow groundwater evaluation activities, limited soil sampling for chlorinated solvents may also be conducted at these areas. In addition, the data generated from this task can subsequently be used to identify the placement of any additional groundwater monitoring wells that may be required to monitor chlorinated solvent impacts to overburden groundwater in the future.

In order to accomplish this task in a time-efficient and cost-effective manner, the Consulting Team proposes the use of an adaptive sampling approach. This approach is a streamlined investigative technique similar to those typically utilized as part of the Expedited Site Characterization (ESC) process, as described in ASTM Standard Practice D6235-98, and the Triad Approach that is currently being promoted by US EPA. In this situation, the adaptive sampling approach will involve the collection of groundwater samples from selected existing Site groundwater monitoring wells and groundwater grab samples to be collected from temporary points advanced with the use of direct-push sampling techniques, coupled with on-site analysis of these samples for selected volatile organic compounds (VOCs) within a mobile laboratory. A limited number of these groundwater grab samples will also be selected to undergo ELAP-certified laboratory “confirmatory” analysis.

Initially, groundwater samples will be collected from existing wells MW-4 and MW-10 to obtain current groundwater quality information at each of the two areas identified as requiring additional delineation activity. Then, a direct-push unit will be utilized to collect groundwater grab samples from temporary points situated adjacent to, and downgradient of, monitoring wells MW-4 and MW-10. The results from the groundwater grab samples will be used as calibration points at known groundwater quality impact locations. If sufficient saturated thickness is encountered at either of these two locations within the overburden deposits (i.e., greater than six feet), then an attempt may be made to collect multiple depth-discrete groundwater grab samples at each sampling location.

Once the initial groundwater grab samples have been collected and analyzed at each location, then additional groundwater grab samples will be collected at locations radiating out from the initial sampling points. We anticipate that lateral sampling intervals will be at distances of approximately 25 to 50 feet from the starting points located at MW-4 and MW-10. A minimum of three or four sampling locations will initially be selected at each of the two areas identified for groundwater VOC delineation. Lateral sampling intervals will continue to be extended outward from the initial sample locations until the target VOCs (i.e., PCE, TCE, and associated breakdown products) have been delineated to within approximately 5 ug/L (i.e., ppb), or the property boundary is reached. The need and specific locations of subsequent groundwater grab sampling points will be determined in the field based upon the analytical results obtained from previous sampling locations. The adaptive sampling program will be continued until delineation objectives have been met within accessible exterior areas (See Figure 12 – Volatile Organic Compound Delineation in Groundwater). If the results of the subject delineation efforts indicate the possible existence of other potential exterior source areas at the Site, then delineation efforts will be extended to those areas.

In the event that the proposed adaptive sampling approach does not lead the delineation efforts to the northern most portion of the Site (i.e., just north of the facility building), an attempt will be made to collect a minimum of two shallow groundwater grab samples in that vicinity.

Groundwater grab samples from discrete depth sample intervals will be collected from temporary points consisting of Mill Slot Rods, Screen Point 16 samplers fitted with expendable points, or from temporary boreholes advanced with rods fitted with expendable points. Groundwater grab sampling will be accomplished with the use of a peristaltic pump or by bailing with a dedicated length of polyethylene tubing fitted with a check-valve and ball.

If limited soil sampling is conducted as part of the chlorinated solvent delineation program, such sampling will also be accomplished with the use of direct-push sampling techniques. A Geoprobe MacroCore or LargeBore enclosed piston soil sampling system will be used to collect soil samples. These sampling systems effectively eliminate the risk of cross-contamination by sealing the sampling unit until the desired sampling interval is reached. Disposable clear acetate liners will be used to collect each soil sample.

Groundwater grab samples and/or soil samples collected as part of the proposed adaptive sampling program to delineate chlorinated solvent impacts in shallow groundwater, will be analyzed on-site for selected VOCs, including: PCE, TCE, 1,1,1-TCA, and associated breakdown products of TCE, (i.e., Cis-1,2 DCE and vinyl chloride). On-site sample analysis will be conducted in accordance with US EPA SW-846 Method 8260B-modified. Analytical results will be reported on Form I's. Selected samples will also be submitted to a New York State certified laboratory to undergo "confirmation" analysis. The confirmation analysis will be conducted in accordance with USEPA SW-846 Method 8260B.

Task 2B – Shallow Soils & Fill Area Evaluation

As previously discussed, a significant amount of soil sampling and analysis has been conducted at the Site by AMEC as part of past SI activities. Such sampling was targeted at specific locations where historic activities were suspected of potentially causing environmental quality impacts. The primary objective of this task is to build upon the information previously obtained in order to more thoroughly evaluate the condition of soils at exterior locations at the Site. In addition, this task will also be used to define the lateral and vertical extent of former landfilling activities at the southwest portion of the Site.

The resulting soil sampling program discussed with, and conceptually agreed upon by, NYS DEC, includes a variety of depth-discrete soil samples to either fill data gaps in existing vertical profiling data, or to obtain information at locations not previously addressed. The parameter list for this task includes PAHs and RCRA 8 Metals at all proposed soil sampling locations, while PCB analysis will be added at surface soil sampling locations only. As discussed in the previous section, VOC analysis for soils will only be initiated if needed to help verify potential source areas identified as part of the groundwater delineation activities.

Summaries of proposed soil sampling locations are shown on Figure 13 – Shallow Soil Evaluation. The locations are also listed, along with associated parameters to be analyzed, on the following table.

Proposed Soil Sampling Locations for the VCP RI – Carlson Park

Location	Reason	Depth	Parameters
104	Vertical profile gap	10-12' (below fill)	PAHS, Metals
105	Drum Storage Area	0-0.5'	PAHS, Metals, PCBs
106	Vertical profile gap near Drum Storage, Lab and UST	6-8'	PAHS, Metals
201	Drum Storage	0-0.5' & deeper (Below Pavement)	PAHS, Metals, PCBs
202	Drum Storage	0-0.5' & deeper	PAHS, Metals, PCBs
203	Lab	0-0.5' 2-4'	PAHS, Metals, PCBs PAHS, Metals
204	Bldg. 14	0-0.5' + deeper	PAHS, Metals, PCBs
205-207	Landfill evaluation	within & below fill	PAHs, Metals

Proposed soil samples are intended to better evaluate potential impacts from the former drum storage area (around building 5), the former lab (i.e., building 6), building 14, the on-site landfill area, and the existing on-site underground utility and environmental contractors storage area. The shallow sampling locations are intended to further assess the potential for groundwater migration pathways direct-contact concerns. A more detailed description of the proposed soil sampling program for each of these areas is presented below.

Former Drum Storage Area

Former drum storage activities reportedly occurred around the outside of Building 5. Two previous soil sampling locations (MW-105 and MW-106), were situated within this area. A total of four additional soil samples are proposed for collection in this area as part of the subject field program. Three of these locations (i.e., 105, 201, and 202), will be subject to shallow soil sampling from the top 6-inches of the soil column. Such shallow soil will be analyzed for PAHs, metals, and PCBs. A fourth soil sample will be collected from a depth of 6 to 8 feet below grade at location 106. This deeper sample is intended to provide vertical profiling data to supplement the shallow analysis previously conducted at this location, and will be analyzed for PAHs and metals. This deeper sample will not only provide information near former drum storage activities, but will also be situated near the former lab (building 6) and former petroleum underground storage tank (UST) locations.

Former Lab (Building 6)

In addition to the above-referenced sample at location 106, two additional samples are intended to be collected near the northeast corner of building 6 (i.e., location 203). At this location, both a surface soil sample and a deeper soil sample (i.e., 2-4 feet bgs) will be collected and analyzed. Each of these samples will be analyzed for PAHs and metals, while PCB analysis will also be performed on the surface soil sample.

Building 14

At the Department's request, a single surface soil sample (i.e., location 204) is proposed for collection adjacent to building 14 in an area where drum storage formerly took place. This sample will be analyzed for PAHs, metals, and PCBs.

On-Site Fill Area

A variety of soil samples are proposed for collection within and below the on-site fill area (Monroe County Health Department Waste Site #52). These samples are intended to help define the physical lateral and vertical extent of filling activities and the vertical extent of soil quality impacts from landfilled materials. At a minimum, two depth-discrete soil samples will be collected at each of three soil sampling locations (MW-205, MW-206, and MW-207). Selected soil samples from these locations will be analyzed for PAHs and RCRA 8 Metals. The shallower soil sample collected at each location will be from within the landfill material and the deeper sample will be collected from native soil beneath the fill. In addition to these samples, additional samples may be selected from areas immediately outside the fill area, or at additional locations within/below the fill. A field deployable XRF unit may be utilized to help screen samples for metals at potential fill/soil interface locations, and to help select depth-discrete sampling intervals. It should be noted that at least one of the subject sampling locations will be selected at a location to help evaluate potential impacts from the on-site contractors situated in the southwest corner of the Site.

Soil borings will be advanced into overburden soils with the use of direct-push techniques. Continuous soil sampling will be conducted from the ground surface to the appropriate depth interval as described above. A Geoprobe MacroCore or LargeBore enclosed piston soil sampling system will be used to collect soil samples. This system isolates the sampling tube from the surrounding soil until the desired sampling depth is reached, thereby minimizing the potential risk of cross-contamination from one sample interval to another. Dedicated, disposable acetate liners will be used to collect soil samples from each depth-discrete interval. Each sample interval will be field-screened for total organic vapors with a photoionization detector (PID). With the exception of the surface soil samples to be collected from the top 6-inches of the soil column, or those samples intended to fill specific existing vertical profiling data gaps, results from the field screen measurements (PID) will be used to assist in the selection of the soil samples to be submitted for laboratory analysis. If more than one soil sample depth interval per boring has elevated total organic vapor measurements, the sample with the highest total organic vapor concentration will be submitted for laboratory analysis. In the event that total organic vapors are not detected, a soil sample will be selected based on visual observations (i.e., stained soil) or at the pre-determined depths above the water table.

Soil samples collected for laboratory analysis will be submitted to a New York State Certified laboratory under chain-of-custody protocol and analyzed for PAH's in accordance with USEPA SW-846 Method 8270C, RCRA 8 Metals in accordance with USEPA 6000-7000 series, and PCBs in accordance with USEPA Method 8080. Soil sample analytical results will be compared to NYSDEC Technical and Administrative Guidance Memorandum concentrations (TAGM) #4046.

6.0 FIELD SAMPLING AND ANALYSIS REQUIREMENTS

The field sampling and analysis requirements have been proposed to provide the methods by which the site characterization activities will be performed. The field sampling and analysis sections presented below provide methods and procedures for field sampling activities, laboratory analytical methods, and data evaluation procedures. These methods and procedures will be implemented to provide the data necessary to meet the overall sampling objectives of this investigation.

6.1 Field Sampling Requirements

6.1.1 Sampling Objectives

The sampling objectives for the additional investigation are to:

- Provide data necessary to further evaluate the nature and extent of VOC impacts to overburden groundwater associated with historical uses and operations at the Site; and

- Provide data necessary to further evaluate the nature and extent of polycyclic aromatic hydrocarbons (PAHs) and heavy metals impacts in soils at the site.

6.1.2 Sample Location and Frequency

To meet the objectives stated above, the field sampling program to be implemented will include the collection of groundwater grab samples from temporary points with on-site mobile laboratory analysis, select groundwater samples for confirmatory laboratory analysis, and soil samples from direct-push soil borings with laboratory analysis. It is anticipated that the initial groundwater grab samples collected as part of the adaptive sampling program, will be collected from a total of approximately 8 to 10 temporary points. Additional points will be selected as necessary to complete the stated delineation objectives. The precise number and location of these sampling points will be determined in the field based on analytical results obtained. Groundwater samples will also be collected from at least two of the existing groundwater monitoring wells (i.e., MW-4 and MW-10) as part of the chlorinated solvent delineation effort to be conducted in these two areas (vicinity of MW-4 and MW-10). Groundwater samples collected from existing wells will be collected in general accordance with the procedures detailed in Appendix B – Groundwater Sampling Procedures. A total of approximately 14 soil samples will be collected from 10 boring locations as part of the Shallow Soil Evaluation program.

6.1.3 Sample Designations

Each of the environmental samples collected during the implementation of the Additional Investigation will be given a unique sample identification, which will include an identifier for the Site (i.e., "CP" – Carlson Park), the sampling location, and the sample depth interval. For example, a soil sample collected from a depth of 1.5 to 2.0 feet in Soil Boring SB-101 at the Site would be given the designation CPSB-101 (1.5 - 2.0).

6.1.4 Soil and Groundwater Sampling Equipment and Procedures

Soil and groundwater grab samples will be obtained using a truck-mounted direct-push unit. Soil samples will be obtained with the use of geoprobe enclosed-piston (i.e., MacroCore) soil sampling systems. Soil samples will be collected in disposable acetate liners. As each sample liner is opened, a photoionization detector (PID) fitted with a 11.1 eV lamp will be used to screen the soil core for total organic vapors, see Appendix C – Soil Headspace Screening (Field Technique). The soil samples used for headspace screening will be warmed to approximately 70°F, if necessary. The screened samples will not be submitted for laboratory analysis of VOCs. The results from soil screen measurements will be used to assist with the selection of the soil samples submitted for laboratory analysis. In the event that elevated total organic vapors are not detected, a soil sample will be selected based on visual observation from a sample depth that is above the water table. Once selected, a representative portion of the soil sample will be placed into a glass jar and stored on ice for subsequent laboratory analysis.

Groundwater grab samples will be collected from temporary sample points consisting of Mill Slot Rods, Screen Point 16 samplers fitted with expendable points, or from temporary boreholes advanced with rods fitted with expendable points. Collection of groundwater grab samples will be accomplished with the use of a peristaltic pump or check-valve and ball fitted with a dedicated length of polyethylene tubing, or with a mini bailer. Samples will be poured directly from the dedicated tubing or mini bailers into laboratory-supplied glassware and submitted to the on-site mobile laboratory for analysis. Depth to groundwater measurements will be measured in existing wells prior to purging for the collection of groundwater samples. Depth to groundwater measurements will be taken in general accordance with the procedures detailed in Appendix D – Groundwater Level Measurement Protocol.

Groundwater samples to be submitted to the laboratory for confirmation analysis will be poured directly from the dedicated polyethylene bailer into the laboratory supplied glass containers. The groundwater sample containers will be labeled with the same information as presented in section 6.1.3 immediately following placement of the sample into the appropriate containers. Sample preservation methods will be performed and the samples will be placed in a cooler to be maintained at a temperature of approximately 4°C until delivery to the laboratory. A chain-of-custody form will be completed as part of the laboratory documentation for the sample event. The overall analytical program is summarized in Table 10 – Summary of Sample Requirements and Laboratory Analysis.

The downhole geoprobe sampling equipment will be decontaminated prior to sample collection at each location, and between sample intervals during the collection of soil samples, by the following procedure:

1. Detergent and tap water wash;
2. Tap water rinse;
3. Distilled water rinse; and
4. Air dry.

Other equipment which comes in contact with the soil samples, such as the stainless steel hand trowels used to transfer soil from the sampler to the laboratory containers, will also be decontaminated prior to each use by the same method.

The rinsate generated through the equipment decontamination activities will be collected in an appropriate container for proper disposal at the conclusion of the field investigation program. Drill cuttings will be placed back in the same area they came from if the soil/groundwater quality in that area is the same or worse than the investigation derived waste (see DER's TAGM 4032 – Disposal of Drilling Cuttings for more information). If these investigation derived wastes are not placed back in the area they came from, then these soils will be stockpiled on-Site and a sample of these soils will be submitted for laboratory analysis to determine proper disposal methods.

6.1.5 Sample Handling and Analysis

Each of the soil samples collected during the proposed investigation will be screened for total organic vapors with a PID. Each soil sample will be collected, handled, and stored as if it were to be analyzed. The selected soil samples will be submitted for laboratory analysis upon completion of the soil boring. The disposable acetate liner will be opened from the down-hole sampler and a representative soil sample of the depth interval sampled will be placed directly into a laboratory-provided sample container using a stainless steel spatula or trowel. Immediately after collection, each soil sample will be labeled with the following information and placed in a cooler to be held at a temperature of approximately 4°C until delivery to the laboratory:

- sample designation;
- site name;
- sampling location;
- job number;
- date;
- time; and
- initials of person collecting sample.

Each sample will be tracked by means of a Chain-of-Custody form. A Chain-of-Custody form will be initiated at the time of sample collection and will be maintained with the sample until delivery to the laboratory.

The soil and/or groundwater samples collected for off-site laboratory analysis will be sent to a New York Certified Laboratory. These samples will be analyzed in accordance with NYSDEC ASP Method OLM 4.2 for organics (including VOCs, SVOCs, and PCBs) and NYSDEC ASP Method ILM 4.2 for inorganics.

In addition to off-site laboratory analysis, selected soil and/or groundwater samples will also be analyzed in the field with slightly less stringent modified USEPA SW-846 protocol. Such protocol modifications will include expanding the BFB tune and continuing calibration window from 12 to 24 hours, and eliminating the analysis of matrix spike and matrix spike/duplicate samples. Other method-specified QA/QC requirements will be followed. Upon receipt of the results for such field analysis, a selected number of samples will be submitted for confirmatory analysis following NYSDEC ASP protocol to help verify the field results. Final decision-making will be based upon data obtained with ASP protocol.

6.2 Quality Assurance Samples

6.2.1 General

QA/QC samples will be prepared by the laboratory and collected in the field as part of the sampling requirements and data validation program. Two types of QA/QC samples will be prepared or collected: trip blanks and duplicate aqueous samples. The QA/QC samples are discussed in more detail below.

6.2.2 Trip Blanks

The primary purpose of a trip blank is to detect additional sources of contamination that may potentially influence compound detection and concentration values reported in actual samples both quantitatively and qualitatively. Trip blanks serve as a mechanism of control on sample bottle preparation and blank water quality, as well as sample handling. The trip blank travels to the Site with the empty sample containers and back to the off-site lab from the Site with the collected samples in an effort to simulate sample handling controls. Contaminated trip blanks may indicate inadequate bottle cleaning, exposure to contaminants while the samples are in transit, or that the water used to prepare the blank was of questionable quality. The following have been identified as potential sources of contamination for trip blanks:

- laboratory reagent water;
- sample containers;
- cross-contamination in shipment;
- ambient air or contact with analytical instrumentation during preparation and analysis of the laboratory; and
- laboratory reagents used in analytical procedures.

A trip blank consists of a set of sample containers filled at the laboratory with laboratory demonstrated analyte-free water. This water must originate from one common source and physical location within the laboratory, and must be the same water as the method blank water used by the laboratory performing the analysis. Trip blanks should be handled, transported, and analyzed in the same manner as the samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, they must travel with the sample collector. Individual sample matrices and associated blanks must be packaged in separate sample shuttles prior to shipment back to the lab. Trip blanks must return to the lab with the same set of bottles they accompanied to the field.

Trip blanks will be prepared and analyzed at a rate of one per day per matrix. In the event that more than one sample cooler is used per day, one trip blank will be included with each sample cooler. The trip blanks will be analyzed only for volatile organic parameters specified for the environmental samples collected that day.

6.2.3 Duplicate Samples

Collection of an aqueous (groundwater) duplicate sample provides for the evaluation of the laboratory's performance by comparing analytical results of two samples from the same location. One duplicate groundwater sample will be collected during the groundwater sampling event.

Collection of a duplicate groundwater sample will be performed by alternately filling sample containers from the same sampling device for each parameter. Samples for VOC analysis collected from groundwater monitoring wells will be filled from the same bailer full of water whenever possible.

6.2.4 Field Equipment Procedures and Preventative Maintenance

Prior to the initiation of the field investigation, preventive maintenance and calibration of equipment will be implemented to assure proper operation of field instruments. Members of the field team will be familiar with the maintenance, calibration, and operation of field equipment. The vapor monitoring devices will be used according to manufacturer instructions. Matrix spike/matrix spike duplicate samples (MS/MSD) will also be required for ASP laboratory protocol. One matrix spike/matrix spike duplicate is required for a frequency of 20 samples per sample media. The MS/MSD samples will be collected using the same methods used for soil and groundwater sampling procedures.

6.2.5 Data Validation

Laboratory analytical data generated through the implementation of this investigation will be submitted for independent data validation in general accordance with the following guidance documents to provide a data usability summary report (DUSR):

- "Functional Guidelines for Evaluation of Inorganic Data" (EPA Region 2).
- "Functional Guidelines for Evaluation of Organic Analyses" Technical Directive Document No. HQ-8410-0i (USEPA).

A data usability summary report (DUSR) is the acceptable level of data review required by the NYSDEC. Full data validation may be necessary if the DUSR identifies potential concerns.

7.0 SCHEDULE

The overall schedule to implement the Supplemental Site Investigation activities detailed within this Work Plan is anticipated to require a total of approximately 14 - 15 weeks from the time of initial Site mobilization through completion of the draft report. This schedule includes: two to three weeks for completion of the field investigation activities, six weeks for laboratory analysis and the preparation of a data usability summary report, and six weeks for evaluation of the results and draft report preparation. It should be noted that the subject field program must be conducted when there are adequate saturated overburden conditions at the site. All field personnel will follow the Health and Safety Plan that is presented in Appendix E – Health and Safety Plan.

8.0 REFERENCES

AMEC Earth and Environmental, Inc., February 21, 2001. Preliminary Site Investigation Data, Carlson Park Remedial Investigation, 100 Carlson Park, Rochester, New York.

Preliminary Site Investigation Data; Carlson Park Remedial Investigation; 100 Carlson Park, Rochester, NY; February 21, 2001 (AMEC Earth and Environmental, Inc.)

USEPA/540-G-89i/004; October 1988. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final's.

TABLE 1 (PAGE 1 OF 2)
SOIL ANALYTICAL SUMMARY - USEPA METHOD 8260 COMPOUNDS

100 Carlson Park
Rochester, New York

USEPA Method 8260 Compounds	**P-10 (4-8)**	**P-9 (4-8)**	**P-11 (2-4)**	**P-4 (4-8)**	**P-6 (0-4)**	**P-5 (4-6)**	**P-7 (2-4)**	**P-8 (2-4)**	**P-13 (0-4)**	**P-12 (0-4)**	**P-3 (8-10)**	**P-2 (4-8)**	**P-1 (5.5-7.5)**	**SS-11 (0-0.5)**	**SS-7 (0-0.5)**	**SS-4 (0-1)**	**SS-8 (0-1)**	Rec. Soil Cleanup Obj.
Chloromethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Bromomethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Vinyl Chloride	<2	<2	<2	<13	<2	<2	<2	<2	<2	<2	<5	<2	<2	<2	<2	<2	<2	200
Chloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,900
Methylene Chloride	12	21	16	130	18	28	12	16	15	11	71	18	10	14	19	16	20	100
Acetone	<11	<11	<11	<67	<11	<13	<12	<11	<12	<11	<27	<11	<11	<12	<12	<11	<11	200
Carbon Disulfide	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	2,700
1,1-Dichloroethene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	400
1,1-Dichloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	200
Trans-1,2-Dichloroethene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	300
Cis-1,2-Dichloroethene	<3	<3	<3	<20	<3	62	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Chloroform	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	300
1,2-Dichloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	100
2-Butanone	<11	<11	<11	<67	<11	<13	<12	<11	<12	<11	<27	<11	<11	<12	<12	<11	<11	300
1,1,1-Trichloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	17	<3	<3	<3	<4	<3	<3	800
Carbon Tetrachloride	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	600
Bromodichloromethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
1,2-Dichloropropane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Cis-1,3-Dichloropropene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Trichloroethene	67	9	<3	320	21	280	<4	<3	<3	<3	45	<3	<3	<3	6	3	<3	700
Dibromochloromethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
1,1,2-Trichloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Benzene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	60
Trans-1,3-Dichloropropene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
Bromoform	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*
4-Methyl-2-pentanone	<11	<11	<11	<67	<11	<13	<12	<11	<12	<11	<27	<11	<11	<12	<12	<11	<11	1,000
2-Hexanone	<11	<11	<11	<67	<11	<13	<12	<11	<12	<11	<27	<11	<11	<12	<12	<11	<11	10,000*
Tetrachloroethene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,400
1,1,2,2-Tetrachloroethane	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	600
Toluene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,500
Chlorobenzene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,700
Ethylbenzene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	5,500
Styrene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	10,000*

TABLE 1 (PAGE 2 OF 2)
SOIL ANALYTICAL SUMMARY - USEPA METHOD 8260 COMPOUNDS
100 Carlson Park
Rochester, New York

USEPA Method 8260 Compounds	**P-10 (4-8)**	**P-9 (4-8)**	**P-11 (2-4)**	**P-4 (4-8)**	**P-6 (0-4)**	**P-5 (4-6)**	**P-7 (2-4)**	**P-8 (2-4)**	**P-13 (0-4)**	**P-12 (0-4)**	**P-3 (8-10)**	**P-2 (4-8)**	**P-1 (5.5-7.5)**	**SS-11 (0-0.5)**	**SS-7 (0-0.5)**	**SS-4 (0-1)**	**SS-8 (0-1)**	Rec. Soil Cleanup Obj.
m-,p-Xylenes	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,200
o-Xylene	<3	<3	<3	<20	<3	<4	<4	<3	<3	<3	<8	<3	<3	<3	<4	<3	<3	1,200
Total USEPA 8260 Compounds	79	30	16	450	40	302	12	16	15	11	116	18	10	14	25	16	20	NA

NOTES:
1) NA = Not Applicable, < = Less than laboratory detection limits.
2) Concentrations are expressed in parts per billion (ppb), equivalent to ug/kg.
3) Soil collected on August 25, 2000, and August 26, 2000, by AGRA Earth & Environmental, Inc., and analyzed by Upstate Laboratories, Inc., Syracuse, New York.
4)*= As per TAGM 4046, both individual VOCs and the sum of VOCs may not exceed 10,000 ppb.

TABLE 2 (Page 1 of 4)
SOIL ANALYTICAL SUMMARY - USEPA 8270 (TCL BASE/NEUTRAL EXT.) COMPOUNDS
100 Carlson Park
Rochester, New York

EPA 8270C Compounds	P-10 (4-8)	P-9 (4-8)	P-11 (2-4)	P-4 (4-8)	P-6 (0-4)	P-5 (4-6)	P-7 (2-4)	P-8 (2-4)	P-13 (0-4)	Rec. Soil Cleanup objectives
bis(2-Chloroethyl) ether	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
1,3-Dichlorobenzene	<380	<370	<370	<440	<380	<440	<410	<370	<390	1,600
1,4-Dichlorobenzene	<380	<370	<370	<440	<380	<440	<410	<370	<390	8,500
1,2-Dichlorobenzene	<380	<370	<370	<440	<380	<440	<410	<370	<390	7,900
2,2'-Oxybis(1-Chloropropane)	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
n-Nitrosodi-n-propylamine	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Hexachloroethane	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Isophorone	<380	<370	<370	<440	<380	<440	<410	<370	<390	4,400
bis(2-Chloroethoxy)methane	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
1,2,4-Trichlorobenzene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Naphthalene	<380	<370	<370	2,700	<380	<440	<410	<370	<390	13,000
4-Chloroaniline	<380	<370	<370	<440	<380	<440	<410	<370	<390	220
Hexachlorocbutadiene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
2-Methylnaphthalene	<380	<370	<370	1,800	<380	<440	<410	<370	<390	50,000*
Hexachlorocyclopentadiene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
2-Chloronaphthalene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
2-Nitroaniline	<380	<370	<370	<440	<380	<440	<410	<370	<390	430
Dimethylphthalate	<380	<370	<370	<440	<380	<440	<410	<370	<390	2,000
Acenaphthylene	<380	<370	<370	3,300	<380	<440	<410	<370	<390	41,000
2,6-Dinitrotoluene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
3-Nitroaniline	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Acenaphthene	<380	<370	<370	<440	<380	<440	<410	<370	1,800	50,000*
Dibenzofuran	<380	<370	<370	2,200	<380	<440	<410	<370	990	6,200
2,4-Dinitrotoluene	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Diethylphthalate	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
4-Chlorophenylphenylether	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Fluorene	<380	<370	<370	4,600	<380	<440	<410	<370	2,000	50,000*
4-Nitroaniline	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
n-Nitrosodiphenylamine	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
4-Bromophenylphenylether	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Hexachlorobenzene	<380	<370	<370	<440	<380	<440	<410	<370	<390	410
Phenanthrene	<380	<370	<370	39,000	740	<440	<410	<370	15,000	50,000*
Anthracene	<380	<370	<370	8,800	<380	<440	<410	<370	4,200	50,000*
Carazole	<380	<370	<370	2,700	<380	<440	<410	<370	3,100	50,000*
Di-n-butylphthalate	<380	790	<370	<440	<380	<440	<410	<370	<390	8,100
Fluoranthene	<380	<370	<370	32,000	1,400	<440	<410	<370	26,000	50,000*
Pyrene	<380	<370	<370	36,000	1,300	<440	<410	<370	18,000	50,000*

TABLE 2 (Page 2 of 4)
SOIL ANALYTICAL SUMMARY - USEPA 8270 (TCL BASE/NEUTRAL EXT.) COMPOUNDS

100 Carlson Park
Rochester, New York

Butylbenzylphthalate	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
3,3'-Dichlorobenzidine	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Benzo(a)anthracene	<380	<370	<370	17,000	670	<440	<410	<370	13,000	224
Chrysene	<380	<370	<370	18,000	670	<440	<410	<370	14,000	400
Bis(2-Ethylhexyl)phthalate	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
di-n-octylphthalate	<380	<370	<370	<440	<380	<440	<410	<370	<390	50,000*
Benzo(b)fluoranthene	<380	<370	<370	19,000	860	<440	<410	<370	14,000	1,100
Benzo(k)fluoranthene	<380	<370	<370	3,800	<380	<440	<410	<370	6,000	1,100
Benzo(a)pyrene	<380	<370	<370	12,000	550	<440	<410	<370	10,000	61
Indeno(1,2,3-cd)pyrene	<380	<370	<370	4,500	<380	<440	<410	<370	4,300	3,200
Dibenzo(a,h)anthracene	<380	<370	<370	1,300	<380	<440	<410	<370	1,700	14
Benzo(ghi)perylene	<380	<370	<370	4,700	<380	<440	<410	<370	4,000	50,000*
Total EPA 8270C Compounds	<380	790	<370	213,400	6,190	<440	<410	<370	137,100	NA

TABLE 2 (Page 3 of 4)
SOIL ANALYTICAL SUMMARY - USEPA 8270 (TCL BASE/NEUTRAL EXT.) COMPOUNDS
100 Carlson Park
Rochester, New York

EPA 8270C Compounds	P-12 (0-4)	P-3 (8-10)	P-2 (4-8)	P-1 (5.5-7.5)	SS-11 (0-0.5)	SS-7 (0-0.5)	SS-4 (0-1)	SS-8 (0-1)	Rec. Soil Cleanup obj.
bis(2-Chloroethyl) ether	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
1,3-Dichlorobenzene	<350	<440	<370	<370	<390	<410	<380	<370	1,600
1,4-Dichlorobenzene	<350	<440	<370	<370	<390	<410	<380	<370	8,500
1,2-Dichlorobenzene	<350	<440	<370	<370	<390	<410	<380	<370	7,900
2,2'-Oxybis(1-Chloropropane)	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
n-Nitrosodi-n-propylamine	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Hexachloroethane	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Isophorone	<350	<440	<370	<370	<390	<410	<380	<370	4,400
bis(2-Chloroethoxy)methane	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
1,2,4-Trichlorobenzene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Naphthalene	<350	<440	<370	<370	<390	<410	520	<370	13,000
4-Chloroaniline	<350	<440	<370	<370	<390	<410	<380	<370	220
Hexachlorocbutadiene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
2-Methylnaphthalene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Hexachlorocyclopentadiene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
2-Chloronaphthalene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
2-Nitroaniline	<350	<440	<370	<370	<390	<410	<380	<370	430
Dimethylphthalate	<350	<440	<370	<370	<390	<410	<380	<370	2,000
Acenaphthylene	<350	<440	<370	<370	<390	<410	<380	<370	41,000
2,6-Dinitrotoluene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
3-Nitroaniline	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Acenaphthene	<350	<440	<370	<370	<390	<410	590	<370	50,000*
Dibenzofuran	<350	<440	<370	<370	<390	<410	<380	<370	6,200
2,4-Dinitrotoluene	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Diethylphthalate	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
4-Chlorophenylphenylether	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Fluorene	<350	<440	<370	<370	<390	<410	600	<370	50,000*
4-Nitroaniline	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
n-Nitrosodiphenylamine	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
4-Bromophenylphenylether	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Hexachlorobenzene	<350	<440	<370	<370	<390	<410	<380	<370	410
Phenanthrene	<350	<440	<370	<370	4,700	1,200	5,700	<370	50,000*
Anthracene	<350	<440	<370	<370	450	<410	1,100	<370	50,000*
Carazole	<350	<440	<370	<370	530	<410	870	<370	50,000*
Di-n-butylphthalate	<350	<440	<370	<370	<390	<410	<380	<370	8,100
Fluoranthene	<350	<440	<370	<370	7,200	1,800	7,600	<370	50,000*
Pyrene	<350	<440	<370	<370	6,800	1,500	6,600	<370	50,000*

TABLE 2 (Page 4 of 4)
SOIL ANALYTICAL SUMMARY - USEPA 8270 (TCL BASE/NEUTRAL EXT.) COMPOUNDS
100 Carlson Park
Rochester, New York

Butylbenzylphthalate	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
3,3'-Dichlorobenzidine	<350	<440	<370	<370	<390	<410	<380	<370	50,000*
Benzo(a)anthracene	<350	<440	<370	<370	2,700	780	3,200	<370	224
Chrysene	<350	<440	<370	<370	3,200	830	3,400	<370	400
Bis(2-Ethylhexyl)phthalate	<350	<440	<370	<370	600	<410	<380	<370	50,000
di-n-octylphthalate	<350	<440	<370	<370	<390	<410	<380	<370	50,000
Benzo(b)fluoranthene	<350	<440	<370	<370	4,300	1,200	4,600	<370	1,100
Benzo(k)fluoranthene	<350	<440	<370	<370	1,600	430	2,100	<370	1,100
Benzo(a)pyrene	<350	<440	<370	<370	2,800	720	3,200	<370	61
Indeno(1,2,3-cd)pyrene	<350	<440	<370	<370	1,600	<410	1,300	<370	3,200
Dibenzo(a,h)anthracene	<350	<440	<370	<370	440	<410	450	<370	14
Benzo(ghi)perylene	<350	<440	<370	<370	1,700	<410	1,400	<370	50,000*
Total EPA 8270C Compounds	<350	<440	<370	<370	38,020	8,460	43,230	<370	NA

NOTES: 1) NA = Not Applicable, < = Less than laboratory detection limits.
2) Concentrations are expressed in parts per billion (ppb), equivalent to ug/kg.
3) Soil collected on August 25, 2000, and August 26, 2000, by AGRA Earth & Environmental, Inc., and analyzed by Upstate Laboratories, Inc., Syracuse, New York.
4) *= As per TAGM 4046, individual SVOCs may not exceed 50,000 ppb and total SVOCs may not exceed 500,000 ppb.

TABLE 3
SOIL ANALYTICAL SUMMARY - RCRA 8 METALS
100 Carlson Road
Rochester, New York

EPA RCRA 8 Metals (Method 6010/7471)	**P-10 (4-8)**	**P-9 (4-8)**	**P-11 (2-4)**	**P-4 (4-8)**	**P-6 (0-4)**	**P-5 (4-6)**	**P-7 (2-4)**	**P-8 (2-4)**	**P-13 (0-4)**	**P-12 (0-4)**	**P-3 (8-10)**	**P-2 (4-8)**	**P-1 (5.5-7.5)**	**SS-11 (0-0.5)**	**SS-7 (0-0.5)**	**SS-4 (0-1)**	**SS-8 (0-1)**	**NYSDEC Soil TAGM 4046**
Arsenic	1.6	3.1	2.5	9.8	5.3	6.6	2.1	2.0	5.5	2.0	13	2.8	1.6	3.8	5.9	6.0	2.5	7.5 or SB
Barium	<33	<30	<31	110	36	<43	41	<36	<37	<33	550	<33	<32	42	40	47	<31	300 or SB
Cadmium	<0.55	<0.50	<0.51	1.2	1.2	0.71	<0.59	<0.60	1.0	<0.54	12	<0.56	<0.54	0.51	0.63	1.7	0.51	1 or SB
Chromium	7.5	11	7.7	12	6.7	15	9.9	6.0	9.0	6.4	59	6.8	<5.4	19	11	14	6.0	10 or SB
Lead	<11	14	<10	290	48	120	<12	<12	58	<11	1,100	<11	<11	45	50	150	16	SB
Mercury	<0.2	<0.2	<0.2	14	0.49	0.35	<0.2	<0.2	0.23	<0.2	3.8	<0.2	<0.2	<0.2	0.21	0.36	<0.2	0.1
Selenium	<0.2	<0.2	<0.2	0.52	0.25	0.22	0.13	<0.2	<0.2	<0.2	3.1	<0.2	<0.2	<0.2	<0.2	0.26	<0.2	2 or SB
Silver	<5.5	<5.0	<5.1	<6.0	<5.6	<7.1	<5.9	<6.0	<6.2	<5.4	<6.4	<5.6	<5.4	<5.1	<5.2	<5.2	<5.1	SB

NOTES:

1) < = Less than laboratory detection limits, SB = Site background.
2) Concentrations are expressed in parts per million (ppm), equivalent to mg/kg.
3) Soil samples collected on August 25, 2000, and August 26, 2000, by AGRA Earth and Environmental, Inc. and analyzed by Upstate Laboratories, Inc., Syracuse, New York,

TABLE 4
SOIL ANALYTICAL SUMMARY - CYANIDE
100 Carlson Park
Rochester, New York

	Total Cyanide	**Recommended Soil Cleanup Objectives**
Soil Sample Name		
P-10 (4-8)	<1.1	NA
P-9 (4-8)	<1.1	NA
P-11 (2-4)	<1.1	NA
P-4 (4-8)	1.1	NA
P-6 (0-4)	<1.1	NA
P-5 (4-6)	<1.2	NA
P-7 (2-4)	<1.2	NA
P-8 (2-4)	<1.0	NA
P-13 (0-4)	<1.1	NA
P-12 (0-4)	<1.0	NA
P-3 (8-10)	4.2	NA
P-2 (4-8)	<1.1	NA
P-1 (5.5-7.5)	<1.1	NA
SS-11 (0-0.5)	<1.2	NA
SS-7 (0-0.5)	<1.1	NA
SS-4 (0-1)	<1.0	NA
SS-8 (0-1)	<1.1	NA

NOTES:
1) NA = Not Applicable, < = Less than laboratory detection limits.
2) Concentrations are expressed in parts per million (ppm), equivalent to mg/kg.
3) Soil collected on August 25, 2000, and August 26, 2000, by AGRA Earth & Environmental, Inc., and analyzed by Upstate Laboratories, Inc., Syracuse, New York.

TABLE 5
GROUNDWATER ANALYTICAL SUMMARY - USEPA METHOD 8260 COMPOUNDS

100 Carlson Park
Rochester, New York

USEPA Method 8260 Compounds	**MW-1**	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-9**	**MW-10**	**MW-13**	**NYSDEC G.W. Standard**
Chloromethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	NA
Bromomethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Vinyl Chloride	<2	<2	<2	<10	**23**	**17**	<2	<10	<2	2
Chloroethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	50
Methylene Chloride	<3	<3	<3	**29**	5	<3	4	<15	<3	5
Acetone	<10	<10	<10	<50	<10	<10	<10	<50	<10	50
Carbon Disulfide	<3	<3	<3	<15	<3	<3	<3	<15	<3	50
1,1-Dichloroethene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
1,1-Dichloroethane	<3	<3	<3	<15	**17**	<3	<3	<15	<3	5
Trans-1,2-Dichloroethene	<3	<3	<3	<15	<3	**32**	<3	<15	<3	5
Cis-1,2-Dichloroethene	<3	<3	<3	**130**	**57**	**18**	**98**	**20**	<3	5
Chloroform	<3	<3	<3	<15	<3	<3	<3	<15	<3	7
1,2-Dichloroethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
2-Butanone	<10	<10	<10	<50	<10	<10	<10	<50	<10	50
1,1,1-Trichloroethane	<3	<3	**6**	**43**	<3	<3	<3	<15	<3	5
Carbon Tetrachloride	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Bromodichloromethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	50 (GV)
1,2-Dichloropropane	<3	<3	<3	<15	<3	<3	<3	<15	<3	1
Cis-1,3-Dichloropropene	<3	<3	<3	<15	<3	<3	<3	<15	<3	0.4 (cis- & trans-)
Trichloroethene	<3	<3	4	**430**	**27**	**12**	**95**	**390**	<3	5
Dibromochloromethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	50
1,1,2-Trichloroethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Benzene	<3	<3	<3	<15	<3	<3	<3	<15	<3	0.7
Trans-1,3-Dichloropropene	<3	<3	<3	<15	<3	<3	<3	<15	<3	0.4 (cis- & trans-)
Bromoform	<3	<3	<3	<15	<3	<3	<3	<15	<3	50 (GV)
4-Methyl-2-pentanone	<10	<10	<10	<50	<10	<10	<10	<50	<10	50
2-Hexanone	<10	<10	<10	<50	<10	<10	<10	<50	<10	50 (GV)
Tetrachloroethene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
1,1,2,2-Tetrachloroethane	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Toluene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Chlorobenzene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Ethylbenzene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Styrene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
m-,p-Xylenes	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
o-Xylene	<3	<3	<3	<15	<3	<3	<3	<15	<3	5
Total USEPA 8260 Compounds	<10	<10	10	632	129	79	197	410	<10	NA

NOTES:
1. NA = No standard has been established by NYSDEC, < = Less than laboratory detection limits.
2. Concentrations are expressed in parts per billion (ppb) equivalent to ug/L.
3. Groundwater samples collected on December 1, 2000, December 2, 2000, and December 3, 2000, by AMEC Earth & Environmental. Inc. and analyzed by Upstate Laboratories, Inc., Rochester, New York.
4. (GV) = Guidance Value, Values above NYSDEC Groundwater Standards or Guidance Values are shaded.

TABLE 6
GROUNDWATER ANALYTICAL SUMMARY - RCRA 8 METAL COMPOUNDS

100 Carlson Park
Rochester, New York

RCRA 8 Metal Compounds	MW-2	MW-3	MW-5	MW-6	MW-9	MW-10	MW-13	Part 703 Water Quality Standard
Arsenic	0.004	0.015	0.019	0.008	0.014	0.004	0.006	0.025
Barium	<0.3	0.9	0.3	0.4	0.5	<0.3	<0.3	1.0
Cadmium	<0.005	**0.062**	<0.005	**0.013**	**0.020**	**0.007**	**0.010**	0.005
Chromium	<0.05	**0.31**	<0.05	**0.07**	**0.14**	<0.05	**0.06**	0.050
Lead	<0.1	**0.7**	0.2	<0.1	<0.1	<0.1	<0.1	0.025
Mercury	<0.0004	**0.0027**	0.0007	**0.0010**	<0.0004	<0.0004	<0.0004	0.0007
Selenium	<0.001	0.002	<0.001	0.001	<0.001	<0.001	0.001	0.010
Silver	<0.05	**0.06**	<0.05	<0.05	<0.05	<0.05	<0.05	0.050

NOTES:

1. < = Less than laboratory detection limits.
2. Arsenic and Selenium by furnace method.
3. Concentrations are expressed in parts per million (ppm) equivalent to mg/L.
4. Groundwater samples collected on December 1, 2000, December 2, 2000, and December 3, 2000, by AMEC Earth & Environmental, Inc. and analyzed by Upstate Laboratories, Inc., Rochester, New York.
5. Values above NYSDEC Part 703 Water Quality Standards are bold font and shaded.

TABLE 7 (Page 1 of 2)
GROUNDWATER ANALYTICAL SUMMARY - USEPA METHOD 8270 (TCL SEMIVOLATILES) COMPOUNDS
100 Carlson Park
Rochester, New York

EPA 8270C Compounds	MW-1	MW-2	MW-3	MW-4	MW-6	MW-9	MW-10	MW-13	NYSDEC G.W. Standard
Phenol	<5	<5	<5	<5	<5	<5	<5	<5	1
bis(2-Chloroethyl) ether	<5	<5	<5	<5	<5	<5	<5	<5	NA
2-Chlorophenol	<5	<5	<5	<5	<5	<5	<5	<5	50
1,3-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	NA
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	NA
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	NA
2,2'-Oxybis(1-Chloropropane)	<5	<5	<5	<5	<5	<5	<5	<5	NA
4-Methylphenol	<5	<5	<5	<5	<5	<5	<5	<5	50
n-Nitrosodi-n-propylamine	<5	<5	<5	<5	<5	<5	<5	<5	NA
Hexachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	NA
Nitrobenzene	<5	<5	<5	<5	<5	<5	<5	<5	5
Isophorone	<5	<5	<5	<5	<5	<5	<5	<5	50
2-Nitrophenol	<5	<5	<5	<5	<5	<5	<5	<5	5
2,4-Dimethylphenol	<5	<5	<5	<5	<5	<5	<5	<5	NA
bis(2-Chloroethoxy)methane	<5	<5	<5	<5	<5	<5	<5	<5	NA
2,4-Dichlorophenol	<5	<5	<5	<5	<5	<5	<5	<5	1
1,2,4-Trichlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	5
Naphthalene	<5	<5	<5	<5	<5	<5	<5	<5	10
4-Chloroaniline	<5	<5	<5	<5	<5	<5	<5	<5	5
Hexachlorobutadiene	<5	<5	<5	<5	<5	<5	<5	<5	NA
4-Chloro-3-methylphenol	<5	<5	<5	<5	<5	<5	<5	<5	NA
2-Methylnaphthalene	<5	<5	<5	<5	<5	<5	<5	<5	50
Hexachlorocyclopentadiene	<5	<5	<5	<5	<5	<5	<5	<5	NA
2,4,6-Trichlorophenol	<5	<5	<5	<5	<5	<5	<5	<5	NA
2,4,5-Trichlorophenol	<5	<5	<5	<5	<5	<5	<5	<5	1
2-Chloronaphthalene	<5	<5	<5	<5	<5	<5	<5	<5	NA
2-Nitroaniline	<50	<50	<50	<50	<50	<50	<50	<50	5
Dimethylphthalate	<5	<5	<5	<5	<5	<5	<5	<5	50
Acenaphthylene	<5	<5	<5	<5	<5	<5	<5	<5	20
2,6-Dinitrotoluene	<5	<5	<5	<5	<5	<5	<5	<5	5
3-Nitroaniline	<50	<50	<50	<50	<50	<50	<50	<50	5
Acenaphthene	<5	<5	<5	<5	<5	<5	<5	<5	20
2,4-Dinitrophenol	<50	<50	<50	<50	<50	<50	<50	<50	5
4-Nitrophenol	<50	<50	<50	<50	<50	<50	<50	<50	5
Dibenzofuran	<5	<5	<5	<5	<5	<5	<5	<5	5

TABLE 7 (Page 2 of 2)
GROUNDWATER ANALYTICAL SUMMARY - USEPA METHOD 8270 (TCL SEMIVOLATILES) COMPOUNDS
100 Carlson Park
Rochester, New York

2,4-Dinitrotoluene	<5	<5	<5	<5	<5	<5	<5	<5	NA
Diethylphthalate	<5	<5	<5	<5	<5	<5	<5	<5	50
4-Chlorophenylphenylether	<5	<5	<5	<5	<5	<5	<5	<5	NA
Fluorene	<5	<5	<5	<5	<5	<5	<5	<5	50
4-Nitroaniline	<50	<50	<50	<50	<50	<50	<50	<50	NA
2-Methyl-4,6-dinitrophenol	<50	<50	<50	<50	<50	<50	<50	<50	NA
n-Nitrosodiphenylamine	<5	<5	<5	<5	<5	<5	<5	<5	NA
4-Bromophenylphenylether	<5	<5	<5	<5	<5	<5	<5	<5	NA
Hexachlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	0.35
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	1
Phenanthrene	<5	<5	<5	<5	<5	<5	<5	<5	50
Anthracene	<5	<5	<5	<5	<5	<5	<5	<5	50
Carbazole	<5	<5	<5	<5	<5	<5	<5	<5	NA
Di-n-butylphthalate	<5	<5	<5	<5	<5	<5	<5	<5	NA
Fluoranthene	<5	<5	<5	<5	<5	<5	<5	<5	50
Pyrene	<5	<5	<5	<5	<5	<5	<5	<5	50
Butylbenzylphthalate	<5	<5	<5	<5	<5	<5	<5	<5	50
3,3'-Dichlorobenzidine	<5	<5	<5	<5	<5	<5	<5	<5	NA
Benzo(a)anthracene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Chrysene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Bis(2-Ethylhexyl) phthalate	<5	<5	<5	<5	<5	<5	<5	<5	50
di-n-octylphthalate	<5	<5	<5	<5	<5	<5	<5	<5	NA
Benzo(b)fluoranthene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Benzo(k)fluoranthene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Benzo(a)pyrene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Indeno(1,2,3-cd)pyrene	<5	<5	<5	<5	<5	<5	<5	<5	0.002
Dibenzo(a,h)anthracene	<5	<5	<5	<5	<5	<5	<5	<5	50
Benzo(ghi)perylene	<5	<5	<5	<5	<5	<5	<5	<5	5
Total EPA 8270C Compounds	<50	<50	<50	<50	<50	<50	<50	<50	NA

NOTES:

1. NA = No standard has been established by NYSDEC, < = Less than laboratory detection limits.
2. Concentrations are expressed in parts per billion (ppb) equivalent to ug/L.
3. Groundwater samples collected on December 1, 2000, December 2, 2000, and December 3, 2000, by AMEC Earth & Environmental, Inc. and analyzed by Upstate Laboratories, Inc., Rochester, New York.
4. (GV) = Guidance Value, Values above NYSDEC Groundwater Standards or Guidance Values are shaded.

TABLE 8
GROUNDWATER ANALYTICAL SUMMARY - USEPA METHOD 8080 (PCBs) COMPOUNDS
100 Carlson Park
Rochester, New York

PCBs by USEPA Method 8080	MW-3	MW-5	MW-6	MW-9	MW-10	MW-13	Water Quality Standard
Aroclor 1016	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1221	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1232	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1242	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1248	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1254	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Aroclor 1260	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Total PCB	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1

NOTES:

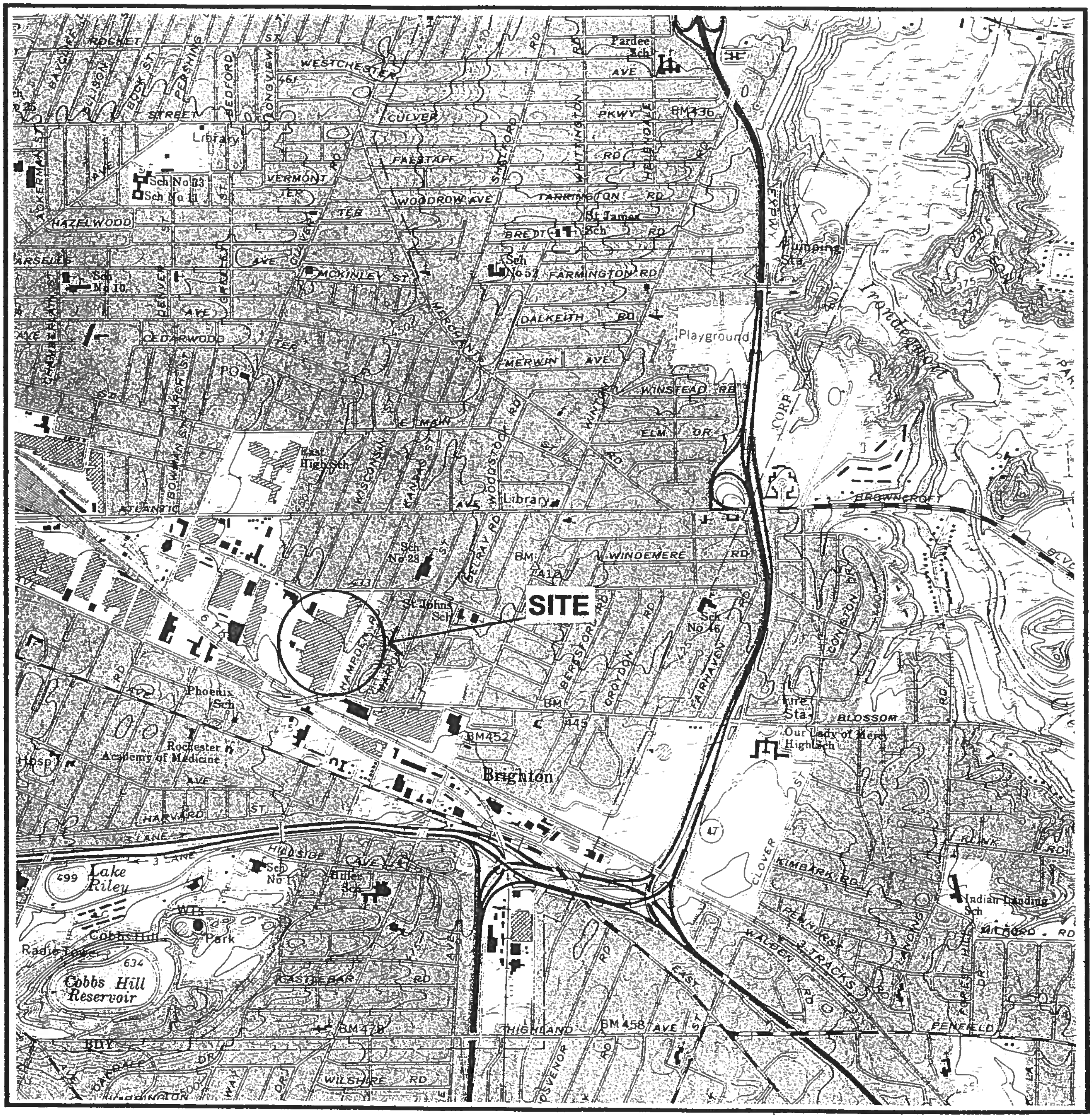
1. < = Less than laboratory detection limits.
2. Concentrations are expressed in parts per billion (ppb) equivalent to ug/L.
3. Groundwater samples collected on December 1, 2000, December 2, 2000, and December 3, 2000, by AMEC Earth & Environmental, Inc. and analyzed by Upstate Laboratories, Inc., Rochester, New York.
4. Values above NYSDEC Water Quality Standards are bold font and shaded.

TABLE 9
GROUNDWATER ANALYTICAL SUMMARY - TOTAL CYANIDE
100 Carlson Park
Rochester, New York

	Total Cyanide	**Part 703 Water Quality Standard**
Monitoring Well Sample Name	▨	▨
MW-2	<0.01	0.2
MW-3	<0.01	0.2
MW-5	<0.01	0.2
MW-6	0.06	0.2
MW-9	<0.01	0.2
MW-10	0.006	0.2

NOTES:

1. < = Less than laboratory detection limits.
2. Concentrations are expressed in parts per million (ppm) equivalent to mg/L.
3. Groundwater samples collected on December 1, 2000, December 2, 2000, and December 3, 2000, by AMEC Earth & Environmental, Inc. and analyzed by Upstate Laboratories, Inc., Rochester, New York.



GeoQuest Environmental, Inc.

1134 Titus Avenue
Rochester, NY 14617-2411
Phone: (585) 467-1696
Fax: (585) 266-4269
www.geoquestenv.com

Drawn By:	KAT - GeoQuest Environmental, Inc.
Checked By:	SJD - GeoQuest Environmental, Inc.
Status:	Final
Date:	7/28/04

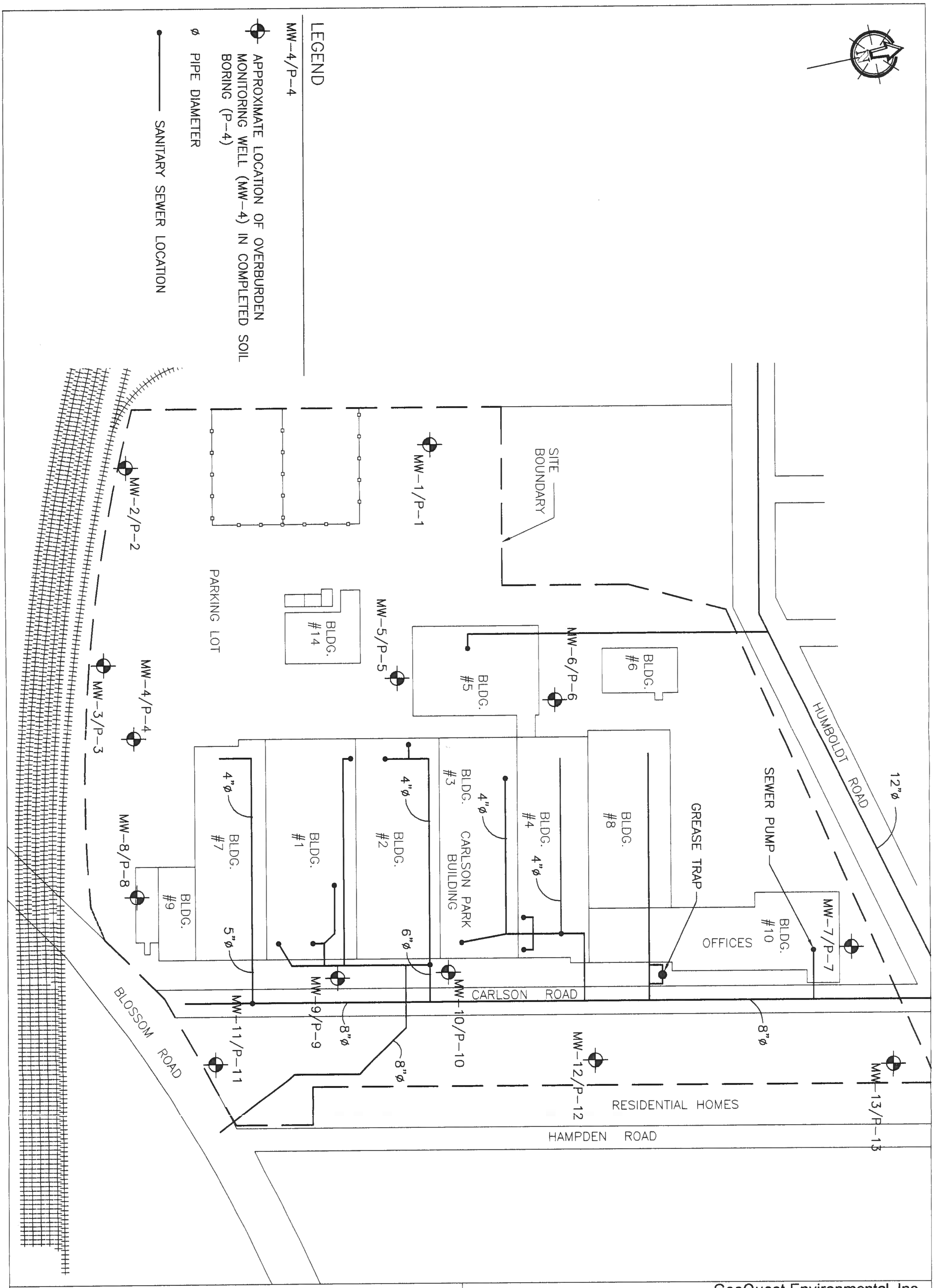
Rev	Description	Date	By

PROJECT TITLE:
VCP Remedial Investigation Work Plan
Carlson Park
100 Carlson Road
Rochester, New York

DRAWING TITLE:
Site Vicinity Map

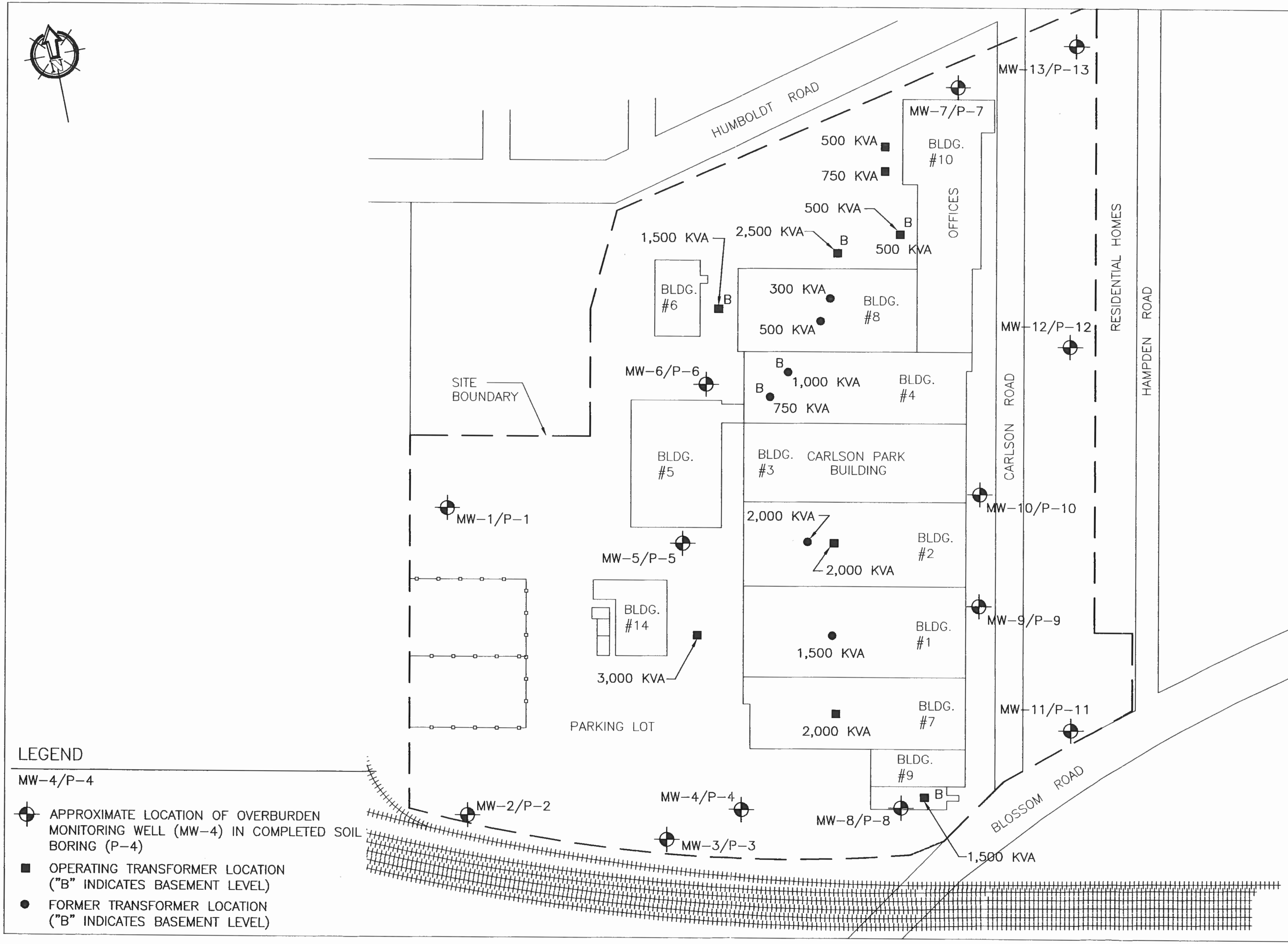
Project Number
080502

Drawing Number
Figure 1



SANITARY SEWER LOCATIONS		GeoQuest Environmental, Inc. 1134 Titus Avenue Rochester, NY 14617 Tel. (585) 467-1696 Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION 100 CARLSON ROAD ROCHESTER, NY	DRAWN BY: A.A.G.	DATE: 4/26/04	SHEET: FIG-2	REV
	SCALE: 1"=200'			



LEGEND

MW−4/P−4

- ⊕ APPROXIMATE LOCATION OF OVERBURDEN MONITORING WELL (MW−4) IN COMPLETED SOIL BORING (P−4)
- ■ OPERATING TRANSFORMER LOCATION ("B" INDICATES BASEMENT LEVEL)
- ● FORMER TRANSFORMER LOCATION ("B" INDICATES BASEMENT LEVEL)

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

REV

SHEET: FIG-3

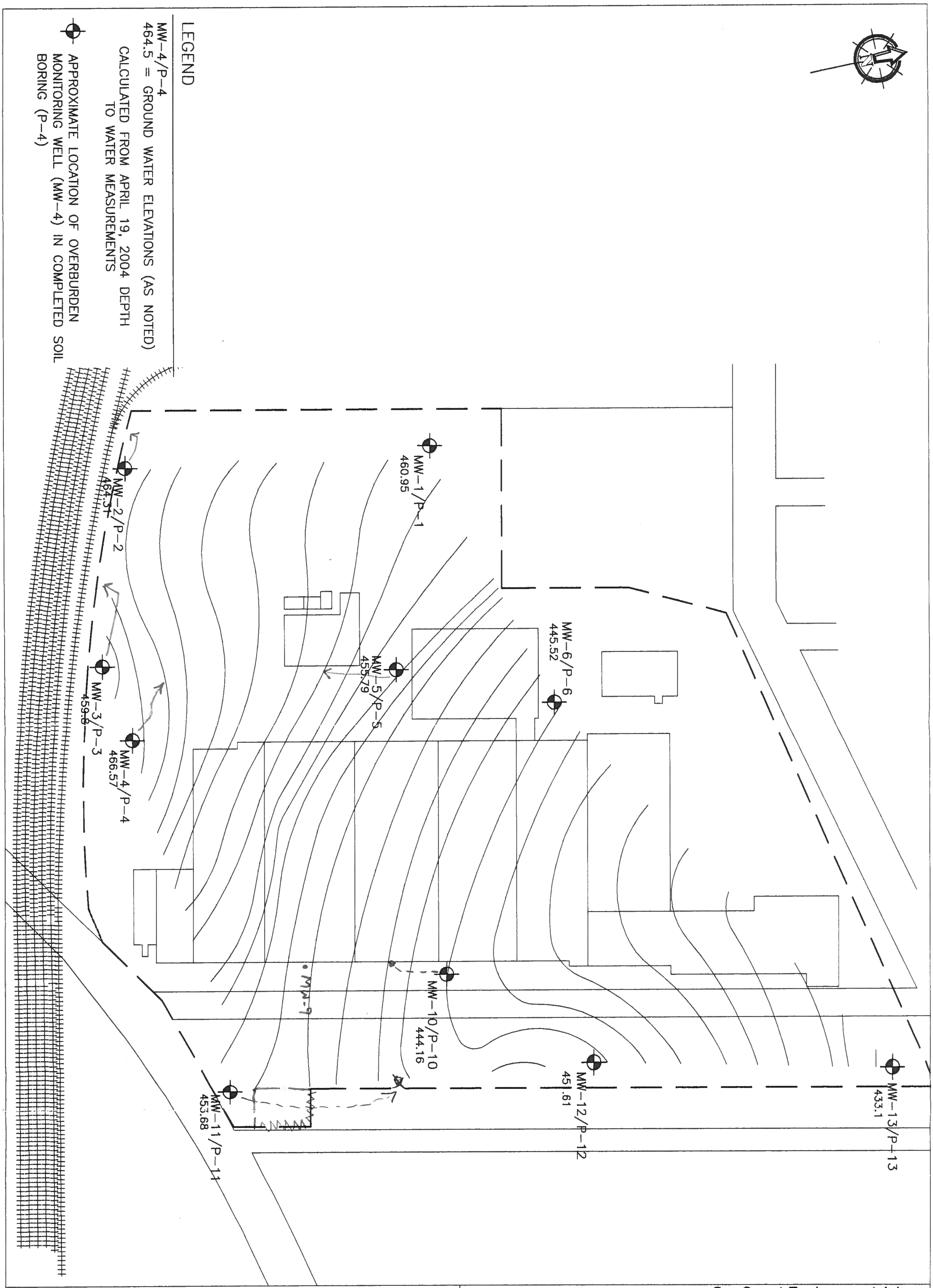
DATE: 4/26/04

DRAWN BY: A.A.G.

SCALE: 1"=200'

OPERATING & FORMER TRANSFORMER
LOCATIONS

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY



GROUND WATER CONTOUR MAP
(APRIL 19, 2004 GROUNDWATER ELEVATIONS)

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY:	DATE:	SHEET:	REV
A.A.G.	4/26/04	FIG-4	
SCALE: 1"=200'			

LEGEND

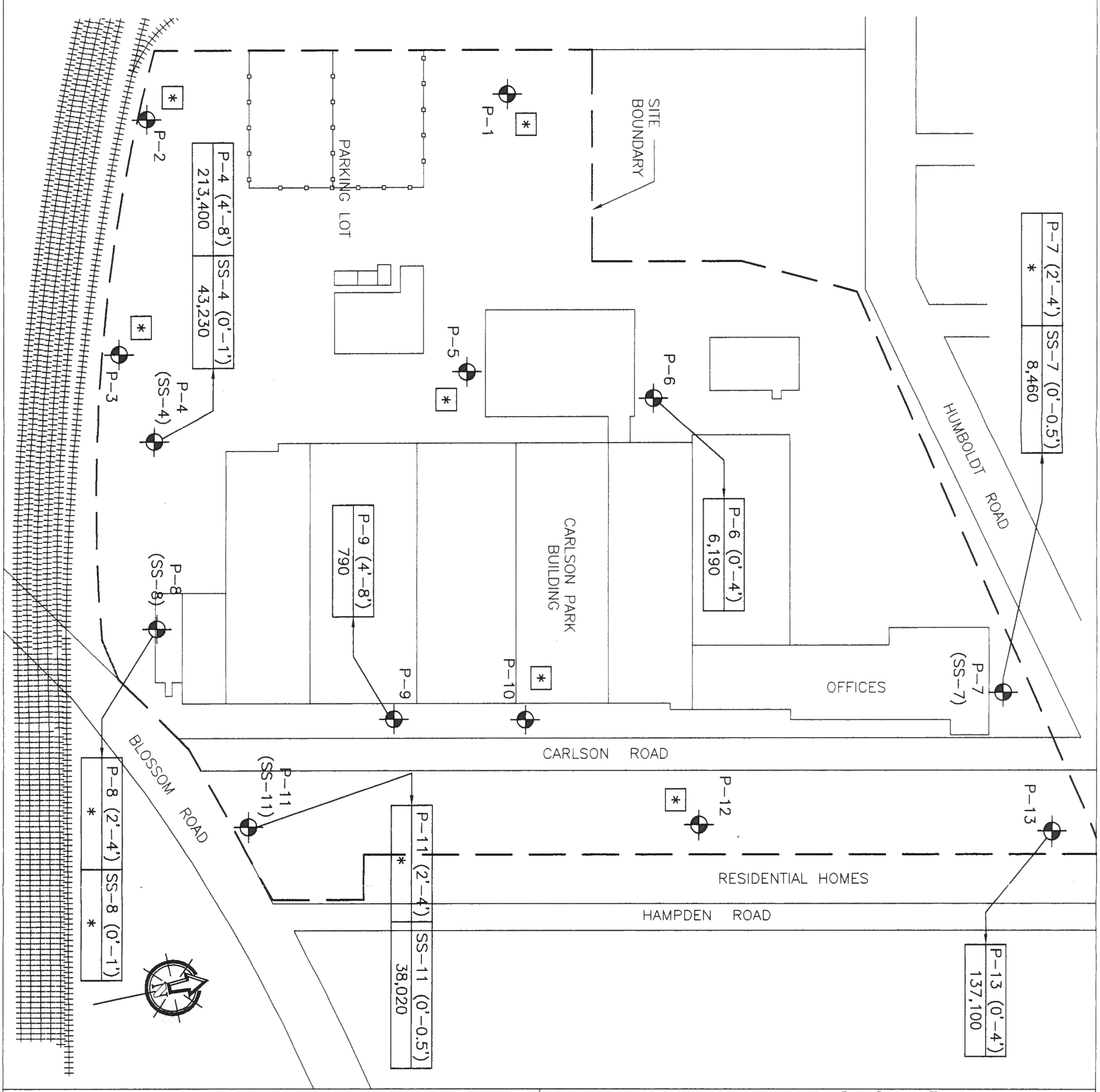
⊕	P-1 AMEC'S SOIL BORING
P-9 (4'-8') 790	TOTAL CONCENTRATION OF SEMI-VOLATILE ORGANIC COMPOUNDS
*	SEMI-VOLATILE ORGANIC COMPOUNDS NOT DETECTED OVER NYSDEC TAGM 4046

NOTES:

(1) CONCENTRATIONS IN ug/kg EQUIVALENT TO PARTS PER BILLION (ppb.)

(2) P-7 (2'-4'): SUBSURFACE SAMPLE WITH DEPTH IN FEET.
SS-7 (0'-0.5'): SURFACE SAMPLE WITH DEPTH IN FEET.

(3) CONCENTRATIONS EXPRESS THE TOTAL VOLUME FOR ALL DETECTED SEMI-VOLATILE ORGANIC COMPOUNDS IN THE SAMPLE.



TOTAL SEMI-VOLATILE ORGANIC COMPOUND DISTRIBUTION IN SOIL			GeoQuest Environmental, Inc. 1134 Titus Avenue Rochester, NY 14617 Tel. (585) 467-1696 Fax (585) 266-4269	
CARLSON REMEDIAL INVESTIGATION 100 CARLSON ROAD ROCHESTER, NY	DRAWN BY: A.A.G.	DATE: 4/26/04	SHEET: FIG-5	REV
	SCALE: 1"=200'			

LEGEND

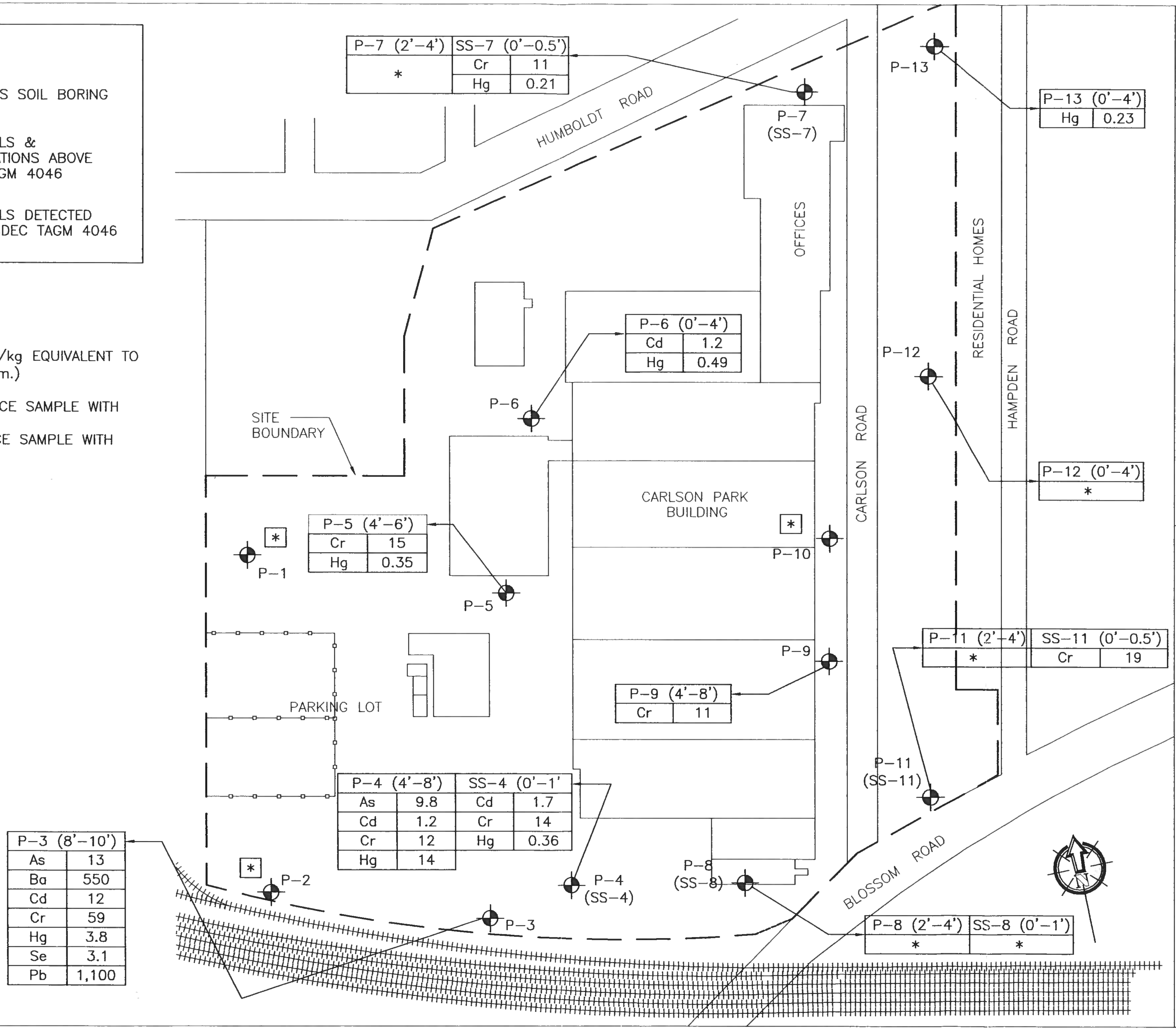
⊕	P-1 AMEC'S SOIL BORING
P-9 (4'-8) / Cr 11	RCRA METALS & CONCENTRATIONS ABOVE NYSDEC TAGM 4046
☒ *	RCRA METALS DETECTED BELOW NYSDEC TAGM 4046

NOTES:

(1) CONCENTRATIONS IN mg/kg EQUIVALENT TO PARTS PER MILLION (ppm.)

(2) P-7 (2'-4'): SUBSURFACE SAMPLE WITH DEPTH IN FEET.
SS-7 (0'-0.5'): SURFACE SAMPLE WITH DEPTH IN FEET.

(3) As-ARSENIC
Ba-BARIUM
Cd-CADMIUM
Cr-CHROMIUM
Hg-MERCURY
Pb-LEAD
Se-SELENIUM

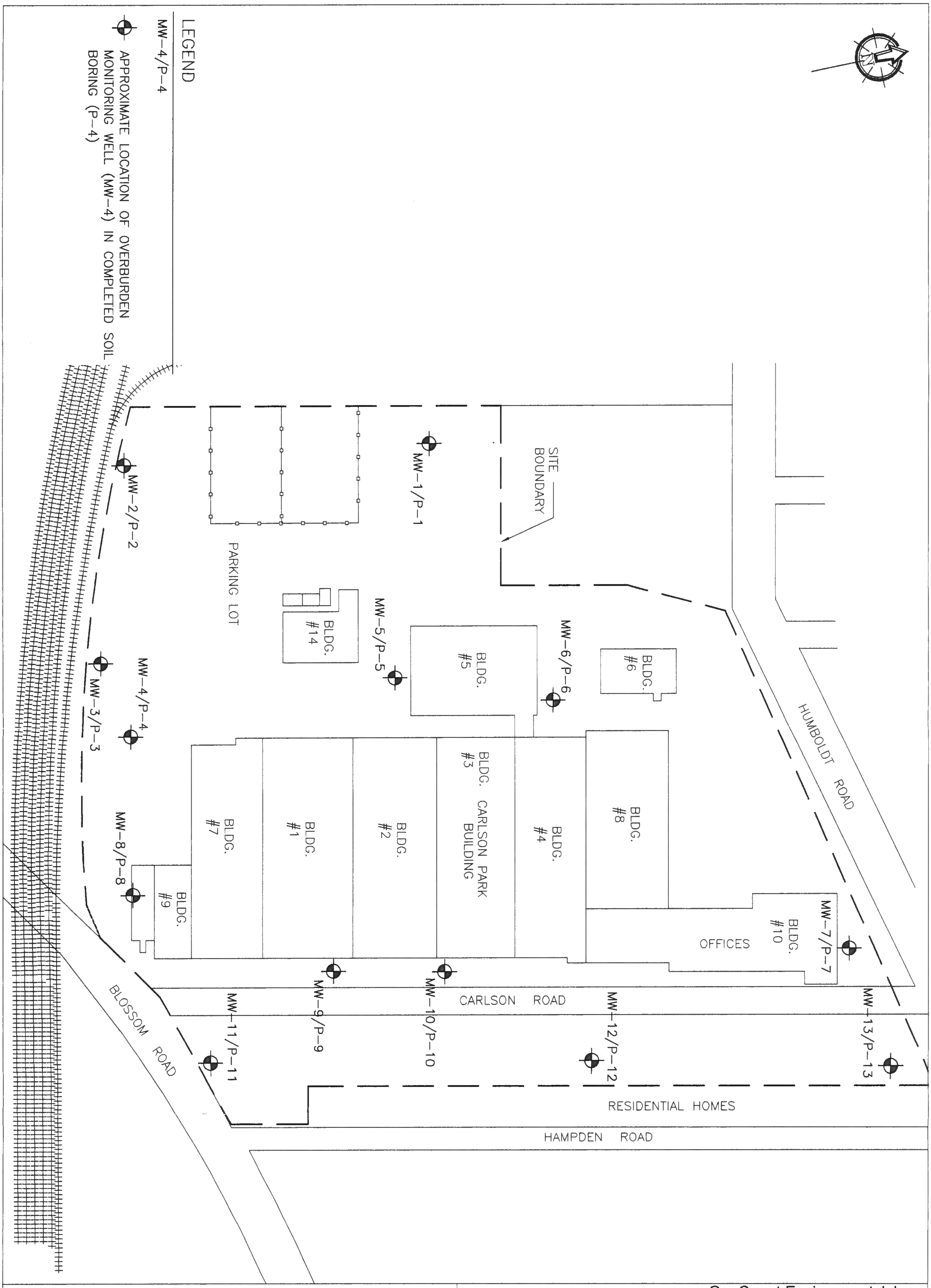


TOTAL RCRA METALS
CONTAMINANT DISTRIBUTION IN SOIL

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

DRAWN BY: A.A.G.	DATE: 4/26/04	SHEET: FIG-6	REV
SCALE: 1"=200'			

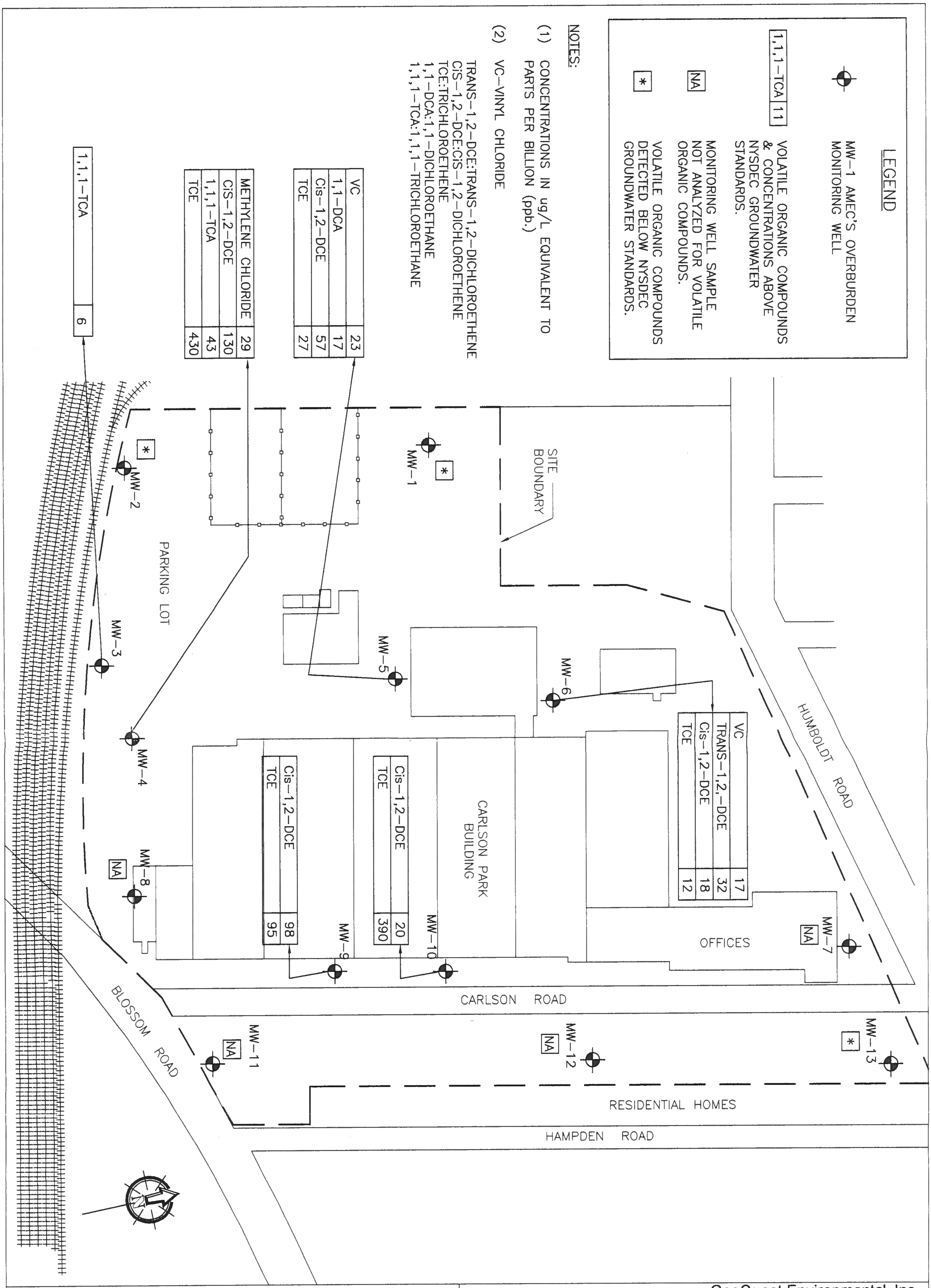


SUBSURFACE EXPLORATION PLAN
AMEC 2000

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY:	DATE:	SHEET:	REV
A.A.G.	4/26/04	FIG-7	
SCALE: 1"=200'			



LEGEND

⊕ MW-1 AMEC'S OVERBURDEN MONITORING WELL

1,1,1-TCA | 11 VOLATILE ORGANIC COMPOUNDS & CONCENTRATIONS ABOVE NYSDEC GROUNDWATER STANDARDS.

NA MONITORING WELL SAMPLE NOT ANALYZED FOR VOLATILE ORGANIC COMPOUNDS.

* VOLATILE ORGANIC COMPOUNDS DETECTED BELOW NYSDEC GROUNDWATER STANDARDS.

NOTES:

(1) CONCENTRATIONS IN ug/L EQUIVALENT TO PARTS PER BILLION (ppb.)

(2) VC-VINYL CHLORIDE
TRANS-1,2-DCE:TRANS-1,2-DICHLOROETHENE
CiS-1,2-DCE:CiS-1,2-DICHLOROETHENE
TCE:TRICHLOROETHENE
1,1-DCA:1,1-DICHLOROETHANE
1,1,1-TCA:1,1,1-TRICHLOROETHANE

VC	23
1,1-DCA	17
Cis-1,2-DCE	57
TCE	27

METHYLENE CHLORIDE	29
CiS-1,2-DCE	130
1,1,1-TCA	43
TCE	430

1,1,1-TCA	6

VC	17
TRANS-1,2,-DCE	32
Cis-1,2-DCE	18
TCE	12

Cis-1,2-DCE	98
TCE	95

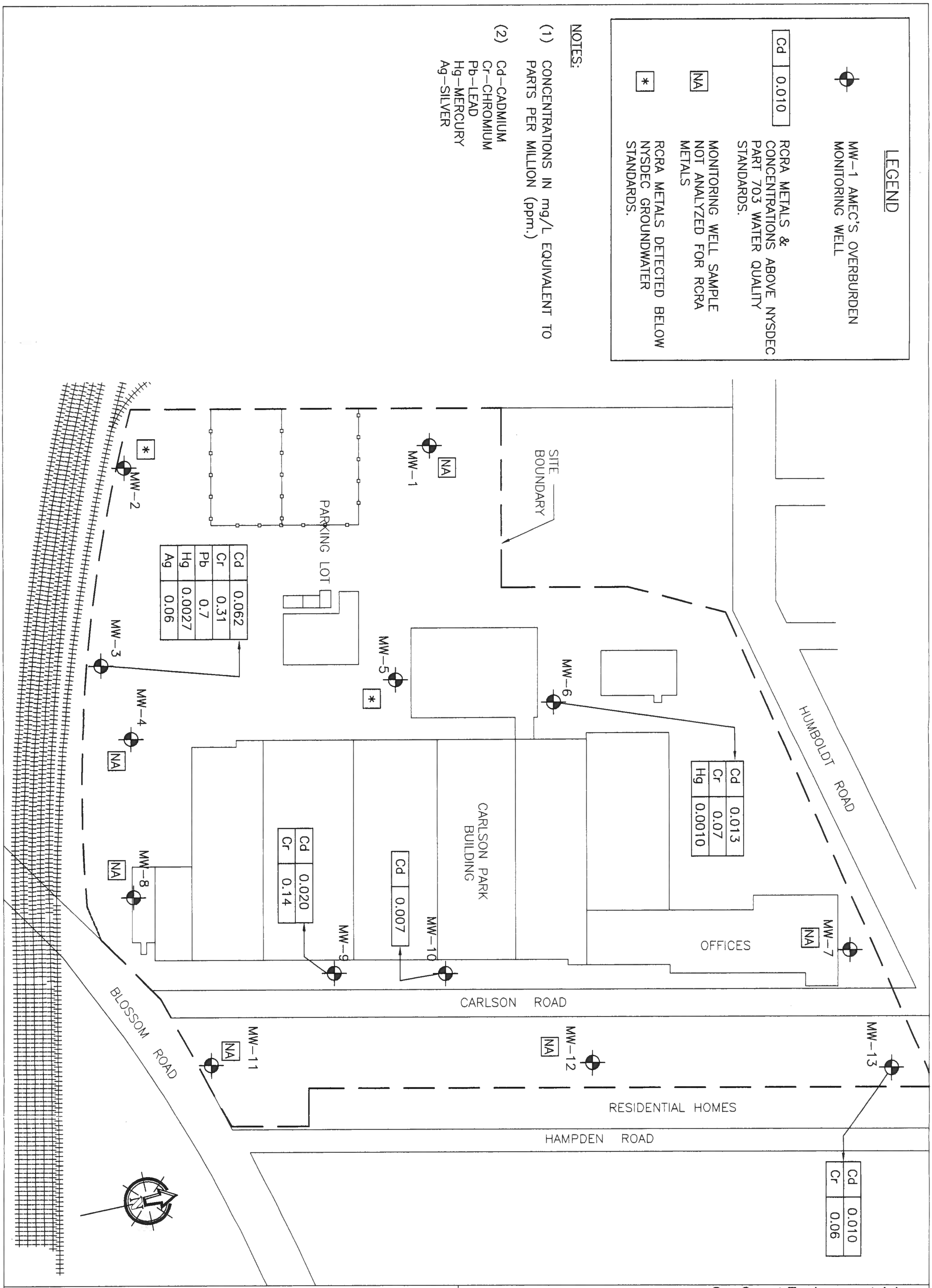
Cis-1,2-DCE	20
TCE	390

VOLATILE ORGANIC COMPOUND
DISTRIBUTION IN GROUNDWATER

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY: A.A.G.
DATE: 4/26/04
SCALE: 1"=200'
SHEET: FIG-8
REV



NOTES:

(1) CONCENTRATIONS IN mg/L EQUIVALENT TO PARTS PER MILLION (ppm.)

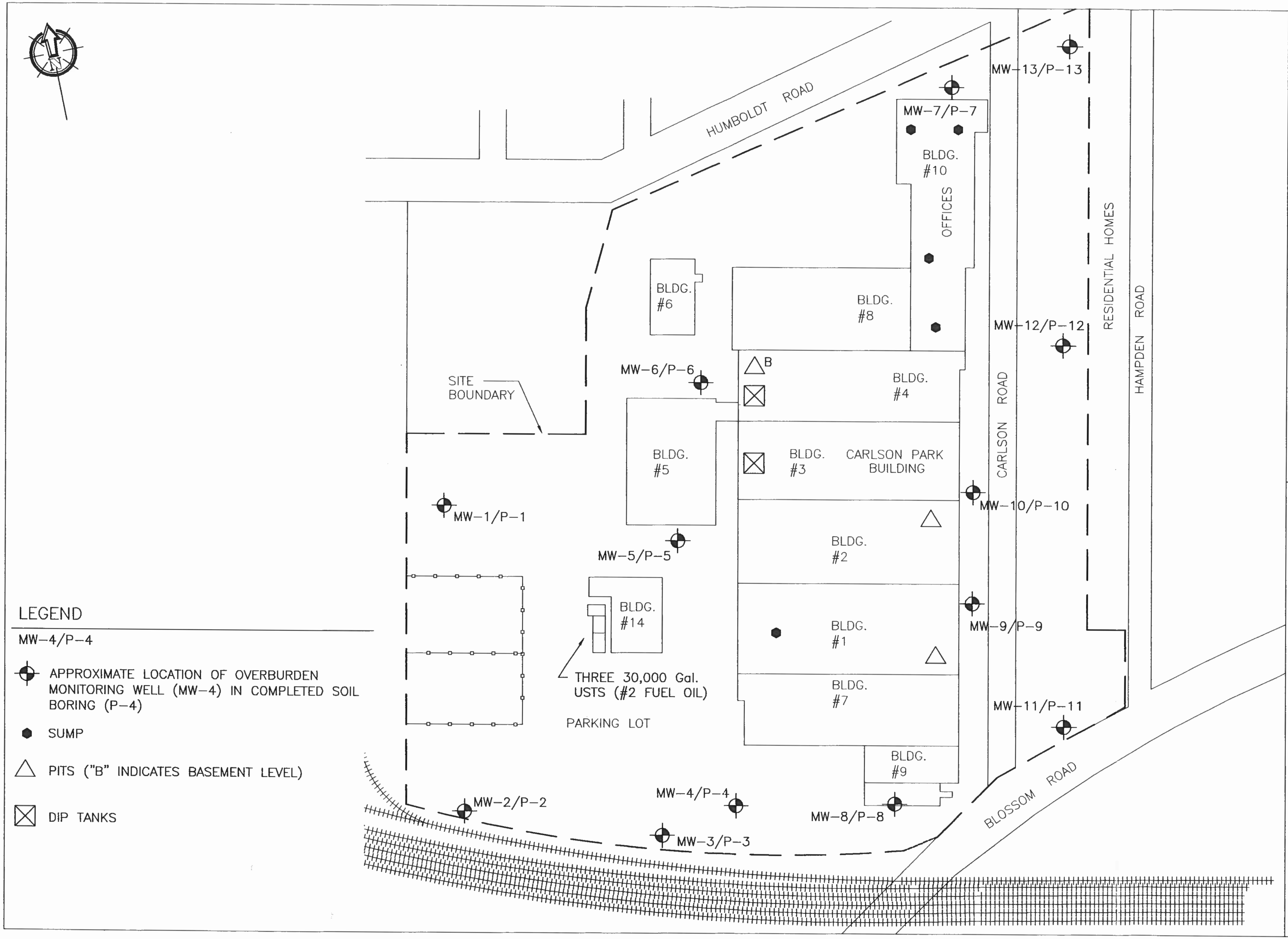
(2) Cd–CADMIUM
Cr–CHROMIUM
Pb–LEAD
Hg–MERCURY
Ag–SILVER

TOTAL RCRA METALS
CONTAMINANT DISTRIBUTION IN
GROUNDWATER

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

DRAWN BY: A.A.G.
DATE: 4/26/04
SCALE: 1"=200'
SHEET: FIG-9
REV



LEGEND

MW-4/P-4

⌖ APPROXIMATE LOCATION OF OVERBURDEN MONITORING WELL (MW-4) IN COMPLETED SOIL BORING (P-4)

● SUMP

△ PITS ("B" INDICATES BASEMENT LEVEL)

☒ DIP TANKS

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

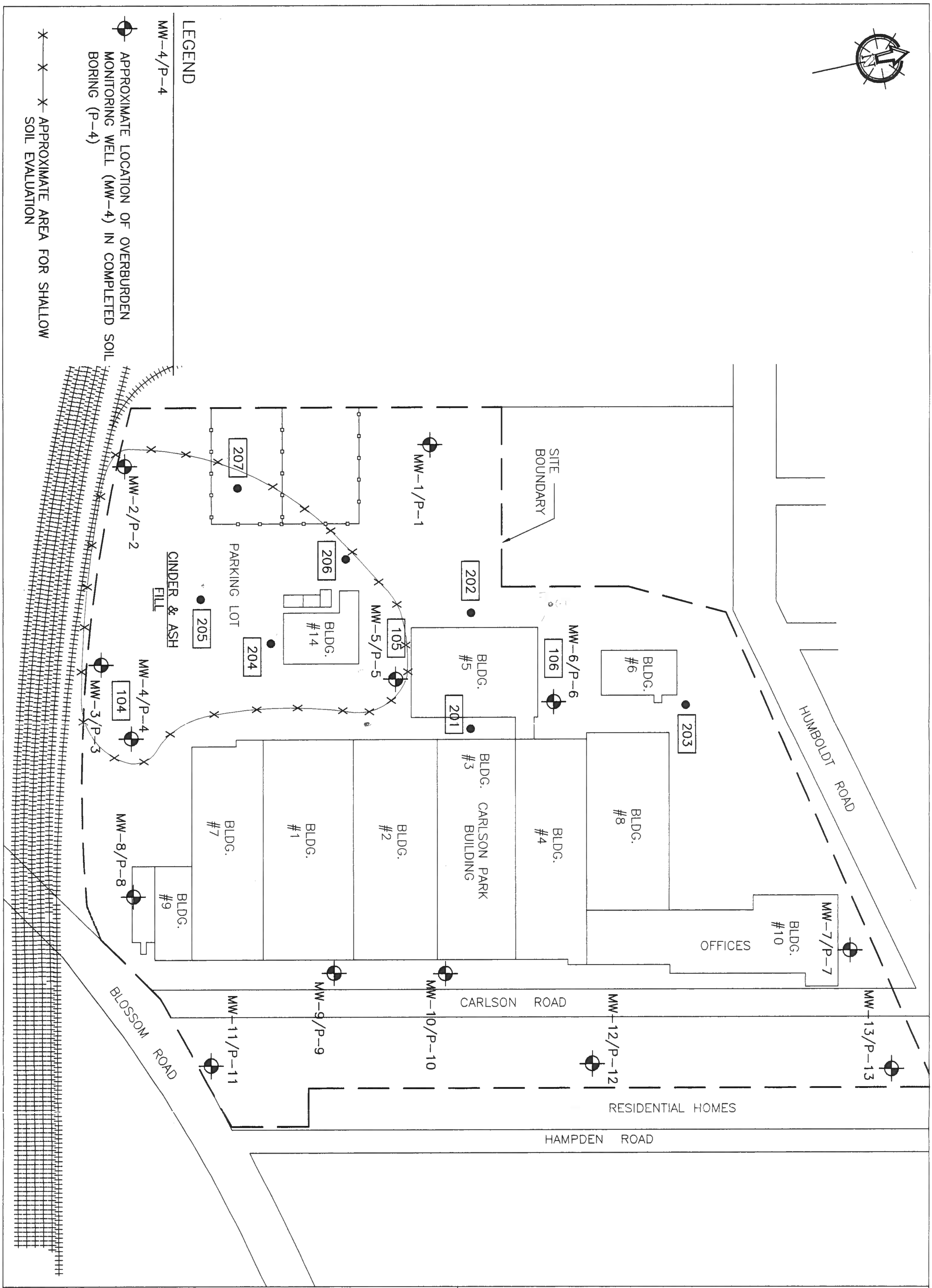
REV

SHEET: FIG-10

SUMPS, PITS, DIP TANKS & TANK LOCATIONS

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY: A.A.G.
DATE: 4/26/04
SCALE: 1"=200'

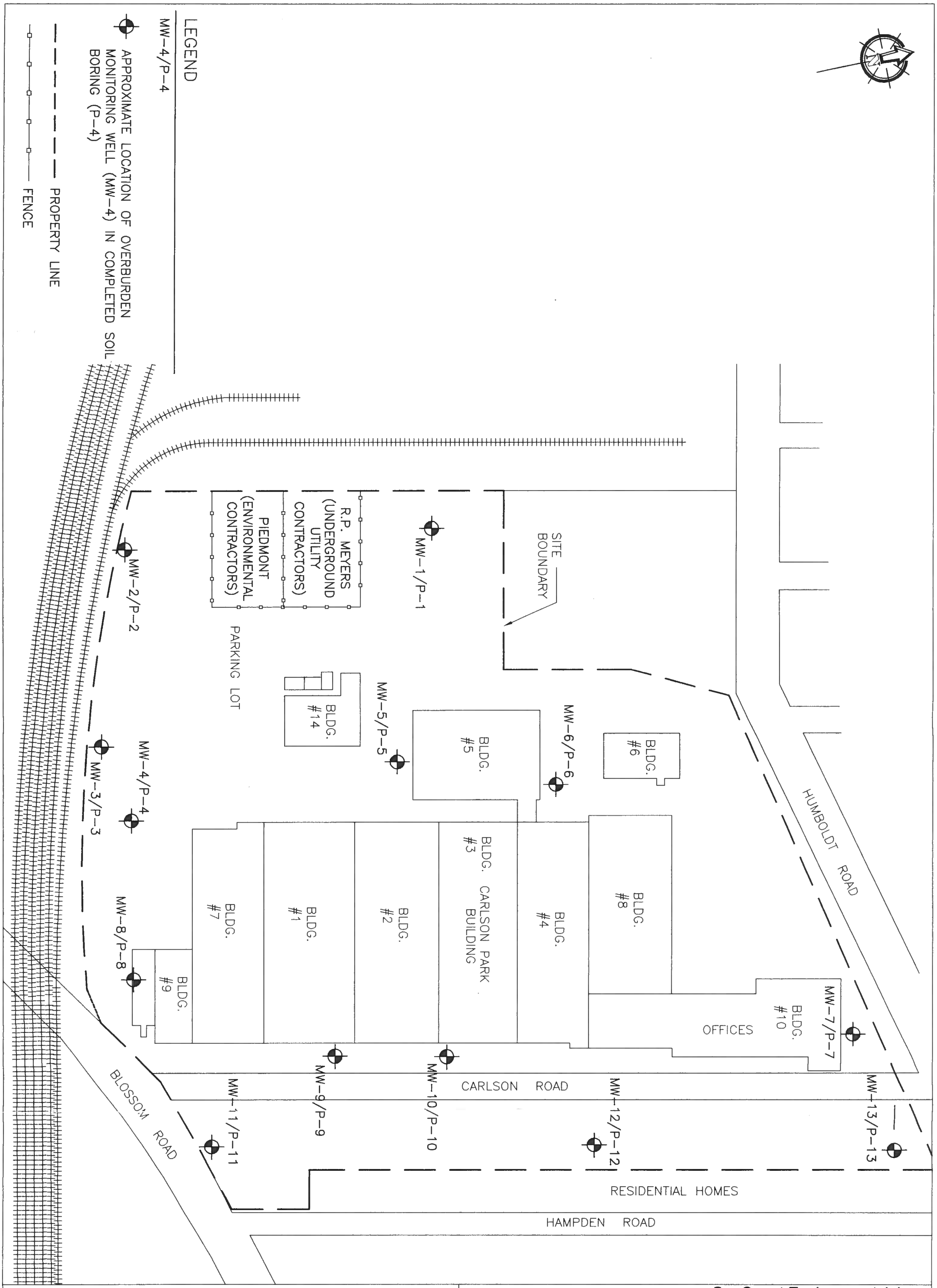


SHALLOW SOIL EVALUATION

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY: A.A.G.
DATE: 4/26/04
SHEET: FIG-13
REV
SCALE: 1"=200'

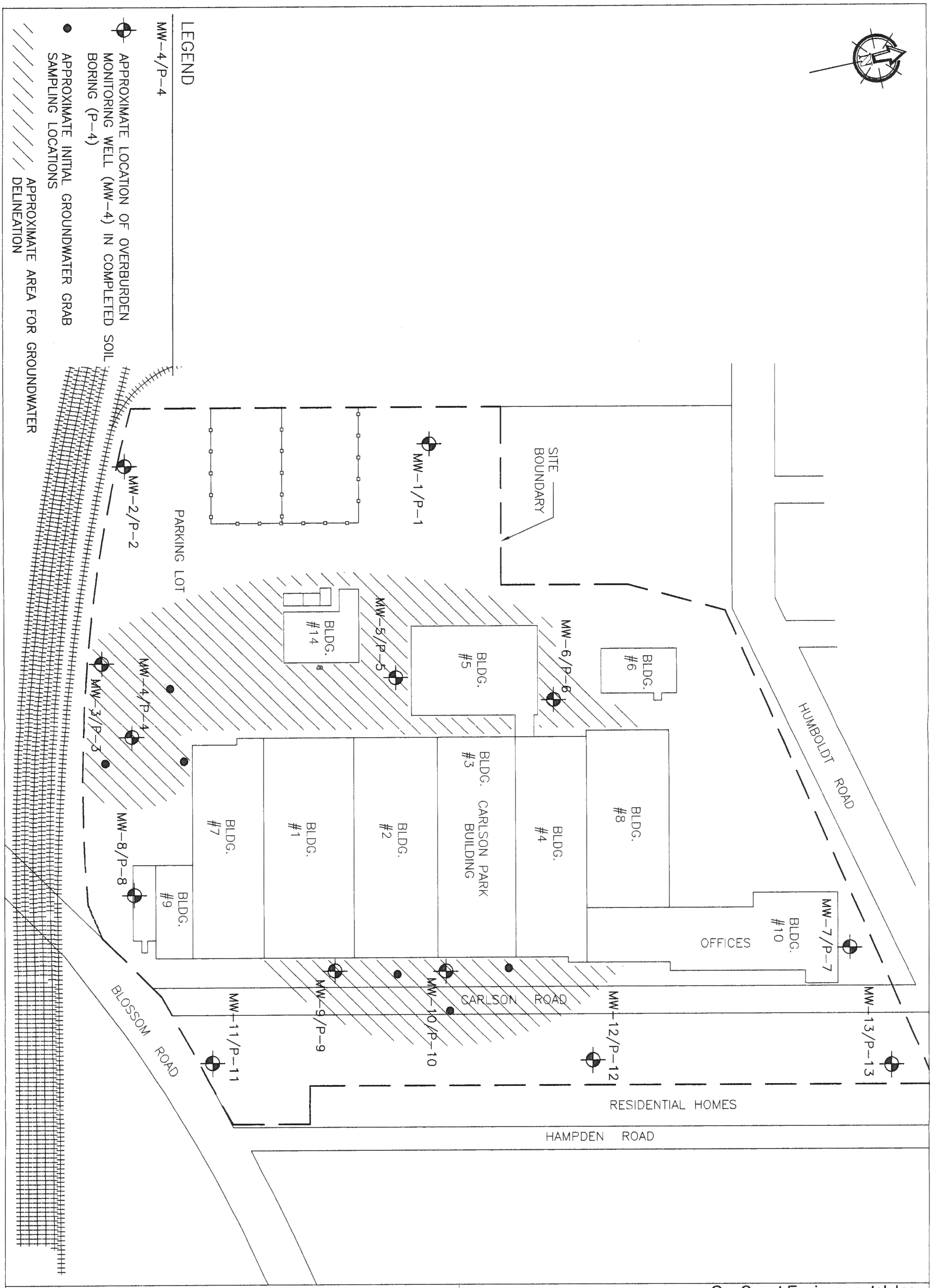


PROPERTY LINE & CONTRACTOR'S LOCATIONS

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY:	DATE:	SHEET:	REV
A.A.G.	4/26/04	FIG-11	
SCALE: 1"=200'			



PROPOSED VOLATILE ORGANIC COMPOUND
DELINEATION IN GROUNDWATER

GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, NY 14617
Tel. (585) 467-1696
Fax (585) 266-4269

CARLSON REMEDIAL INVESTIGATION
100 CARLSON ROAD
ROCHESTER, NY

DRAWN BY: A.A.G.	DATE: 4/26/04	SHEET: FIG-12	REV
SCALE: 1"=200'			

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-3-00 / 1530
Sampler S. DeMeo
Well I.D. No. MW-1
Weather 22° F
Date/Time Sampled 12-3-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level 6.71 ft.
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics Light turbidity
To be completed by Project Engineer/Geologist:
Casing elevation 464.34 ft.
Distance from surface to measuring point
Static water level (depth below surface) 6.71 ft.
Water table elevation 457.63 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1530
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments US EPA 8260, US EPA 8270 samples collected – not enough water for RCRA 8 Metals, US EPA 8080 PCB" and Total Cyanide or field parameters during sampling event period.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-2-00 / 1430
Sampler S. DeMeo
Well I.D. No. MW-2
Weather 18° F
Date/Time Sampled 12-2-00 / 12-3-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing
(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level 10.30 ft.
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics Light turbidity
To be completed by Project Engineer/Geologist:
Casing elevation 472.10 ft.
Distance from surface to measuring point
Static water level (depth below surface) 10.30 ft.
Water table elevation 461.80 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1430
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected – not enough well water for field parameters. Total Cyanide and PCB's samples Collected on 12-3-00.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-2-00 / 1200
Sampler S. DeMeo

Well I.D. No. MW-3
Weather 18° F
Date/Time Sampled 12-2-00
Date Shipped 12-4-00

Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment ____
Well depth ____
Static water level 11.08 ft.
If purged dry, water level at time of sampling ____
80% Recovery level ____

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity
1230	11.6	6.94	1.61	10.97	999

Notable water characteristics Turbid

To be completed by Project Engineer/Geologist:

Casing elevation 469.07 ft.
Distance from surface to measuring point ____
Static water level (depth below surface) 11.08 ft.
Water table elevation 457.99 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1200
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected and field parameters measured as noted above.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-3-00 / 1500
Sampler S. DeMeo
Well I.D. No. MW-4
Weather 22° F
Date/Time Sampled 12-3-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)
Water level measuring equipment ______
Well depth ______
Static water level 7.92 ft.
If purged dry, water level at time of sampling ______
80% Recovery level ______

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics Light turbidity
To be completed by Project Engineer/Geologist:
Casing elevation 463.11 ft.
Distance from surface to measuring point ______
Static water level (depth below surface) 7.92 ft.
Water table elevation 455.19 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1500
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HN0₃ / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments US EPA 8260, US EPA 8270 samples collected – not enough water for RCRA 8 Metals, US EPA 8080 PCB" and Total Cyanide or field parameters during sampling event period.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-3-00 / 1315
Sampler S. DeMeo
Well I.D. No. MW-5
Weather 22° F
Date/Time Sampled 12-3-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level 4.41 ft.
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity
1345	10.8	6.80	1.79	8.92	374

Notable water characteristics Light turbidity
To be completed by Project Engineer/Geologist:
Casing elevation 458.35 ft.
Distance from surface to measuring point
Static water level (depth below surface) 4.41 ft.
Water table elevation 453.94 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1315
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected and field parameters measured.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-3-00 / 1130
Sampler S. DeMeo
Well I.D. No. MW-6
Weather 22° F
Date/Time Sampled 12-3-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level 9.21 ft.
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity
1200	13.1	6.74	2.10	8.69	354

Notable water characteristics Light turbidity
To be completed by Project Engineer/Geologist:
Casing elevation 453.01 ft.
Distance from surface to measuring point
Static water level (depth below surface) 9.21 ft.
Water table elevation 443.80 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1130
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected and field parameters measured.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged
Sampler S. DeMeo

Well I.D. No. MW-7
Weather 22° F
Date/Time Sampled DRY WELL
Date Shipped

Duplicate I.D.
Via

B. Field Measurements: All depths from this measuring point –

(Take all measurements on north side of well)
Water level measuring equipment
Well depth
Static water level
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics
To be completed by Project Engineer/Geologist:
Casing elevation 437.04 ft.
Distance from surface to measuring point
Static water level (depth below surface)
Water table elevation

C. Sampling Methods

Well purging performed? Yes No
Purging equipment
Dedicated? Yes No
Pump depth: Below measuring point
Below water level
Sample collection point
Purge Time
Sample depth (below water level)
GPM

D. Equipment Decontamination Methods

Water level measuring equipment
Purging equipment
Sample collection equipment

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size

Filter apparatus/size
Lab
Chain of Custody procedures followed? Yes No
Comments No samples – well MW-7 was dry

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged 12-2-00 / 1400
Sampler S. DeMeo
Well I.D. No. MW-9
Weather 18° F
Date/Time Sampled 12-2-00
Date Shipped 12-4-00
Duplicate I.D. N/A
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level 9.78 ft.
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity
1445	12.9	7.73	0.765	8.65	43

Notable water characteristics Clear water

To be completed by Project Engineer/Geologist:

Casing elevation 455.17 ft.
Distance from surface to measuring point
Static water level (depth below surface) 9.78 ft.
Water table elevation 445.39 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1400
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected and field parameters measured.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
Well I.D. No. MW-10
AMEC Job No. 0-114-002174
Weather 22° F
Date/Time Purged 12-3-00 / 1000
Date/Time Sampled 12-3-00
Duplicate I.D. N/A
Sampler S. DeMeo
Date Shipped 12-4-00
Via N/A

B. **Field Measurements: All depths from this measuring point** – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment ____
Well depth ____
Static water level 8.78 ft.
If purged dry, water level at time of sampling ____
80% Recovery level ____

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity
1030	14.4	7.41	1.48	9.34	72

Notable water characteristics Clear water
To be completed by Project Engineer/Geologist:
Casing elevation 451.18 ft.
Distance from surface to measuring point ____
Static water level (depth below surface) 8.78 ft.
Water table elevation 442.40 ft.

C. **Sampling Methods**

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1000
Sample depth (below water level) Mid point
GPM N/A

D. **Equipment Decontamination Methods**

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. **Containerization & Preservation**

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments Full sample set collected and field parameters measured.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged
Sampler S. DeMeo
Well I.D. No. MW-11
Weather 22° F
Date/Time Sampled DRY WELL
Date Shipped
Duplicate I.D.
Via

B. Field Measurements: All depths from this measuring point –

(Take all measurements on north side of well)
Water level measuring equipment
Well depth
Static water level
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics
To be completed by Project Engineer/Geologist:
Casing elevation 459.17 ft.
Distance from surface to measuring point
Static water level (depth below surface)
Water table elevation

C. Sampling Methods

Well purging performed? Yes No
Purging equipment
Dedicated? Yes No
Pump depth: Below measuring point
Below water level
Sample collection point
Purge Time
Sample depth (below water level)
GPM

D. Equipment Decontamination Methods

Water level measuring equipment
Purging equipment
Sample collection equipment

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size

Filter apparatus/size
Lab
Chain of Custody procedures followed? Yes No
Comments No samples – well MW-11 was dry

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged ______
Sampler S. DeMeo
Well I.D. No. MW-12
Weather 22° F
Date/Time Sampled DRY WELL
Date Shipped ______
Duplicate I.D. ______
Via ______

B. Field Measurements: All depths from this measuring point –

(Take all measurements on north side of well)
Water level measuring equipment ______
Well depth ______
Static water level ______
If purged dry, water level at time of sampling ______
80% Recovery level ______

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics ______
To be completed by Project Engineer/Geologist:
Casing elevation 455.25 ft.
Distance from surface to measuring point ______
Static water level (depth below surface) ______
Water table elevation ______

C. Sampling Methods

Well purging performed? Yes No
Purging equipment ______
Dedicated? Yes No
Pump depth: Below measuring point ______
Below water level ______
Sample collection point ______
Purge Time ______
Sample depth (below water level) ______
GPM ______

D. Equipment Decontamination Methods

Water level measuring equipment ______
Purging equipment ______
Sample collection equipment ______

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size

Filter apparatus/size ______
Lab ______
Chain of Custody procedures followed? Yes No
Comments No samples – well MW-12 was dry

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
Well I.D. No. MW-13
AMEC Job No. 0-114-002174
Weather 22° F
Date/Time Purged 12-3-00 / 1540
Date/Time Sampled 12-3-00
Duplicate I.D. N/A
Sampler S. DeMeo
Date Shipped 12-4-00
Via N/A

B. Field Measurements: All depths from this measuring point – Top of PVC well casing

(Take all measurements on north side of well)

Water level measuring equipment ____________
Well depth ____________
Static water level 3.70 ft.
If purged dry, water level at time of sampling ____________
80% Recovery level ____________

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics Light turbidity with orange-rust colored water
To be completed by Project Engineer/Geologist:
Casing elevation 434.76 ft.
Distance from surface to measuring point ____________
Static water level (depth below surface) 3.70 ft.
Water table elevation 431.06 ft.

C. Sampling Methods

Well purging performed? Yes ✗ No
Purging equipment Disposable bailer
Dedicated? Yes No ✗ Factory cleaned
Pump depth: Below measuring point N/A
Below water level N/A
Sample collection point Mid point of water
Purge Time 1540
Sample depth (below water level) Mid point
GPM N/A

D. Equipment Decontamination Methods

Water level measuring equipment Heron Dipper-T electronic water level meter
Purging equipment Disposable bailer polyethylene ¾ inch
Sample collection equipment Disposable bailer

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260	HCl / chill	N/A	2 – 40 ml vials glass
US EPA 8270	Chill	N/A	1 – 1 liter amber glass bottle
RCRA 8 metals	HNO_3 / chill	N/A	1 – 1 liter plastic bottle
US EPA 8080 PCB's	Chill	N/A	1 – 1 liter amber glass bottle
Total Cyanide	NaOH / chill	N/A	1 – 1 quart plastic bottle

Filter apparatus/size N/A
Lab Upstate Laboratories, Inc., Syracuse, New York
Chain of Custody procedures followed? Yes ✗ No
Comments US EPA 8260, US EPA 8270 samples collected – not enough water for RCRA 8 Metals, US EPA 8080 PCB" and Total Cyanide or field parameters during sampling event period.

amec

GROUNDWATER SAMPLING PROCEDURES DOCUMENTATION FORM

A.

Project Name Carlson Park RI
AMEC Job No. 0-114-002174
Date/Time Purged
Sampler S. DeMeo

Well I.D. No. Trip Blank
Weather
Date/Time Sampled
Date Shipped

Duplicate I.D.
Via

B. Field Measurements: All depths from this measuring point –

(Take all measurements on north side of well)

Water level measuring equipment
Well depth
Static water level
If purged dry, water level at time of sampling
80% Recovery level

Time	Temp ° C	pH	Specific Conductance µmhos/cm	DO mg/L	Turbidity

Notable water characteristics
To be completed by Project Engineer/Geologist:
Casing elevation
Distance from surface to measuring point
Static water level (depth below surface)
Water table elevation

C. Sampling Methods

Well purging performed? Yes No
Purging equipment
Dedicated? Yes No
Pump depth: Below measuring point
Below water level
Sample collection point
Purge Time
Sample depth (below water level)
GPM

D. Equipment Decontamination Methods

Water level measuring equipment
Purging equipment
Sample collection equipment

E. Containerization & Preservation

Parameter	Preservation	Field Filtering	Container Type/Size
US EPA 8260 Trip Blank			1 – 40 ml glass vial

Filter apparatus/size
Lab
Chain of Custody procedures followed? Yes No
Comments Laboratory supplied trip blank

Groundwater Sampling Procedures

I. Introduction

This protocol describes the procedures to be used to collect groundwater samples from groundwater monitoring wells. During heavy precipitation events, groundwater sampling will be discontinued until precipitation ceases.

II. Materials

The following materials, as required, shall be available during groundwater sampling:

- Photoionization detector (PID) – HNU or equivalent.
- Appropriate health and safety equipment as specified in the Health and Safety Plan.
- Plastic sheeting (for each sampling location).
- Polypropylene or HDPE bailers.
- Polypropylene line
- Buckets to measure purge water.
- Water level probe.
- Conductivity/temperature meter.
- pH meter.
- Glass bowl.
- Laboratory-supplied sample containers.
- Field filter if required for metals sampling.
- Preservatives as provided by the laboratory.
- Appropriate transport containers (coolers) with ice and labeling, packing, and shipping materials.
- Bound field notebook.
- Chain-of-custody forms.
- Indelible ink pens.
- Site map showing well locations.

III. Procedures

A. The procedures to sample monitoring wells will be as follows:

1. Review materials check list (Part II above) to ensure the appropriate equipment has been acquired.
2. Record the following information in the field notebook:
    - Project name and number.
    - Date and time.
    - Sampling personnel.
    - Well number.
    - Weather conditions.
3. Label all sample containers.
4. Use safety equipment, as required in the Health and Safety Plan.

5. Place plastic sheeting adjacent to the well to use as a clean work area.
6. Establish the background reading with the PID and record the reading in the notebook.
7. Remove steel roadway cover from well and, if rusted or broken, replace.
8. Open the well cap while standing upwind of the well. Remove well camp and place on the plastic sheeting. Insert PID probe in the breathing zone above the well casing. Proceed if PID reading is below 1 ppm. If PID reading is above 1 ppm, move upwind from well for 5 minutes to allow the well headspace volatiles to dissipate. Repeat PID reading. If above 1 ppm, follow instructions in the Health and Safety Plan.
9. Lay the sample collection and field parameter measurement out on the plastic sheeting.
10. Check for presence of floating (LNAPL) and sinking (DNAPL) or free-product, water level, and bottom of well depth measurements using an electric interface probe or a translucent bailer. Record observations in the field notebook. Clean the probe after each use. (Note: Observations for LNAPL and DNAPL should be checked at the wells prior to initiating any sampling activities).
11. Obtain a sample of the standing water at the top of the water column using a bailer and pour into a glass bowl. Observe the sample and note the sample turbidity and the presence or absence of a sheen in the field notebook. Also, check the sample for light and dense non-aqueous phase liquid (NAPL) prior to sampling and, should sufficient volume exist, the LNAPL or DNAPL will be sampled separately for laboratory analyses of TCL, VOCs, SVOCs, and PCBs.
12. Calculate the number of gallons of water in the well using the length of the water column (in feet) and record the well volume in the field notebook.
13. Check the calibration of the pH meter. Then measure the pH, temperature, and conductivity of the sample and record these measurements as well as the sample's physical appearance, and record in the field notebook.
14. Using a bottom-loading bailer or pump, purge water from the well until there is no more than a 10% variance between indicator parameters measured in the field (temperature, pH, turbidity, and conductivity) between two successive well volumes purged, or up to five well volumes (for high turbidity, see Appendix B). A minimum of three well volumes should be removed, unless the well runs dry, in which case the water that comes into the well will be sampled (RCRA Groundwater Monitoring Technical Enforcement Guidance Document, EPA, September 1986). Water levels in future bedrock wells will not be drawn down into the open rock interval (well intake). Dispose of purge water on the ground at well unless there is evidence of contamination (visually apparent or suggested by elevated PID readings, or previous laboratory results). If evidence of contamination is apparent using the above criteria, place the water in 55-gallon drums or other suitable containers.
15. After the appropriate purge volume of groundwater in the well has been removed or if the well has been bailed dry and allowed to recover, obtain the groundwater sample needed for analysis with a stainless steel bottom-loading bailer and pour the groundwater directly from the sampling device into the appropriate sampling containers and tightly screw on the caps. To prepare sample duplicates, all sample containers will be filled from the same bailer. If this is not possible, the first bailer volume will be used to fill all the sample containers for volatile analyses and

successive bailer volumes will be divided between the sample containers until they are full. The preferred order of sample collection after purging is as follows: volatile organics, extractable organics, total metals, filtered metals, and any remaining fractions. For samples requiring filtration, pour groundwater from the bailer into a pre-cleaned glass bowl. Using a peristaltic pump, dedicated or pre-cleaned tubing, and the filter, pump the sample from the bowl into the sample container. The filtering device should be made of polyethylene, polypropylene, or boro-silicate glass. The filtering apparatus should be pre-cleaned by rinsing with 10% HNO_3 solution, followed by a demonstrated analyte-free deionized water rinse, and should be cleaned in the same manner between samples. Also, a field rinse blank for metals analysis must be collected for this apparatus at a frequency of one per filtration event, not to exceed one per day. The filter used should be cellulose-based membrane filter. Samples must be filtered immediately after collection to minimize changes in the concentration of the substances of interest. Samples should be passed through the filtration apparatus once. Samples should then be preserved immediately with undiluted, ultra-pure HNO_3 and the pH checked to ensure proper pH has been attained. All paperwork accompanying the samples to the laboratory should clearly state that the samples have been filtered in order to avoid a second filtration at the laboratory.

16. Place an initialed and dated length of tape around the cap and the sample container as a custody seal. Note the sample collection time on the sample label. Secure with packing material and store at 4°C on wet ice in an insulated transport container provided by the laboratory.
17. Replace the well cap and steel roadway cover.
18. Record the time that sampling procedures were completed in the field notebook.
19. Clean the non-dedicated sampling equipment. Place all disposable sampling materials (plastic sheeting and health and safety equipment) in a garbage bag for appropriate disposal following completion of field activities. Go to next well and repeat steps 1 through 18 until all wells are sampled.
20. Complete sample packaging, shipping, handling, and chain-of-custody procedures.

Soil Head Space Screening (Field Technique)

I. Materials:

- Photoionization detector (PID)
- Aluminum foil
- Clear 8-oz. to 16-oz. glass large-mouth containers with lids
- Stainless steel spoon
- Field notebook

II. Procedure:

1. Check PID to ensure that it is working properly.
2. Using standard operating procedure (SOP) for collecting soil, sludge, or sediment, half-fill the clean glass jar with sample. Wrap Teflon tape around the threads of the jar. Place a piece of aluminum foil over the top of the jar and tightly seal the jar. Label the jar indicating the sampling location, depth, and date. Store the jar upside down until the sample is analyzed.
3. If jars are not available, collect the sample using a Ziploc® bag. Seal and label the bag as specified above.
4. Shake the sample vigorously for approximately 15 seconds.
5. If necessary, warm the sample to room temperature (70° F) by placing the jar in a heated room or vehicle. This step is very important when the ambient temperature is below 32° F.
6. After waiting approximately 15 minutes, carefully unscrew the lid of the jar without disturbing the aluminum foil and Teflon tape. Pierce a hole through the aluminum foil using the tip of the PID. If using Ziploc® bags, open the bag slightly and place the tip of the probe into the opening. Do not insert the probe into the soil and avoid the uptake of water droplets or soil particulates.
7. Following probe insertion, record the highest meter response. Using the foil seal/probe insertion method, maximum response should occur between 2 seconds and 5 seconds. Erratic PID response may occur at high organic vapor concentrations or conditions of elevated headspace moisture in which case the headspace data should be qualified or discounted.
8. Record the sample location, depth, medium character (i.e., clay or sand), and PID reading in the field notebook. Also indicate ambient temperature, humidity, and whether moisture was present in the jar. These points are important because on very cold days volatilization of organic compounds is reduced and water vapor present in the jar may cause the PID to give a false reading. Be consistent in your procedure and in your recording of the data.
9. Samples collected for headspace screening should not be retained for laboratory analysis. Dispose of the soil and jar appropriately.

Groundwater Level Measurement Procedures

I. Introduction

Water levels will be measured using an electronic well probe. Water level readings will be made twice at each location to verify accuracy.

II. Materials

- Photoionization detector (PID).
- Appropriate health and safety equipment as specified in the Health and Safety Plan.
- Water level probe with 0.01-inch gradations.
- Laboratory-type non-phosphate soap (Alconox or equivalent).
- Distilled water.
- Plastic sheeting (optional).

III. Procedures

A. A detailed procedure for obtaining water levels will be as follows:

1. Identify the site and well number, the date, time, personnel, and weather conditions in the bound field book.
2. Use safety equipment as specified in the Health and Safety Plan.
3. Clean the water level probe tape with a soapy (Alconox) water rinse followed by a distilled water rinse. Discard rinse water adjacent to each well.
4. Put clean plastic sheeting on the ground next to the well if necessary to prevent the probe tape from contacting the ground.
5. Establish a background reading with the PID.
6. Open the well cover while standing up-wind from the well. Place the well cap on the plastic sheeting. Monitor the air in the breathing zone above the well casing with the PID. If the PID meter reads greater than 1 ppm meter units, move up wind from the well and allow the air inside the casing to vent for approximately 5 minutes. Repeat PID reading. If above 1 ppm, follow instructions in the Health and Safety Plan.
7. The measurement reference point is the PVC well casing. All down hole measurements will be taken from the top of the PVC well casing.
8. Lower the water level indicator probe until it indicates the top of water. Measure to the nearest 0.01-foot and record the depth to water from the reference point.
9. Lower the water level probe to the bottom of the well. Measure to the nearest hundredth of a foot and record the depth of the well from the reference point.
10. Remove probe from the well.
11. Repeat Step 8 and record.
12. Clean the water level probe and cable that extended into the well with a soapy (Alconox) water rinse followed by a distilled water rinse. Discard rinse water on the ground adjacent to the well unless contamination is evident.
13. Compare depth of well to previous records.
14. Place the cap on the well and bolt roadway cover into place when all activities are completed.

HEALTH AND SAFETY PLAN
CARLSON PARK
100 CARLSON ROAD
ROCHESTER, NEW YORK

Submitted To:
Carlson Park, LLC
100 Carlson Road
Rochester, New York

Prepared By:
GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, New York

and

S_2C_2 Inc.
5 Johnson Drive, Suite 12
Raritan, New Jersey

April 30, 2004
(Revised July 28, 2004)

1.0 INTRODUCTION

GeoQuest Environmental, Inc. (GeoQuest) has prepared this Health and Safety Plan (HASP) for soil and groundwater sampling (investigation) and potential future remediation work that is being conducted at Carlson Park, 100 Carlson Road, Rochester, New York.

This plan outlines the health and safety procedures and equipment required for the field activities at Carlson Park in order to minimize the potential for exposure of GeoQuest employees conducting work on this site.

1.1 Health & Safety Plan Overview

This HASP has been prepared for GeoQuest personnel for activities conducted during soil and groundwater sampling and future remediation work. The procedures and protective equipment described in this plan were developed after reviewing available data and evaluating the potential hazards that may be encountered. The purpose of this HASP is to:

- Establish personnel safety/protection standards that meet or exceed the Occupational Safety and Health Administration (OSHA) Regulations;
- Define Responsibilities of different organizations and personnel;
- Establish safe operating procedures relative to the conditions encountered on the site;
- Delineate secured areas;
- Provide for contingencies that may arise during the course of work at 100 Carlson Park

2.0 SITE ACCESS & PERSONNEL

GeoQuest personnel entering the work areas at the Site must follow this HASP and other appropriate written safe access procedures maintained by GeoQuest.

2.1 Site Access

Site access will be given to GeoQuest personnel.

Site Specific Health & Safety Personnel

GeoQuest is responsible for the health and safety of GeoQuest personnel. This responsibility includes:

- Provide overall health and safety oversight for the project;
- Prepare and/or review any task-specific addendum to the HASP;
- Monitor health and safety performance

One person may be designated as having the responsibilities of the key personnel listed below. A description of the responsibilities of the key personnel involved in the HASP program is presented below.

Project Manager

The Project Manager (PM) will assist with on-site work tasks. The PM is responsible for:

- Ensuring that planned work requirements adhere to the established health and safety procedures;
- Require that personnel follow established health and safety procedures;
- Correct work practices, or conditions that may result in injury or exposure to constituents as identified during project work. Provide notification of unsafe conditions noted during fieldwork to Site owner or subcontractor.

Site Health and Safety Officer

The Site Health and Safety Officer (SHSO) will be provided by GeoQuest. The SHSO responsibilities will be implemented by the on-site representative who will be present during all phases of the project. The SHSO will be responsible for the following tasks:

- Implementing the HASP;
- Maintaining a daily record (if relevant to Health and Safety at the site) of personnel activities, monitoring activities and results, exposure incidents, and personnel protection equipment usage;
- Monitoring hazards and proposing modifications (if necessary) for the level of personnel protection and/or work procedures;
- Advising the PM on work procedures which may impact health and safety requirements;
- Having copies of this HASP available on-site for review;

- Record daily weather conditions (e.g., temperature, wind speed/direction, etc.) if these conditions are relevant to Health and Safety at the project site.

The SHSO has the authority to suspend work activities if it is felt that the conditions may adversely affect personnel health and safety. The SHSO will notify the PM of such actions.

On Site Workers

GeoQuest Project personnel involved in the Carlson Park field investigation and remediation activities are responsible for:

- Reading, understanding and complying with the requirements of the HASP;
- Taking reasonable precautions to prevent incidents;
- Implement procedures specified in this HASP, and reporting deviations to the SHSO;
- Performing those tasks that they are trained to do; and
- For this project, hard hats, work boots, safety glasses, and gloves are required for all tasks.

Visitors

All non-site workers and visitors are responsible for:

- Reading, understanding and complying with the requirements of the HASP;
- Have the required personnel protecting equipment (e.g., hard hats, safety boots, etc.);
- Taking reasonable precautions to prevent incidents.

3.0 HEALTH & SAFETY RISK ANALYSES

3.1 Site Overview

The Carlson Park site is located at:

100 Carlson Road
Rochester, New York

The Carlson Park property at 100 Carlson Road is listed as a New York State Department of Environmental Conservation (NYSDEC) Hazardous substance Waste Disposal Site

(Site No. HS8054). The site was nominated to the NYSDEC for listing by the Monroe County Department of Health as a result of a site inspection. In addition, portions of the site are part of the City of Rochester Waste Site #52.

The subcontractors will conduct the drilling and sampling of soil borings using direct-push technologies and installation of micro-wells. The borings will be used to assist with the vertical and horizontal extent of potential solvent, petroleum, and metals release to soil and groundwater from the former electroplating and circuit board manufacturing Facility.

Hazard Analyses

Physical Hazards

- Physical hazards associated with vehicles (e.g., getting run over)
- Physical hazards associated with installation of wells and borings (i.e., drill rig equipment)
- Underground utilities
- Fire and explosion
- Heat and/or cold stress

Chemical Hazards

Various Solvents – Acute systemic effects by inhalation and ingestion may be but are not limited to central nervous system depression, headache, dizziness, and upset stomach. Chronic effects are possible liver damage, cancer, and blindness.

Various Semi-volatile organic compounds and **Heavy Metals**– Acute systemic effects by inhalation and ingestion.

4.0 SITE CONTROL MEASURES

4.1 Buddy System

The buddy system is not required for the proposed project.

4.2 Site Communications

The nearest telephone will be located in the Site offices adjacent to the work area.

5.0 EMPLOYEE TRAINING

5.1 Pre-assignment & Annual Refresher Training

GeoQuest employees and subcontractor personnel working on this site will be trained in accordance with OSHA 29 CFR Part 1910.120.

6.0 MEDICAL SURVEILLANCE

GeoQuest employees and subcontractors will follow their individual in-house medical surveillance procedures.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Levels of Protection

The SHSO has reviewed the environmental and historical sampling data that is, relevant to this incident, to determine potential health hazards. This review resulted in designating the work areas as a construction zone. Modified Level D PPE has been designated as the primary level of personnel protection worn during all operations where contact with debris material is likely. Upgrading to Level C will be executed as required in the monitoring guidelines detailed below for Air & Personnel Monitoring.

Modified Level D Protection

Modified Level D Protection includes the following:

- Hard hats
- Safety toe boots
- Safety glasses
- Long sleeve shirts and pants (no shorts)
- Leather gloves when using hand held tools
- Latex gloves when sampling water or debris

8.0 AIR & PERSONNEL MONITORING

Ambient air monitoring will consist of using a photo ionization detector (PID) calibrated for total VOCs. Personnel monitoring will be conducted periodically measuring the total organic vapors in the worker-breathing zone. Elevated total organic vapors are not anticipated in the worker-breathing zone. In the event that total organic vapors are detected in the breathing zone at 3 parts per million (ppm), the worker personnel protection will be upgraded to Level C protection. Level C protection will also be required if drager colorometric tubes detect Vinyl Chloride at 0.5 ppm in the breathing zone. GeoQuest will stop work, notify the client, and upgrade the health and safety plan prior to continuing fieldwork in the event that field conditions require Level C protection. Level C protection includes the following:

- Full-face respirator with canisters for chlorinated solvents.
- All of the personnel protection for modified Level D plus Tyvek suits.

9.0 DECONTAMINATION PROCEDURES

Field decontamination will consist washing contaminated equipment with a mixture of Alconox soap and water. Modification to the decontamination protocol will be made on-site as needed.

10.0 EMERGENCY RESPONSE

In the event of any emergency the following procedures will apply:

Fire – the work area will be evacuated and the fire department will be notified. Telephone 911.

Injury – A qualified person will administer first aid. If it is a life or death situation, the fire department will be notified (Telephone 911). If it is not than self transport to the hospital is acceptable. Directions to the hospital are attached.

Chemical overexposure – If possible, remove the victim to a safe location and have a qualified person administer first aid. If the person is conscious self transport to the hospital is acceptable. If the person is unconscious, notify the appropriate emergency response agency at telephone number 911.

10.1 Available Equipment and Emergency Authorities

GeoQuest will have a cellular telephone. If additional emergency equipment is required, the following local agencies can be called upon for advice, supplies or additional manpower:

AGENCY	TELEPHONE NUMBER
Rochester Fire Department	911
Monroe Ambulance	911
Rochester Police	911
Highland Hospital	341-6880

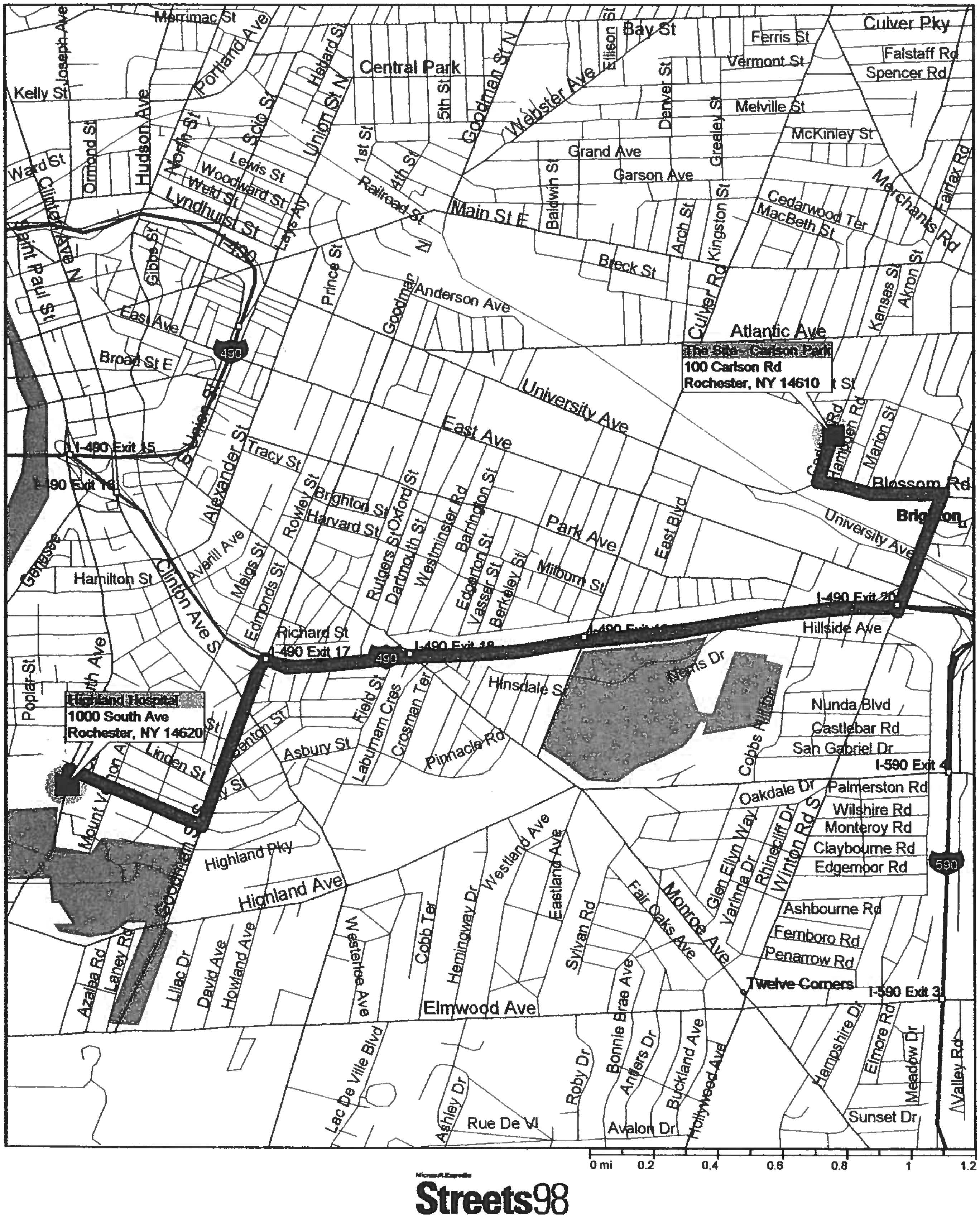
SIGNATURE PAGE

By signing below, I certify that I have been informed of the items covered by this plan.

PRINTED NAME	SIGNATURE

HASP - Route from Site to Highland Hospital

100 Carlson Park, Rochester, New York



Streets98

Directions to Highland Hospital from the Site

(1) Go south on Carlson Road.

(2) Turn left onto Blossom Road.

(3) Turn right onto Winton Road South.

(4) Merge onto I-490 West.

(5) Take Exit 17 towards the Inner Loop.

(6) Turn left onto Goodman Street South.

(7) Make a right onto Rockingham Street.

(8) Make a left onto South Avenue.

(9) Highland Hospital is located at 1000 South Avenue, Rochester, New York.

COMMUNITY AIR MONITORING PLAN
CARLSON PARK
100 CARLSON ROAD
ROCHESTER, NEW YORK

Submitted To:
Carlson Park, LLC
100 Carlson Road
Rochester, New York

Prepared By:
GeoQuest Environmental, Inc.
1134 Titus Avenue
Rochester, New York

and

S_2C_2 Inc.
5 Johnson Drive, Suite 12
Raritan, New Jersey

July 28, 2004

1.0 Introduction

This Community Air Monitoring Plan (CAMP) has been prepared by GeoQuest Environmental, Inc. (GeoQuest) and S_2C_2, Inc. (S_2C_2) on behalf of Carlson Park Associates. This CAMP addresses potential volatile organic compounds (VOCs) and particulate air quality issues which may arise during remedial measures planned at the Carlson Park Site (Site), City of Rochester, Monroe County, New York (Figure 1).

The activities planned during the portion of the project covered by this CAMP primarily include contaminated soil excavation, product recovery well installation, and product recovery. Petroleum related volatile organic compounds (VOCs) as well as trichloroethylene (TCE) are the compounds that are present in the soil and groundwater at the Site. Volatilization of the organic compounds through disturbance of soils and/or groundwater could result in releases to the ambient air creating possible nuisance or health threats to the neighborhood. This CAMP details real-time monitoring activities to be carried out during remedial measures, to minimize the potential for neighborhood exposure to airborne hazards resulting from fugitive emissions during the field work.

Pursuant to New York State Department of Environmental Conservation (NYSDEC) Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum – Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites (HWR-89-4031), this CAMP addresses the methods that will be implemented to monitor particulate (dust) levels at the perimeter of, and within, the work area. In the event that elevated particulate levels are encountered, this CAMP identifies the steps that will be taken to rectify the elevated particulate levels.

Air monitoring and response actions for VOCs are also included in this CAMP. VOC monitoring of the work sites will also be conducted as part of the Health and Safety Plan (HASP) that will be implemented during fieldwork by GeoQuest and S_2C_2.

2.0 Methodology

The remedial activities, as mentioned in Section 1.0 at the Site will consist primarily of contaminated soil excavation, product recovery well installation, and product recovery. The following programs will be implemented to monitor and, if necessary, control the potential migration of fugitive dust and/or VOCs on the property.

2.1 Perimeter Monitoring

For each day of intrusive fieldwork, a windsock or flag will be used to monitor wind direction in the area of the work zone. Based upon the daily wind direction, two temporary particulate monitoring points will be identified, one upwind and one downwind of the work area, at the perimeter of the Site or fieldwork location.

Real-time particulate monitoring will be carried out using an MIE PDM-3 MiniRae aerosol monitor, or its equivalent, capable of providing the measurement of airborne particulate matter.

VOC monitoring will be done with a Photoionization Detector (PID) fitted with a 10.2 eV lamp or it's equivalent. Rainy, snowy, or damp conditions may eliminate the need for particulate monitoring, as well as reduce the usefulness of the PID.

Prior to the commencement of fieldwork each day, background measurements of particulate and VOC concentrations will be logged at the up- and downwind locations with the drill rig engine and any other gas/diesel engines operating on Site.

Thereafter, readings will be recorded at approximate 30-minute intervals. These readings will be used to observe the difference between upwind and downwind particulate and VOC levels. If at any time the difference between the upwind and downwind particulate levels exceed 0.15 mg/m_3 or total VOC levels downwind exceed upwind levels (adjusted for engine exhaust) by 5 ppm, then work will be temporarily halted. The Contractor will then be required to implement dust suppression techniques or any other means necessary to control dusts and VOCs, similar to those discussed in Section 2.3. In addition, the product Biosolve™ (a surfactant) will be used for the mitigation of VOCs. Biosolve™ will be sprayed onto the walls and floor of the excavation, on an as needed basis, if elevated VOCs are recorded. The first readings of the day will be obtained prior to the commencement of work to obtain daily background readings. Readings will be logged along with the perimeter measurements. Specific monitoring procedures to be used in the work zone can be found in the HASP prepared for the activities at this Site.

2.2 Work Area Monitoring

In addition to perimeter monitoring, monitoring for VOCs, particulates, and explosivity will be carried out continuously within the work area to monitor personal exposures and to compare work area readings with downwind and upwind readings. The first readings of the day will be obtained prior to the commencement of work to obtain daily background readings. Readings will be logged along with the perimeter measurements. Specific monitoring procedures to be used in the work zone can be found in the HASP prepared for the activities at this Site.

2.3 Fugitive Dust Control

If the monitoring described in Sections 2.1 or 2.2 result in fugitive particulate levels exceeding 0.15 mg/m_3 above background, then the Contractor will implement fugitive dust control measures which may include one or more of the following:

- Using water spray or other dust suppression methods;
- Establishing wind shielding;
- Slowing down the fieldwork speed; and/or
- Stopping the fieldwork activities.

2.4 Minor Vapor Emission Response Plan

If the ambient air concentration of total organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the total organic vapor level decreases below 5 ppm above background, work activities can resume, with emphasis given to observing spikes in levels. If the total organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- The organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background. (The locations of structures in the subject neighborhood may not allow the 200 ft. buffer zone to be used).

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to evaluate if the vapor emission levels exceed those specified in Section 2.5, Major Vapor Emission Response Plan.

2.5 Major Vapor Emission Response Plan

If total organic vapor levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial structure, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of the emergency, total organic vapor levels greater than 5 ppm above background persist 200 feet downwind or half the distance to the nearest residential or commercial structure, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 foot zone).

If efforts to abate the emission source area are unsuccessful and if the organic vapor levels continue to persist at or near 5 ppm above background or more than 30 minutes in the 20 foot zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

The Major Vapor Emission Response Plan shall also be immediately placed into effect if organic vapor levels are greater than 10 ppm above background at the 20 foot zone.

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts, as listed in the Health and Safety Plan, will be contacted.
2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation. Evacuation or neighborhood notification plans can be discussed at that time.
3. Air monitoring will be conducted at 30 minute intervals within the 20 foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

3.0 Record Keeping and Quality Control

For the duration of the field activities, a monitoring logbook will be kept to record calibration, operational notes, and monitoring readings. The results of the Community Air Monitoring Program will be incorporated by GeoQuest and S_2C_2 into the required reports.

Instrumentation will be calibrated and/or operationally checked, either daily or at intervals recommended by the manufacturer. Only approved calibration gases will be used. All operators will have been trained in the proper use, maintenance, limitation, and interpretation of results of the monitoring equipment.