CORRECTIVE ACTION PLAN

80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

NYSDEC Spill #0270474
USEPA Assistance ID No. BF97298603

Prepared for:	The City of Rochester 30 Church Street Rochester, New York 14614
Prepared by:	Day Environmental, Inc. 40 Commercial Street Rochester, New York 14614
Project No.:	3638R-05
Revised Date:	September 2005

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Day Environmental, Inc. (DAY) prepared this Corrective Action Plan (CAP) to be implemented at the 0.78-acre vacant parcel located at 80-100 Charlotte Street, City of Rochester, County of Monroe, New York (Site). The location of the Site is shown on Figure 1 (Project Locus Map) and Figure 2 (Site Plan Depicting Previous Test Locations and Petroleum-Impacted Soil Thickness Contours) included in Appendix A. DAY understands that this CAP will likely be conducted under a Stipulation Agreement between the City of Rochester (City) and the New York State Department of Environmental Conservation (NYSDEC).

1.1 Background

DAY prepared a Phase I Environmental Site Assessment (Phase I ESA) report dated May 2002 for the Site. The Phase I ESA report identified the following recognized environmental conditions (RECs):

1.) Adjoining NYSDEC active spill sites;

2.) Historic uses of the Site;

3.) Drums and containers;

4.) Suspect asbestos-containing materials (SACM); and,

5.) Lead-based paint (LBP)

DAY subsequently performed a Phase II Environmental Site Assessment (Phase II ESA) at the Site. This study included the collection and analytical laboratory testing of concrete floor samples; the advancement of test borings; the installation of groundwater monitoring wells; field observations and monitoring; analytical laboratory testing of selected soil and groundwater samples, evaluation of groundwater flow; and preparation of a Phase II ESA report dated July 2002. RECs associated with drums and containers (REC #3), SACM (REC#4) and LBP (REC#5) were not evaluated as part of the Phase II ESA, but were later addressed by others prior to the demolition of the building on the Site in September 2003. The following conclusions were provided in the Phase II ESA report:

REC #1: Active Spills on Adjoining/Nearby Properties: Evidence of petroleum-type contamination was detected in saturated soil and groundwater on the northwest and southwest portions of the Site (designated as Area #2 and Area #3 on Figure 2 included in Appendix A). This contamination appears attributable to active spills on adjoining/nearby properties located west and northwest of the Site. TPH was not detected in soil samples from these locations; however, light-weight TPH designated as gasoline was detected in a groundwater sample on the northwest portion of the Site.

REC #2: Historic uses of the Site

- Floor Drains: Suspect historical discharges of chemicals or petroleum products to floor drains did not appear to impact soil or groundwater at the Site.
- Stained Concrete Floor: Historic storage, repair, etc. of transformers, light ballasts and mercury vapor lights, did not appear to impact the concrete floor (i.e., polychlorinated biphenyls and mercury were not detected in concrete samples).

- Stained Surface Soils: Several approximate three-foot diameter or less areas of stained surface soils, observed on an unpaved area on the northwest portion of the Site, were determined to be impacted with heavy-weight total petroleum hydrocarbons (TPH) designated as lube oil. One sample of the stained soil contained the semi-volatile organic compound (SVOC) benzo(b)fluoranthene at a concentration exceeding its respective recommended soil cleanup objective (RSCO) as referenced in NYSDEC Technical and Administrative Guidance Memorandum (TAGM 4046) dated January 24, 1994 as amended by a supplemental NYSDEC Table 1 dated 1998.
- Former On-Site Gasoline UST System: Evidence of petroleum contamination exceeding NYSDEC TAGM 4046 RSCOs and/or groundwater standards or guidance values referenced in the NYSDEC Technical and Operational Guidance Series 1.1.1 document titled "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (TOGS 1.1.1) dated June 1998 was detected in proximity to, and hydraulically downgradient from, a former underground storage tank (UST) system used to store gasoline (designated as Area #1 on Figure 2 included in Appendix A). The contamination is generally present in soil in an approximately 2-foot to 4-foot layer immediately above bedrock. Previous analytical laboratory testing confirmed the contamination to be related to gasoline, and toxicity characteristic leaching procedure (TCLP) test results on a contaminated sample indicate the contamination should not be considered a characteristic hazardous waste based on its lead content. A review of the previous Phase II ESA report indicates the petroleum-contaminated soil attributable to the former UST system is primarily situated in an approximately 5,045 ft^2 area with an average thickness of 3 ft (i.e., volume = 15,135 ft^3 = 560 yd^3, weight = approximately 1,000 tons). The Phase II ESA report estimates approximately 75% (i.e., approximately 750 tons) of this petroleum-contaminated soil is expected to exceed NYSDEC TAGM 4046 RSCOs. The NYSDEC was notified regarding the petroleum contamination that was encountered, and the NYSDEC subsequently generated a spill file (NYSDEC Spill #0270474), which currently has an "active" status.
- Fill Material: Heterogeneous fill material generally consisting of re-worked soil with lesser amounts of coal, ash, concrete, asphalt, brick, slag and wood is present generally across the Site. Analytical laboratory test results for samples of fill material indicate it contains concentrations of arsenic, barium, cadmium, lead or mercury that exceed RSCOs or typical background ranges referenced in TAGM 4046. As such, if this material is disturbed during redevelopment of the Site, special handling requirements and disposal/re-use restrictions may be warranted (i.e., implementing a combination of corrective actions, engineering controls, institutional controls, etc. appear warranted).

In order to address regulatory cleanup criteria for contamination attributable to on-site sources, mitigate exposure pathways to residual contamination present at the Site that is attributable to on-site or off-site sources, and allow for redevelopment of the Site, the following items are included as part of this CAP:

- Removing petroleum-contaminated soil from the Site that exceeds regulatory standards, criteria and guidance (SCG) values to the extent that is practicable;
- Implementing a health and safety plan (HASP). This includes performing environmental monitoring (air monitoring with a photoionization detector [PID] and particulate meter;

visual observations; etc.) during activities that would potentially disturb contaminated media;

- Implementing a groundwater monitoring program;
- Collecting soil gas samples to evaluate the need for engineering controls (i.e., vapor barriers, venting systems, etc. on proposed new buildings); and,
- Implementing institutional controls (i.e., City permit flagging system).

1.2 Proposed Future Use of Site

Currently, the conceptual future use of the Site includes redevelopment for a combination of commercial and residential purposes with a parking lot and landscaped areas. The City is currently working on residential redevelopment plans for contiguous vacant lots to the west that were addressed as 14-58 Charlotte Street and adjoin the Site.

1.3 Objectives

The objectives of the CAP are to implement remedial activities, engineering controls, institutional controls, and environmental monitoring activities that allow the redevelopment of the Site for the proposed future use while satisfying regulatory agencies' cleanup criteria and concerns to human health and the environment.

2.0 REMEDIAL ACTIVITIES

Remedial activities that will be completed as part of the corrective actions for this Site will include: a waste characterization study; the removal and off-site disposal of petroleum-contaminated soil attributable to the former UST system at the Site; environmental monitoring; confirmatory soil sampling and analytical laboratory testing; and, backfilling the excavation. These remedial activities are further described herein. Prior to initiating any intrusive work, the City will temporarily close the existing on-site surface parking lot.

2.1 Waste Characterization Study

Prior to conducting the soil removal work, up to sixteen test borings will be advanced using direct-push sampling equipment to further characterize the soil for disposal and define the removal areas. A licensed land surveyor will locate and mark out selected test boring locations in the field and record ground elevations. As an alternative, a hand-held Geo-XT (or similar) global positioning system (GPS) unit may be used to locate and mark out selected test boring locations in the field, as well as record the locations of additional test borings for transfer to a Geographical Information System (GIS). The proposed locations of thirteen of the additional test borings are shown on Figure 3 included in Appendix A. The location of the remaining three test borings will depend on field observations at the time of the waste characterization study fieldwork. As the test borings are advanced, continuous soil samples will be collected for visual observation and screening with a PID.

The analytical laboratory program for this project is summarized on Table 1 included in Appendix B. As shown, up to eight soil samples collected from these test borings will be submitted to Paradigm Environmental Services, Inc. (Paradigm), a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified analytical laboratory. Paradigm will analyze the samples for NYSDEC Spill Technology and Remediation Series (STARS) listed volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 8260, plus up to 20 tentatively identified compounds (TICS). In addition, up to two soil samples exhibiting the greatest potential for petroleum contamination will be tested by Paradigm for ignitability, TCLP metals and polychlorinated biphenyls (PCBs) using USEPA Methods 1010, 1311/6010/7470 and 8082A, respectively. The analytical laboratory test results will be used in the preparation of a waste profile with assistance from the City in order to obtain approval from a regulated disposal facility.

The analytical laboratory test results for VOCs and PCBs will also be compared in a summary table to recommended soil cleanup objectives (RSCOs) as referenced in the NYSDEC document titled "Technical and Administrative Guidance Memorandum: *Determination of Soil Cleanup Objectives and Cleanup Levels*" (TAGM 4046) dated January 24, 1994, as amended by the NYSDEC's supplemental Tables dated August 22, 2001. The analytical laboratory test results for ignitability and TCLP Metals will be compared in a summary table to toxicity and ignitability characteristics levels referenced in 6 NYCRR Part 371.3 (Characteristics of a Hazardous Waste).

Upon receipt of analytical laboratory test results, a data package will be prepared and submitted that includes test boring logs, a figure depicting test boring locations, data tables comparing the test results to SCGs and analytical laboratory reports. In addition, the data package will also include a discussion on revisions to estimated soil removal volumes and disposal requirements (if any).

2.2 Soil Remediation

This Section of the report describes the actions that will be implemented in relation to the soil remediation planned for the Site. This includes site preparation and control, soil removal and air monitoring activities.

2.2.1 Site Preparation and Control

Prior to source-removal excavation work, approximately 305 linear feet of existing four-foot high chain link fence and one gate along Haags Alley and the southern portion of the Site will be removed and staged on-site in a location away from the excavation to facilitate the source removal work (refer to Figure 4 included in Appendix A). [Note: Recent observations indicate that the existing four-foot fence is approximately four feet onto the Site from the Haags Alley right-of-way. Removal of this portion of the fence will allow the excavation of additional petroleum-impacted soil from the Site in the direction of Haags Alley.]

Subsequently, a subcontractor will furnish and install approximately 650 linear feet of temporary six-foot high chain link fence equipped with one 20-foot temporary six-foot high chain link gate with padlock for additional Site control (refer to Figure 4 included in Appendix A). A hand-held Geo-XT (or similar) GPS unit may be used to assist in the layout of the fencing. DAY and the City would control the keys to the padlocks. The section of this temporary six-foot high fencing along Haags Alley would be set as close as possible to the curb of Haags Alley so that as much petroleum-impacted soil located on the Site along Haags Alley can be removed. If necessary, a right-of-way permit for fence installation or traffic control will be obtained. In the event improvements in the right-of-way are disturbed by implementation of the CAP, these improvements will be repaired to the extent deemed necessary by the City. Subsequent to completion of the soil removal and backfilling work, the temporary 6-foot chain link fence and associated gate will be removed prior to re-installation of the original four-foot chain link fence.

In addition, temporary four-foot to six-foot plastic barrier fencing (as directed by City) will be installed around the specific areas as the removal work commences. This fencing will be adjusted as needed during the source removal work, and this fencing will be used as a site control measure to inhibit access to the work area, including during nights and weekends.

2.2.2 Soil Removal, Air Monitoring and Disposal

DAY and its subcontractors will remove petroleum-impacted soil at the Site, subsequently transport and dispose of the petroleum-impacted soil at an approved off-site landfill facility, and document the work completed. Site preparation and layout components (e.g., fencing, soil staging areas, truck/vehicle access, source removal area, decontamination area, etc.) are shown on Figure 4 included in Appendix A. A hand-held Geo-XT (or similar) GPS unit will be used to layout these components. In addition, the soil removal area is designated as Area #1 on Figure 4 included in Appendix A. [Note: Soil removal is not planned for Area #2 or Area #3 shown on Figure 2]. It is anticipated that heavy equipment to be used at the Site may include trucks, excavators, a bulldozer, a loader and a tamper. A DAY representative will be on-site full-time to document and monitor this work. The DAY representative will also conduct health and safety air monitoring for VOCs and particulates during the removal work in accordance with provisions of the HASP and Community Air Monitoring Plan (CAMP) (refer to Appendix C). The contractor will either utilize this HASP or the components of its own HASP for the protection of its on-site workers.

Currently, it is anticipated that the source removal work will only be conducted in the impacted area attributable to the former gasoline UST system. Figure 4 included in Appendix A shows the approximate limits of the currently-projected source removal area (i.e., an approximate 8,000 square-foot area). The results of the waste characterization study described in Section 2.1 will be used to refine this source removal area. The petroleum-contaminated soil will be transported off-site by NYSDEC Part 364 permitted trucks for disposal at a landfill. Currently, it is anticipated that the petroleum-contaminated soil will be used as cover at a NYSDEC-approved landfill facility.

Based on the assumption that Site redevelopment includes residential use, DAY anticipates that the following field criteria will be used during the soil removal work to define the extent of the source removal:

- Soil containing visual and olfactory observations of petroleum-contamination (e.g., staining, odors, etc.) will be removed until the thickness of such material is less than one foot.
- A correlation of previously obtained data and new data obtained during the Waste Characterization Study included in Section 2.1 (e.g., PID readings, analytical laboratory test results) will be used to assist in the removal of petroleum-contaminated soil until the thickness of such material is less than one foot.

Based on the future uses of the Site identified by the City, it is assumed that soil containing petroleum-related constituents at concentrations above and below RSCOs will be removed to the extent that is practicable. It is anticipated that an average thickness of three feet for petroleum-contaminated soil (and intermixed clean soil) will be removed from the Site using the above-stated criteria and these assumptions, this equates to approximately 889 cubic yards (or about 1,510 tons) of petroleum-contaminated soil to be removed. If deemed necessary based on olfactory observations or CAMP results, BioSolve®, foam or other material will be used during the excavation process to suppress petroleum odors and vapors during excavation activities involving petroleum-contamination. A hand-held Geo-XT (or similar) GPS unit will be used to record the actual extent of the soil removal excavation limits for transfer to a GIS.

Using the assumed excavation footprint of 8,000 square feet, it is anticipated that approximately 1,800 cubic yards (or about 3,060 tons) of soil/fill not containing petroleum contamination will require removal and on-site staging in order to remove deeper petroleum-contaminated soil. Included in this volume is a surficial layer of crushed stone that is present at the ground surface at the Site to facilitate its use as a parking lot and inhibit exposure to underlying fill materials that may contain elevated concentrations of metals. The crushed stone layer will be removed and staged separately for re-use as a surface material during Site restoration.

Currently, it is anticipated that the removal activities may be completed in sections or cells, and that these cells will be backfilled on a periodic basis until the source removal is complete. Polyethylene plastic sheeting will be used to temporarily line excavation walls prior to daily backfilling when additional soil removal is required in a specific direction. The source removal will be limited to the boundaries of the Site. Although not anticipated, if buried utilities are identified within the planned source removal area, the City will be consulted in order to achieve an acceptable approach that satisfies the goals and objectives of the project.

2.2.3 Potential Dewatering of Excavation

Based on similar source removal soil excavation work performed by DAY at the adjoining 14-60 Charlotte Street site, it is unlikely that the excavation will require dewatering during removal work. However, if dewatering appears necessary, a 21,000-gallon bi-level steel aboveground holding tank will be mobilized to the Site to collect groundwater from the excavation as deemed necessary during the source removal. If dewatering is conducted, a sample of the staged water will be collected by DAY and subsequently tested by Paradigm for purgeable aromatics using Method 602 or equivalent in order to characterize the staged water to evaluate necessary pre-treatment and/or disposal options.

2.3 Confirmatory Soil Sampling and Analysis

Confirmatory soil samples will be collected from the excavation walls of Area #1 when removal work in a particular direction appears to be complete. This proposal assumes that the confirmatory sampling will be completed in general accordance with provisions set forth in Section 5.4(a)2.ii.2 (Remedial Action Performance Compliance) of the NYSDEC document titled "Draft DER-10 Technical Guidance for Site Investigation and Remediation" dated December 2002. As such, it is currently anticipated that the confirmatory samples will be collected near the invert of the excavation walls; however, actual locations will be selected based upon field screening in order to obtain samples exhibiting the greatest evidence of contamination in accordance with DER-10. Due to the size of the excavation, it is proposed that confirmatory samples be collected at approximate 30-foot intervals along the sidewalls of the excavation. Based on the anticipated limits of source removal excavation (refer to Figure 4 included in Appendix A), it is currently anticipated that 14 discrete post-removal confirmatory soil samples will be collected. Since it is anticipated that petroleum-contaminated soil will be removed to the top of bedrock, no confirmatory soil samples are anticipated to be collected from the bottom of the excavation. A hand-held Geo-XT (or similar) GPS unit will be used to record the locations of confirmatory soil samples for transfer to a GIS.

The post-source removal confirmatory soil samples will be submitted for testing under chain-of-custody control to Mitkem Corporation, (Mitkem), which is a NYSDOH ELAP-certified analytical laboratory. Based on previous analytical laboratory test results for soil and groundwater samples collected from the area of the source removal, the confirmatory samples will be tested by Mitkem for NYSDEC STARS-list VOCs using USEPA Method 8260. The test results will be reported in Analytical Services Protocol (ASP) Category B deliverable reports, including summary reports, and the test results will also include reporting TICs. The analytical laboratory program for this project is summarized on Table 1 included in Appendix B.

The analytical laboratory test results for the confirmatory soil samples will be compared to TAGM 4046 RSCOs. Table 1 included in Appendix B summarizes the cleanup objectives for the Site.

Since some petroleum-impacted soil may be left in-place, other corrective actions such as in-situ remediation, engineering controls and/or institutional controls may be implemented if such work is deemed necessary (refer to subsequent sections in this CAP).

2.4 Backfilling the Source Removal Excavation

A select geotechnical fill material will be used as backfill to replace the petroleum-contaminated soil that is removed. It is anticipated that pea gravel replacement fill will be used at the bottom of the excavation in one-foot lifts as a desired material for enhancing delivery of in-situ groundwater remediation products (if deemed necessary in the future). This select fill material does not require compaction; thus, the excavation walls will not require sloping for access by compaction equipment or personnel. Other types of compactable select geotechnical replacement fill (e.g., crusher run, run-of-bank) will be placed at higher elevations in the excavation above the groundwater table when original clean materials previously removed from the excavation are found to be geotechnically unsound (i.e., wood, large pieces of asphalt or concrete, former foundation walls, etc.). DAY will consider modifications to the actual type, volume and location of replacement fill based on the Site redevelopment plans as they progress (i.e., adjust for planned elevation cuts, removal of overburden planned at the Site for future improvements, timing of redevelopment in relation to source removal work, etc.). [Note: During backfilling of the excavation, two four-inch diameter wells will be installed in the source-removal area. Installation of these wells is described in Section 3.1.]

3.0 GROUNDWATER MONITORING PROGRAM

Since contaminated groundwater may be present at the Site after the source area removal (and potentially redevelopment), a groundwater monitoring program will be implemented. The program involves installing new wells and monitoring groundwater quality.

3.1 Installation of Groundwater Monitoring Wells

The effects of the source removal work on groundwater quality will be evaluated by installing/testing groundwater monitoring wells. A total of eight groundwater monitoring wells will be installed/tested at the Site. The approximate anticipated locations of these eight wells are shown on Figure 4 included in Appendix A. Three of these wells will be installed within the limits of the source removal area during its backfilling. The remaining five wells will be installed outside the source removal area subsequent to its backfilling.

Source Area Wells

During backfilling of the removal area excavation, three four-inch diameter wells will be installed in the source-removal area. Utilizing heavy equipment, an attempt will be made to place the bottom of these wells within the upper one or two feet of bedrock. Each well will consist of a five-foot long section of four-inch inner diameter (I.D.) Schedule 40 polyvinyl chloride (PVC) screen connected to threaded four-inch I.D. Schedule 40 PVC riser. Each well will be installed inside a temporary minimum 8-inch I.D. solid pipe. The annulus between the temporary 8-inch solid pipe and four-inch well will be backfilled with sand at least two feet above the screen, then a minimum one foot thick bentonite seal followed by Portland cement grout to near the ground surface. The temporary pipe around each well will be removed as the excavation is backfilled. Each well will be equipped with a locked J-plug and also an outer protective flush-mount curb box that is cemented in-place at the ground surface. These three wells will be used for post-source removal groundwater monitoring, possible collection of light non-aqueous phase liquid (if later encountered), and possible access points for various in-situ remediation-related activities (if deemed appropriate).

Rotary-Drilled Wells

Five rotary-drilled 2-inch diameter PVC overburden/bedrock groundwater monitoring wells will be installed at the Site. The rotary-drilled groundwater monitoring wells will be installed in: two upgradient locations on the northwest and southwest portions of the Site where petroleum-impact that appears attributable to off-site sources has been documented (two wells), a downgradient location (one well), and two cross-gradient locations (two wells).

The drilling subcontractor will utilize a truck-mounted drill-rig to advance hollow stem augers (HSAs) at the five well locations. It is anticipated that continuous split spoon samples will be collected ahead of the augers in general accordance with American Society of Testing and Materials (ASTM) 1586 (Standard Penetration test). Soil/fill will be sampled using split spoon samplers driven by a 140-pound hammer free-falling 30 inches. These borings will be sampled to refusal (suspected top of bedrock). The recovered split spoon samples will be visually examined for evidence of suspect contamination (e.g., staining, unusual odors). Portions of the recovered split spoon samples will also be screened with a PID in order to evaluate if VOCs are present in the samples.

Pertinent information for the test borings will be recorded in field logs, whereupon portions of information will subsequently be transcribed onto final boring logs. The recorded information will include:

- Date, boring/well identification, and project identification.
- Name of individual developing the log.
- Name of drilling company.
- Drill make and model, auger size, core barrel.
- Identification of alternative drilling methods used and justification thereof (e.g., rotary drilling with a specific bit type to remove a sand plug from within the hollow stem augers).
- Depths recorded in feet and fractions thereof (tenths of inches) referenced to ground surface.
- Standard penetration test (ASTM D-1586) blow counts.
- The length of the sample interval and the percent of the sample recovered.
- The depth of the first encountered water table, along with the method of determination, referenced to ground surface.
- Drilling and borehole characteristics.
- Sequential stratigraphic boundaries.
- Visual and/or olfactory evidence of suspected impact (e.g., unusual odors, staining, etc.).
- Initial PID screening results of split-spoon samples, and/or PID screening results of ambient headspace air above selected samples.

Once the top of bedrock is encountered (i.e., estimated at a depth of approximately 9 feet below the ground surface), it is anticipated that approximately the first five feet of bedrock will be cored at each monitoring well location using an H-sized coring barrel in order to complete the advancement of the boring. Each rock core collected will be observed and described, including adjusted Rock Quality Designation (RQD) values. Adjusted RQD will be determined as follows: measure and sum each piece of sound rock 10.2 centimeters (4 inches) and longer in length in a core run, and divide this by the total length of recovered rock for that core run. Subsequently multiply this value by a factor of 100, which results in an adjusted RQD percentage.

The recovered split spoon samples will be visually examined for evidence of suspect contamination (e.g., staining, unusual odors). Portions of the samples will be placed in sealable plastic baggies and the ambient headspace air above selected samples will be screened with a PID. Soil samples collected from the well locations will not be submitted for analytical laboratory testing.

Following the completion of the boring at each of the well locations, monitoring wells will be constructed within each boring. Each well will consist of a pre-cleaned five-foot long to ten-foot long, two-inch I.D., threaded, flush-jointed, No. 10 slot, schedule 40 PVC screen with attached riser casing of the same material. It is anticipated that the well screens will be installed within the fractured zone of the bedrock extending through the interface with the overburden. However, the field placement of the screen will be dependent upon subsurface conditions encountered. The well installations will include a washed and graded sand pack surrounding the screens and extending approximately one foot below it, and approximately one foot above it. An approximate two-foot thick bentonite seal will be placed above the sand pack and the remaining annulus will be filled with cement/bentonite grout. Grout will be mixed as follows: approximately 6 gallons of water will be added to a 96pounds of Portland type 1 (or similar)

cement and 4 pounds of granular bentonite mixture to comprise a cement/bentonite grout. A steel flush-mounted curb box with an internal cap will be placed over each well and cemented in-place at the ground surface. A rubber gasket will also be installed beneath each curb box access plate in order to reduce the release of volatile vapors from the wells.

3.2 Well Development

Based on past experience with installing wells at other properties in proximity to the Site, it is anticipated that an unknown volume of drill water will be lost to the formation at overburden/bedrock interface well locations during HQ coring, and it may not be economically feasible to recover this water during well development/purging. As such, the six overburden/bedrock interface groundwater monitoring wells and two overburden monitoring wells will be developed by removing up to five casing volumes of water from each well. If considerable amounts of water are lost during drilling, then the first round of groundwater sampling would be scheduled at least one month subsequent to the well development. This will assist in dissipating the drill water that is not recovered and allow for actual formation groundwater to enter the well prior to collection of groundwater samples.

The new monitoring wells will be developed prior to sampling and/or measurement of static water levels. Well development will be performed utilizing either new disposable bailers with dedicated cord or a centrifugal pump and dedicated tubing. No fluids will be added to the wells during development, and well development equipment will be decontaminated prior to development of each well. The well development procedure will be as follows:

- Obtain pre-development static water level readings.
- Calculate water/sediment volume in the well.
- Obtain groundwater sample for field analysis using bailer.
- Select development method and set up equipment depending on method used.
- Begin pumping or bailing.
- Obtain initial field water quality measurements (e.g., conductance, temperature, turbidity, and PID readings). Record water quantities and rates removed.
- Obtain field water quality measurements for every 5 to ten gallons of water removed.
- Stop development when water quality criteria are met.
- Obtain post-development water level readings.
- Document development procedures, measurements, quantities, etc.

Development will continue until the following criteria is achieved:

- pH, specific conductance, temperature and turbidity are relatively stable for three consecutive measurements and/or,
- a minimum of five well volumes have been removed.

Prior to well development, an oil/water interface m will be used to detect light non-aqueous phase liquid (LNAPL). During development, the purge water will also be observed for the presence of LNAPL. The results of the well development and LNAPL evaluation will be documented on Well Development Logs.

3.3 Groundwater Sampling and Analysis

Following development, and a suitable period of time to allow stabilization (a minimum of 7 days following development), the six overburden/bedrock interface wells and two overburden wells will be sampled quarterly for a period of one year (i.e., four rounds of groundwater samples from each well) using low-flow sampling methods with a bladder pump connected to a control box. The low-flow sampling method is ideal for collecting in-line filtered groundwater samples and dissolved oxygen readings. The low-flow purging and sampling procedures to be utilized are outlined below:

- Prior to purging and sampling, static water level measurements will be taken from each well using an oil/water interface meter. DAY will also look for LNAPL by using visual observations and the oil/water interface meter at each well location. DAY will document the results of this work in the field.

- In order to minimize the potential re-suspension of solids in the bottom of the well, well depths will not be measured prior to or during low-flow purging and sampling. Well depth information will be obtained from: 1) measurements collected during well development; 2) from well logs; or 3) will be measured after sampling is completed.

- A portable bladder pump connected to new disposable polyethylene tubing will be lowered and positioned at or slightly above the mid-point of the well screen when the screened interval is set in relatively homogeneous material. When the screened interval is set in heterogeneous materials, the pump will be positioned adjacent to the zone of highest hydraulic conductivity (as defined by geologic samples). Care will be taken to install and lower the bladder pump slowly in order to minimize disturbance of the water column.

- The pump will be connected to a control box that is operated on compressed gas (nitrogen, air, etc.) and is capable of varying pumping rates. An in-line flow-through cell attached to a Horiba U-22 water quality meter (or similar equipment) will be connected to the bladder pump effluent tubing to measure water quality data.

- The pump will be started at a pumping rate of 100 ml/min or less (for pumps that can not achieve a flow rate this low, the pump will be started at the lowest pump rate possible). The water level in the well will be measured and the pump rate will be adjusted (i.e., increased or decreased) until the drawdown is stabilized. In order to establish the optimum flow-rate for purging and sampling, the water level in the well will be measured on a periodic basis (i.e., every one or two minutes) using an electronic water level meter or an oil/water interface meter. When the water level in the well has stabilized (i.e., use goal of <0.33 ft of constant drawdown), the water level measurements will be collected less frequently.

- While purging the well at the stabilized water level, water quality indicator parameters will be monitored on a three to five minute basis with a Horiba U-22 water quality meter (or similar equipment). Water quality indicator parameters will be considered stabilized after three consecutive readings for each of the following parameters are generally achieved:

  - pH ($\pm$ 0.1);
  - specific conductance ($\pm$ 3%);

- dissolved oxygen (± 10 %);
- oxidation-reduction potential (± 10 mV);
- temperature (± 10%); and
- turbidity (± 10%, when turbidity is greater than 10 NTUs)

Following stabilization of the water quality parameters, the flow-through cell will be disconnected and a groundwater sample will be collected from the bladder pump effluent tubing. The soluble samples require collection in the field through a 0.45-micron filter media. The pumping rate during sampling will remain at the established purging rate or it may be adjusted downward to minimize aeration, bubble formation, or turbulent filling of sample containers. A pumping rate below 250 ml/min will be used when collecting VOC samples.

If LNAPL is detected, DAY will notify representatives of the City, which will in-turn notify representatives of the NYSDEC. DAY will collect a sample of the LNAPL during at least one of the sampling events by using the bladder pump system and be delivered under chain-of-custody control to Mitkem for TPH analysis using NYSDOH Method 310.13 (refer to table 1 included in Appendix B).

The procedures and equipment used during the purging and groundwater sampling and the field measurement data will be documented in the field and recorded on Monitoring Well Sampling Logs.

For wells set in low-permeability formations and fractured bedrock (if encountered), alternative purging and sampling techniques from those specified above may become necessary. Any changes in technique shall be presented and approved by the NYSDEC site representative.

The groundwater samples will be submitted for analytical laboratory testing by Mitkem for the following parameters, which are also summarized on Table 1 included in Appendix B:

- STARS-list VOCs using USEPA Method 8260;
- TPH using NYSDOH Method 310.13;
- Soluble biological oxygen demand (BOD) using USEPA Method 405.1;
- Soluble chemical oxygen demand (COD) using USEPA Method 5220;
- Soluble sulfate using USEPA Method 4500;
- Soluble nitrate using USEPA Method 353.2; and,
- Soluble iron using USEPA Method 6010.

The VOC data obtained will be compared to NYSDEC TOGS 1.1.1 groundwater standards and guidance values. If the results of the post-source removal groundwater monitoring determines petroleum constituents (e.g., dissolved phase VOCs or TPH, LNAPL, etc.) in groundwater exceed groundwater standards/guidance values, exposure assessment criteria or other regulatory criteria and/or regulatory agencies indicate groundwater quality requires further attention, a proposed conceptual remediation plan to address the groundwater contamination will be provided. Currently, it is anticipated that monitored natural attenuation, enhanced in-situ bioremediation (e.g., oxygen injection and/or biological injection), engineering controls, institutional controls, or a combination of these approaches may be considered to address post-source removal groundwater contamination.

VOC test results for the groundwater samples will be compared to groundwater standards and guidance values as referenced in the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 document titled "*Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*" (TOGS 1.1.1) dated June 1998 (as amended by an April 2000 addendum).

3.4 Evaluation of Aquifer Properties

Slug testing will be conducted on three groundwater monitoring wells (i.e., three rotary-drilled wells at upgradient, cross-gradient, and downgradient positions). DAY will use the SuperSlug software to calculate hydraulic conductivity and transmissivity. In addition, calculations will be made to evaluate aquifer parameters such as hydraulic gradient and groundwater velocity.

A licensed surveyor will survey the locations and elevations of the six two-inch diameter overburden/bedrock interface groundwater monitoring wells, and the two four-inch diameter overburden wells that are installed in the source removal excavation. A handheld Geo-XT (or similar) GPS unit may also be used to record the locations of the wells for transfer to a GIS. During each sampling event, static groundwater measurements will be collected from each monitoring well using an electronic static water level meter or an oil/water interface meter. Groundwater elevations will be calculated, and a potentiometric groundwater map will be prepared illustrating the approximate groundwater elevations and groundwater flow direction(s) for each groundwater sampling event. The Surfer 8 software program by Golden Software, Inc. or the Spacial Analyst Extension for ESRI's ArcMap GIS program (V.9.1) will be used to assist in developing each of the groundwater potentiometric maps.

3.5 Post Source Removal Well Monitoring-Derived Wastes

Post source removal well monitoring-derived wastes (soil cuttings, development water, purge water, etc.) will be containerized in New York State Department of Transportation approved drums. It is anticipated that up to twenty 55-gallon drums of post source removal well monitoring-derived wastes will be generated. DAY will collect up to two liquid samples and two solid samples from the drums. The liquid samples will be tested by a NYSDOH ELAP-certified analytical laboratory for purgeable aromatics using Method 602 or equivalent. The solid samples will be tested by Paradigm for STARS-list VOCs using USEPA Method 8260, for ignitability using USEPA Method 1010, and for TCLP Metals using USEPA Methods 1311, 6010 and 7470. Well monitoring-derived wastes will be disposed after proper disposal methods are identified.

4.0 SOIL GAS SAMPLING AND ANALYSIS

Subsequent to the soil removal work outlined in Section 2.2, in-situ soil gas samples will be collected from six locations on the Site to evaluate the presence of VOCs in the soil vapor pore space. A handheld Geo-XT (or similar) GPS unit will be used to record the locations of the soil gas sampling locations for transfer to a GIS. The soil gas sampling locations will be dependent upon the limits of the source-removal work and on proposed new building locations that have not yet been determined. The soil gas samples will be collected in general accordance with Section 2.7.1 of the NYSDOH draft document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated February 2005. The samples collected will be delivered under chain-of-custody control to Paradigm. Paradigm will subcontract the services of Performance Analytical, Inc (a NYSDOH ELAP-certified laboratory) to analyze the samples for USEPA target compound list (TCL) and STARS-list VOCs using Method TO-15. [Note: The TCL VOC 2-chloroethylvinylether cannot be reported using the specified method; however, previous testing suggests this VOC is not present at the Site]. The data collected may also be utilized in an exposure assessment included as part of the Remedial Construction/Closure Report (see Section 7.0) and the development of Engineering Controls (see Section 8.1).

5.0 HEALTH AND SAFETY PLAN

A site-specific health and safety plan (HASP) for the Site is included in Appendix C. This HASP outlines the policies and procedures necessary to protect workers and the public from potential environmental hazards posed during this project's activities at the Site.

6.0 QUALITY ASSURANCE/QUALITY CONTROL

As part of this CAP, quality assurance/quality control (QA/QC) protocol and procedures have been developed and will be used during this project.

6.1 Operation and Calibration of On-Site Monitoring Equipment

Volatile vapor monitoring will be conducted using a PID. It is anticipated that a Minirae 2000 PID equipped with a 10.6 eV lamp, or equivalent, will be used during this project. The PID will be calibrated in accordance with the manufacturer's specifications using an isobutylene gas standard prior to use and as necessary during fieldwork. Measurements will be collected in accordance with the protocols outlined in the HASP.

Particulate monitoring will be conducted using a Dataram particulate meter (or similar). The particulate meter will be calibrated prior to use and as necessary during fieldwork in accordance with the manufacturer's specifications. Measurements will be collected in accordance with the protocols outlined in the HASP.

Other miscellaneous field equipment that may be used during this project includes:

- an electronic static water level indicator;
- a global positioning system (GPS);
- survey equipment;
- an oil/water interface meter;
- a particulate meter; and
- a Horiba U-22 water quality meter.

These meters will be calibrated, operated, and maintained in accordance with the manufacturer's recommendations.

6.2 Record Keeping

DAY will document project activities in a bound field book on a daily basis. Information that will be recorded in the field book will include:

- Dates and time work is performed;
- Details on work being performed;
- Details on field equipment being used;
- Visual and olfactory observations during monitoring activities;
- PID meter and particulate meter measurements collected during monitoring activities;
- Excavation and sampling locations and depths;
- Soil removal excavation measurements;
- Personnel and equipment on-site;
- Weather conditions; and
- Other pertinent information as warranted.

Additionally, DAY will record information from test borings and groundwater monitoring wells on designated logs. Well development data and well sampling data will also be presented on well development logs and well sampling logs, respectively.

6.3 Sampling and Laboratory Analysis Protocol

During sampling activities, personnel will wear disposable latex gloves. Between collection of each soil sample, personnel performing the sampling will discard used latex gloves and put on new gloves to preclude cross-contamination between samples.

New laboratory-grade sample containers will be used to collect soil and groundwater samples. Sufficient volume (i.e., as specified by the analytical laboratory) will be collected to ensure that the laboratory has adequate sample to perform the specified analyses.

Samples will be preserved as specified by the analytical laboratory for the type of parameters and matrices being tested. Sample holding times and preservation protocols will be adhered to during this project. Analytical laboratory test results for soil samples will be reported on a dry-weight basis. Laboratories will analyze the samples using the lowest practical quantitation limits (PQLs) possible.

Samples that are collected for subsequent testing as part of this project will be handled using chain-of-custody (COC) control. COC documentation will accompany samples from their inception to their analysis, and copies of COC documentation will be included with the laboratory's report. The COC will include the date and time the sample was collected, the sample identity and sampling location, and the requested analysis.

The analytical laboratory test results for confirmatory soil samples and groundwater monitoring samples will be reported in NYSDEC ASP Category B deliverable reports. The laboratory that performs the ASP analyses will provide internal quality assurance/quality control (QA/QC) data that are required by NYSDEC ASP protocol, such as analyses performed on method blanks, and surrogate recovery results.

In order to provide control over the collection, analysis, review, and interpretation of analytical data, the following QA/QC samples will be included as part of this project (refer to Table 1 in Appendix B):

- One trip blank will be included per 10 liquid samples, or per shipment if less than 10 samples, when the shipment contains liquid field samples (i.e., groundwater samples) that are to be analyzed for VOCs. The trip blanks will be analyzed for VOCs.
- One matrix spike/matrix spike duplicate (MS/MSD) will be analyzed during the confirmatory soil sampling, and also during each groundwater sampling event. Specific parameters that MS/MSD samples will be tested for will be dependent upon the test parameters of the samples that are being analyzed.
- One field blank (i.e., rinsate sample) will be collected from reusable groundwater sampling equipment and reusable confirmatory soil sampling equipment. It is anticipated that this equipment rinsate will be tested for the test parameters of the samples that are being analyzed;

Barton F. Kline, P.E., DAY representative, will be the quality assurance officer (QAO) that is responsible for QA/QC on this project.. Mr. Kline's responsibilities on this project are not as a project manager or task manager involved with project productivity or profitability as a job performance criteria.

6.4 Decontamination Procedures

In order to reduce the potential for cross-contamination of samples collected during this project, the following procedures will be implemented to ensure that the data collected (primarily the laboratory data) is acceptable.

It is anticipated that most of the materials used to assist in obtaining samples will be disposable one-use materials (e.g., sampling containers, bailers, rope, pump tubing, latex gloves, etc.). When equipment must be re-used (e.g., static water level indicator, oil/water interface meter, drilling equipment, etc.), it will be decontaminated by at least one of the following methods:

- steam clean the equipment; or
- rough wash in tap water; wash in mixture of tap water and alconox-type soap; double rinse with deionized or distilled water; and air dry and/or dry with clean paper towel.

Split spoons and other re-usable equipment will be decontaminated between each use. When deemed necessary, a temporary decontamination pad will be constructed for decontamination of equipment. Any decontamination pad will be removed following completion of associated activities. Decontamination liquids and disposable equipment and personal protective equipment (PPE) will be containerized in NYSDOT-approved 55-gallon drums and staged on-site. Once a proper disposal method is determined, these materials will be disposed in accordance with applicable regulations.

7.0 REMEDIAL CONSTRUCTION/CLOSURE REPORT

A Remedial Construction/Closure Report will be developed for this project. This report will include: a summary of the work completed; field documentation; scaled figures depicting waste characterization test boring locations, limits of the source removal excavation and confirmatory sample locations, post-source removal groundwater monitoring well locations, and groundwater potentiometric maps; analytical laboratory sampling documentation and test results; data tables; disposal documentation; and, photographs of the work performed. DAY's scaled figures will use the US State Plain 1983 (New York Western Zone) coordinate system.

DAY will perform, and incorporate into the report, an exposure assessment for residual contamination in groundwater in accordance with the provisions set forth in the *"Guidance for Petroleum Spill Site Inactivation"* (PSSI) dated February 23, 1998. In addition, the Risk Based Corrective Action (RBCA) Tool Kit for Chemical Releases software may also be used to assist in performing the PSSI exposure assessment. For evaluation of contaminants in other types of media, the exposure risk will be evaluated by:

1.) Comparing waste characterization study and confirmatory soil sample data to the NYSDEC Technical and Administrative Guidance Memorandum 4046 entitled *"Determination of Soil Cleanup Objectives and Cleanup Levels"* dated January 1994 and STARS Memorandum #1 issued August 1992.

2.) Evaluating the post-source removal soil gas sample analytical laboratory test results; and

3.) Implementing provisions set forth in the Human Health Risk Assessment guidelines outlined in NYSDEC DER-10.

The first quarterly round of post-source removal groundwater monitoring results will be included in the remedial construction/closure report. Subsequent quarterly rounds of post-source removal groundwater monitoring results will be provided in monitoring reports.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

Subsequent to completing the removal and disposal work and at least two groundwater sampling and analysis events, an environmental management plan (EMP) will be developed for the Site. [Note: The EMP will be developed subsequent to the soil removal work and some groundwater sampling and analysis so that the areas of residual petroleum-impacted soil and groundwater can be defined, and confirmatory soil sampling results can be included.] The purpose of the EMP is to address the handling, management, disposal or re-use of: (1) soil, fill material and groundwater containing petroleum-type contamination; and, (2) fill material containing elevated heavy metals.

Specifically, the EMP will address how to identify, characterize, handle, and dispose or re-use these media during construction or post-development activities. The EMP will establish goals, procedures, and appropriate response actions to be used by on-site personnel should petroleum-contaminated soil, fill material, or groundwater be encountered and disturbed.

8.1 Engineering Controls

In order to mitigate exposure pathways to future residential occupants at the Site, the EMP will include engineering controls (ECs) to be incorporated into the redevelopment of this Site. The purpose of the ECs are to preclude the following contaminant exposure pathways:

- surface soil inhalation, ingestion, and dermal contact;
- soil volatilization to indoor air; and,
- groundwater volatilization to indoor air.

Currently, the conceptual future use of the Site includes redevelopment for a combination of commercial and residential uses with a parking lot and landscaped areas. The City is currently working on residential redevelopment plans for contiguous vacant lots to the west addressed 14-60 Charlotte Street that adjoin the Site.

The following ECs are anticipated for the Site; however, the actual ECs (if any) will depend on confirmatory soil sampling results, soil gas sampling results, post-removal groundwater sampling results, and redevelopment design plans.

- In order to preclude exposure pathways to future Site occupants, it is anticipated that the first floor of the building(s) will be underlain with an active soil venting system and an associated vapor barrier (vapor barrier venting system). The system would consist of horizontal perforated piping beneath the building that is set in porous crushed stone media and overlain by a vapor barrier material, connected to solid piping that is run vertical and is connected to in-line fan(s) that provide active ventilation. The vertical piping downstream from the in-line fan(s) would then discharge above the roofline of the building(s). Once redevelopment plans are made available, detailed engineering calculations, equipment and material specifications and construction drawings (including a site plan, notes, details, etc.) associated with the vapor barrier venting system would be provided to the City and regulatory agencies for review and comment.

Subsequent to redevelopment activities at the Site, the vapor barrier venting system will be monitored monthly for a period of at least one year. The results of the monitoring would be presented in a monitoring report submitted to the City and regulatory agencies. The monitoring would consist of screening the vent system discharge piping with a PID during each monitoring event and verifying proper operation. In the event of an incident where vapors or nuisance odors are reported in any on-site indoor space, the City and appropriate regulatory agencies will be notified, and the performance of the vapor barrier venting system in that area will be evaluated and upgraded as deemed necessary (i.e., installation of larger fan, etc.).

If subsequent to one year after redevelopment there has been no evidence of vapors or nuisance odors in the vapor barrier venting system that present an unacceptable potential exposure, and there have been no reported on-site incidents involving the presence of vapors or nuisance odors in indoor spaces, then monitoring of the vapor barrier venting system will be terminated. However, the vapor barrier venting system will continue to operate, and the owner of the system will be required to ensure it remains operating.

- The Site will be covered by the building(s), paved surfaces or a layer of "clean" soil/select fill to preclude direct exposure to underlying existing fill material at the Site that may contain elevated concentrations of heavy metals, and also potential intermittent areas of soil staining containing SVOCs that may be present (e.g., areas of stained surface soils observed during the previous Phase II ESA).

8.2 Institutional Control

As an institutional control (IC), the City will "flag" the Site on its building information system so that environmental conditions are evaluated and addressed prior to issuing new permits for this Site that involve potentially disturbing contaminated materials. This process identifies environmental conditions at the Site and ensures that these existing environmental conditions are considered prior to issuing a permit. Furthermore, this process ensures that the proposed permit action does not result in disturbances to the planned ECs, and that the proposed permit does not result in an unacceptable exposure to Site contamination by on-site construction workers, on-site occupants or the nearby community. This process also allows the City and regulatory agencies the opportunity to require:

1.) Implementation of a site-specific health and safety plan or environmental management plan for the proposed work;

2.) Modifications to environmental monitoring points; and

3.) Modifications to ECs; etc. prior to issuing the permit.

9.0 CAP SCHEDULE

The schedule listed below provides an estimate of the amount of time it will take to complete each task associated with the CAP.

Activity	Time to complete task	Cumulative Time
Notice to Proceed	-	-
1) Perform Waste Characterization Study	1 Week	1 Week
2) Implement CAP Site Preparation, Source Removal and Confirmatory Sampling/Analysis	3-4 Weeks	4-5 Weeks
3) Implement CAP Well Installation	1 Week	5-6 Weeks
4) Submit Remedial Construction / Closure Report to City and Regulatory Agencies	6-12 Weeks	11-18 Weeks
5) Develop EMP, ECs and IC*	4-24 weeks	15-42 Weeks
6) Implement Post-Source Removal Groundwater Monitoring and Soil Gas Sampling/Analysis	52 weeks (4 quarterly groundwater monitoring events)**	58-62 Weeks

* The schedule for development of an EMP, ECs and IC is dependent upon variables such as the availability of actual redevelopment plans, etc.

** The first round of post-source removal groundwater monitoring results will be included in the remedial construction/closure report. Subsequent rounds of post-source removal groundwater monitoring results will be provided in monitoring reports.

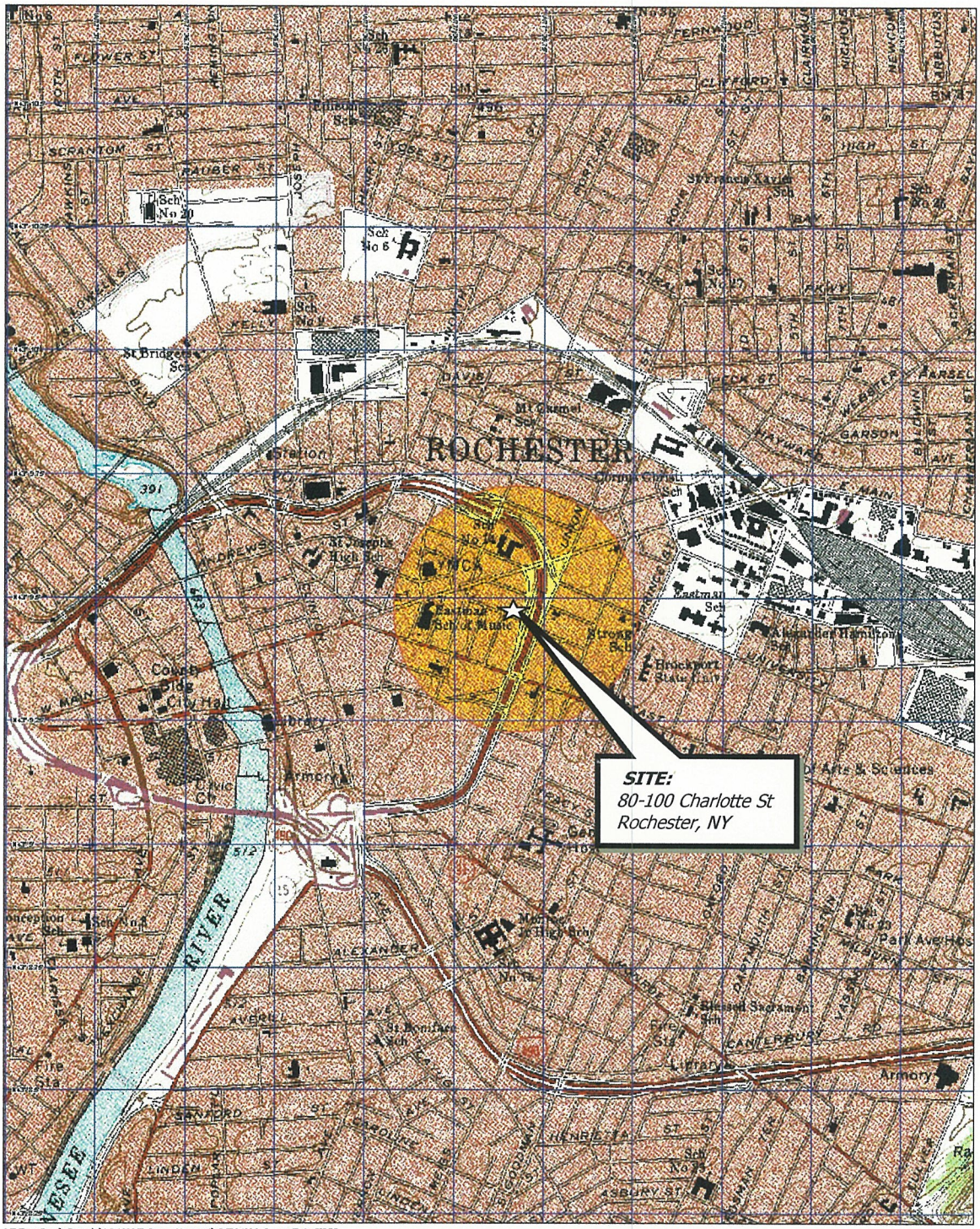
As shown above, it is estimated that it will take approximately 58 to 62 weeks to complete the tasks depicted above that are associated with this project (including post-source removal groundwater monitoring). This schedule does not include the time for review of deliverables by the City, regulatory agencies (i.e., the NYSDEC) and the community.

10.0 ABBREVIATIONS

ASP	Analytical Services Protocol
ASTM	American Society for Testing and Materials
BOD	Biological Oxygen Demand
CAMP	Community Air Monitoring Plan
CAP	Corrective Action Plan
City	City of Rochester
COC	Chain of Custody
COD	Chemical Oxygen Demand
DAY	Day Environmental, Inc.
EC	Engineering Control
ELAP	Environmental Laboratory Approval Program
EMP	Environmental Management Plan
GPS	Global Positioning System
HASP	Health and Safety Plan
HSA	Hollow Stem Auger
IC	Institutional Control
I.D.	Inner Diameter
LBP	Lead-Based Paint
LNAPL	Light Non-Aqueous Phase Liquid
Mitkem	Mitkem Corporation
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
Paradigm	Paradigm Environmental Services, Inc.
Phase I ESA	Phase I Environmental Site Assessment
Phase II ESA	Phase II Environmental Site Assessment
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts Per Million
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/ Quality Control
REC	Recognized Environmental Condition
RSCO	Recommended Soil Cleanup Objective
SACM	Suspect Asbestos Containing Material
SCG	Standards, Criteria and Guidance
STARS	Spill Technology and Remediation Series
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TPH	Total Petroleum Hydrocarbons
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

APPENDIX A

Figures

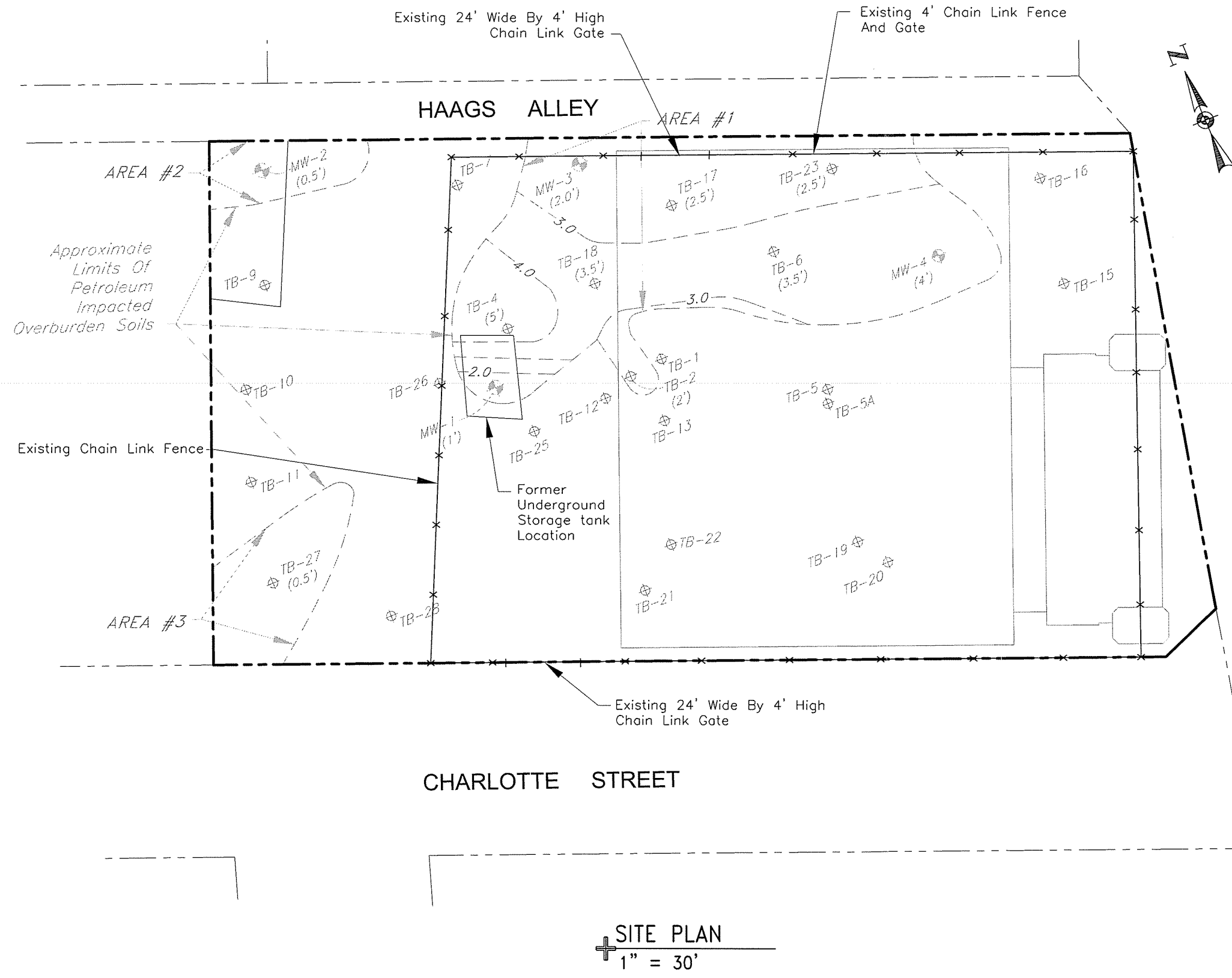


Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad map Rochester East (NY) 1995. Site Lat/Long: N43°09.48' – W77°35.83'

DATE 07-11-2002 DRAWN BY Jad SCALE 1" = 2000'	day DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008	PROJECT TITLE 80-100 CHARLOTTE STREET ROCHESTER, NY CORRECTIVE ACTION PLAN DRAWING TITLE PROJECT LOCUS MAP	PROJECT NO. 3638R-05 FIGURE 1

Ref4:
Ref5:
Ref6:

Ref1: 2957\CharlatteBase-1
Ref2: 2957\PetroPlan-1
Ref3:



SITE PLAN
1" = 30'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B-1, Site Plan, dated 3-12-1962; and notes of site visit by representatives of Day Environmental, Inc. On 6-07-2002.
2. Locations of test borings and sample points tape-measured from existing site structures, and are considered accurate to the degree implied by the method used.
3. Locations of existing 4' chain link fencing and gates are approximate, and are placed based on observations made during site visits by representatives of Day Environmental, Inc. in October 2004.

LEGEND

MW-3 (2.0') — Previous Overburden groundwater monitoring well with thickness of petroleum impacted overburden soils

TB-18 (3.5') — Previous Test Boring with thickness of petroleum impacted overburden soils

2.0 — Previously Identified Petroleum Impacted overburden soil contour with thickness label

FIELD VERIFIED BY	DATE
JAD	08-2005
DRAWN BY	DATE DRAWN
RJM	08-05-2005
SCALE	DATE ISSUED
As Noted	09-29-2005

day
DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

CORRECTIVE ACTION PLAN

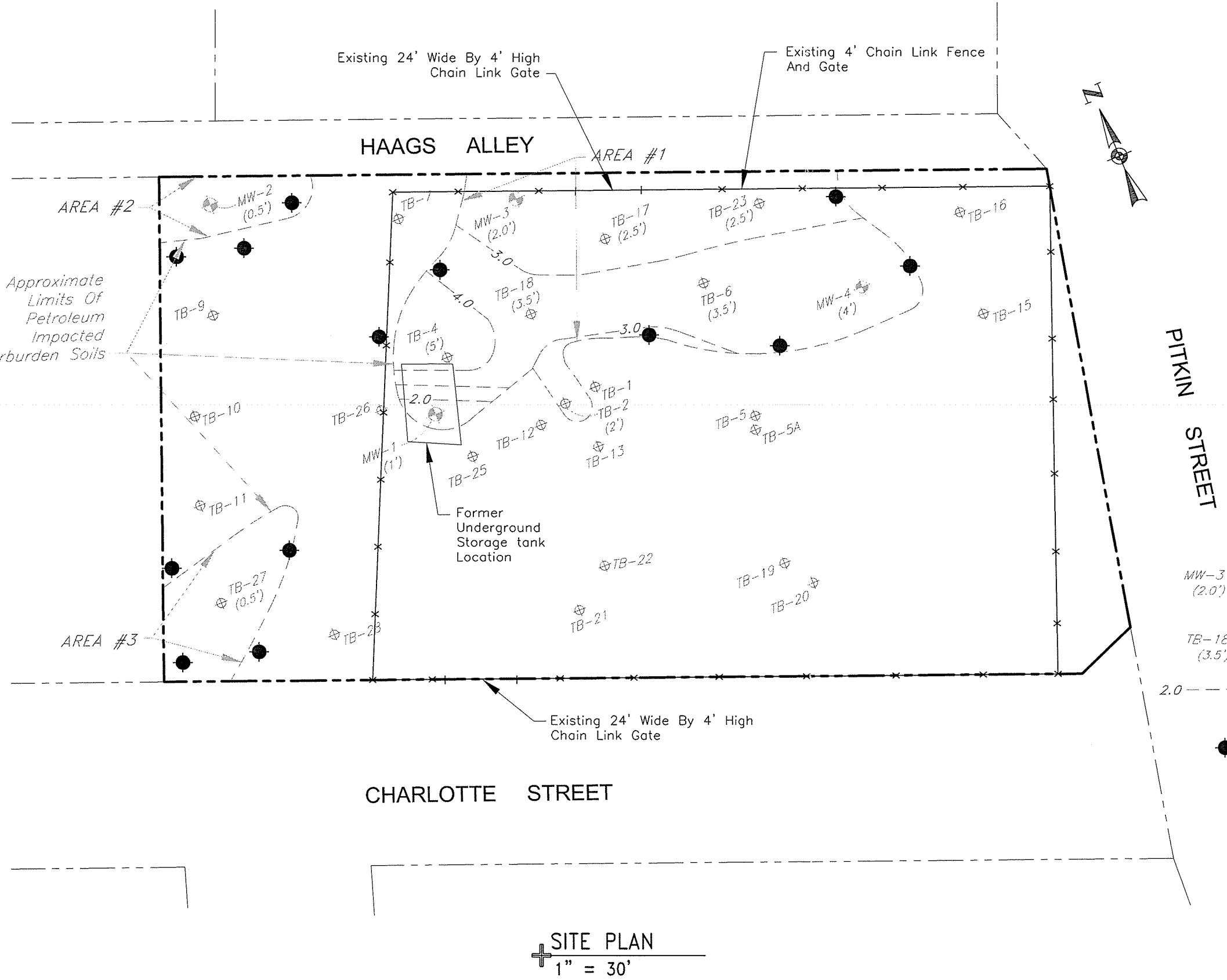
DRAWING TITLE
Site Plan Depicting Previous Test Locations and Petroleum-Impacted Soil Thickness Contours

PROJECT NO.
3638R-05

FIGURE 2

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout 1

Time Plotted: Thur Sept 29 10:15 2005
File Name: Rocity\3638\3638-2.dwg



SITE PLAN
1" = 30'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B-1, Site Plan, dated 3-12-1962; and notes of site visit by representatives of Day Environmental, Inc. On 6-07-2002.
2. Locations of test borings and sample points tape-measured from existing site structures, and are considered accurate to the degree implied by the method used.
3. Locations of existing 4' chain link fencing and gates are approximate, and are placed based on observations made during site visits by representatives of Day Environmental, Inc. in October 2004.

LEGEND

- MW-3 (2.0') — Previous Overburden groundwater monitoring well with thickness of petroleum impacted overburden soils
- TB-18 (3.5') — Previous Test Boring with thickness of petroleum impacted overburden soils
- 2.0 — Previously Identified Petroleum Impacted overburden soil contour with thickness label
- Proposed Waste Characterization Direct-Push Test Boring

FIELD VERIFIED BY	DATE	DRAWN BY	DATE DRAWN	SCALE	DATE ISSUED
JAD	08-2005	RJM	09-20-2005	As Noted	09-21-2005

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE: 80-100 CHARLOTTE STREET ROCHESTER, NEW YORK

CORRECTIVE ACTION PLAN

DRAWING TITLE: Site Plan Depicting Waste Characterization Test Borings

PROJECT NO. 3638R-05

FIGURE 3

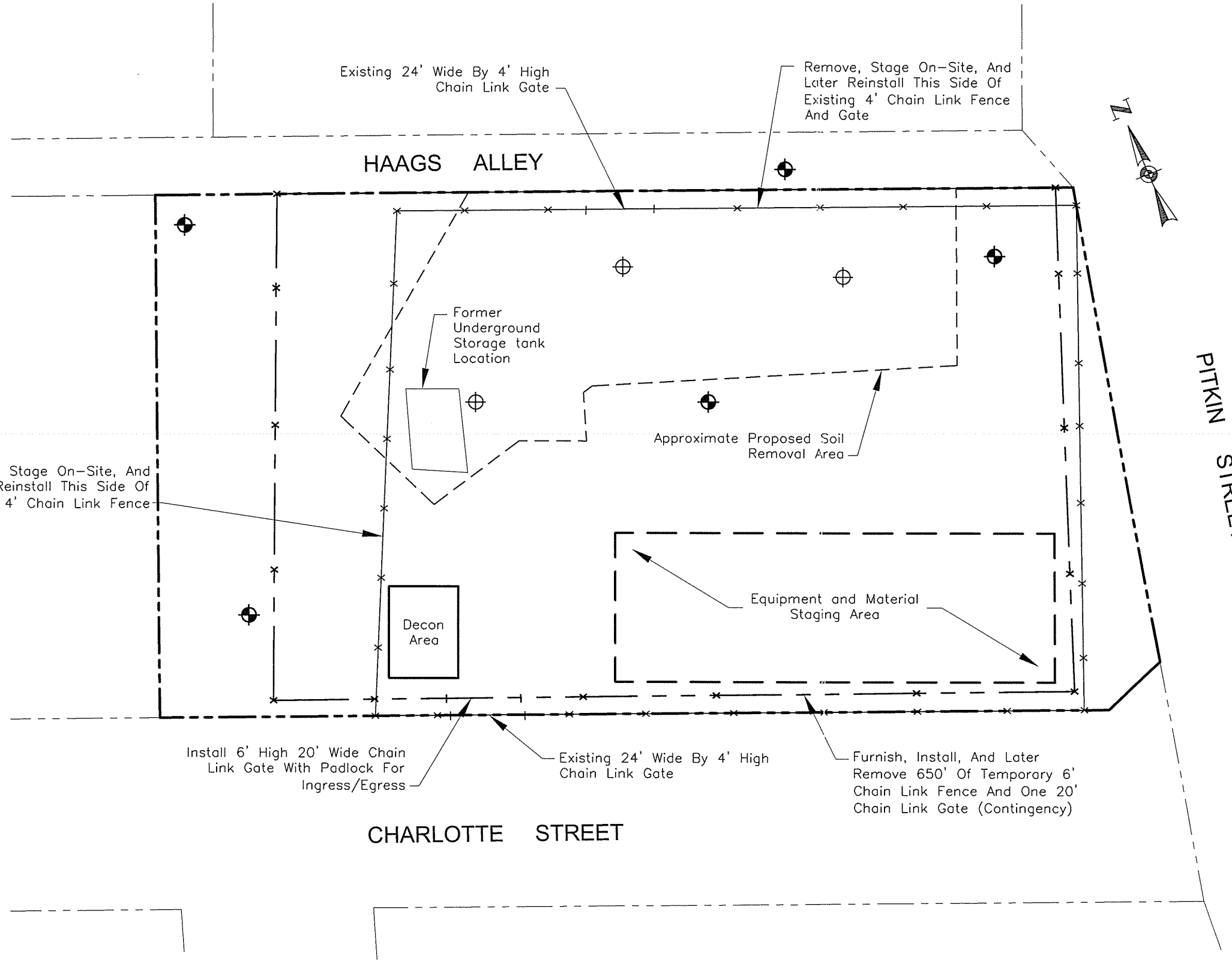
Ref1: 2957\CharlotteBase-1
Ref2: 2957\PetroPlan-1
Ref3:
Ref4:
Ref5:
Ref6:

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout 1

Time Plotted: Wed Sept 21 09:50 2005
File Name: Rocity\3638\3638-4.dwg

Ref4:
Ref5:
Ref6:

Ref1:
Ref2:
Ref3:



SITE PLAN
1" = 30'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B-1, Site Plan, dated 3-12-1962; and notes of site visit by representatives of Day Environmental, Inc. On 6-07-2002.
2. Locations of test borings and sample points tape-measured from existing site structures, and are considered accurate to the degree implied by the method used.
3. Locations of existing 4' chain link fencing and gates are approximate, and are placed based on observations made during site visits by representatives of Day Environmental, Inc. in October 2004.

LEGEND

- Proposed 4" Overburden/Bedrock Interface Well installed during backfilling
- Proposed 2" Overburden/Bedrock Interface Well

FIELD VERIFIED BY	DATE	DRAWN BY	DATE DRAWN	SCALE	DATE ISSUED
JAD	08-2005	RJM	09-20-2005	As Noted	09-21-2005

DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

CORRECTIVE ACTION PLAN

DRAWING TITLE
Site Plan Depicting Corrective Action Components

PROJECT NO.
3638R-05

FIGURE 4

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout 1

Time Plotted: Wed Sept 21 10:00 2005
File Name: Rocity\3638\3638-5.dwg

APPENDIX B

Table 1 (Analytical Laboratory Testing Program)

Table 1 (Analytical Laboratory Testing Program)

Corrective Action Plan
80 - 100 Charlotte Street
Rochester, New York

Task	Sample Matrix	Parameter	Field Samples	Trip Blanks	MS/MSD	Field Blanks	Analytical Methods	Reporting Levels	Corresponding SCGs
2.1 (Waste Characterization Study)	Soil	STARS-list VOCs plus TICs	up to 8	0	0	0	USEPA Method 8260	PQL	TAGM 4046 RSCOs
	Soil	Ignitability, TCLP Metals, PCBs	up to 2	0	0	0	1010, 1311/6010/7470 and 8082A	ASP-B	6 NYCRR Part 371.3 Toxicity & Ignitability Characteristics Levels
2.3 (Confirmatory Soil Samples)	Soil	STARS-list VOCs plus TICs	14	0	2	1	USEPA Method 8260	ASP-B	TAGM 4046 RSCOs
3.3 (Groundwater Monitoring)	Water	STARS-list VOCs plus TICs, BOD, COD, sulfate, nitrate, iron, TPH	32 (4 rounds,8 samples/ round)	4* (1/round)	4 (1/round)	4 (1/round)	USEPA Methods 8260, 405.1, 5220, 4500, 353.2, 6010 and NYSDOH Method 310.13	ASP-B	TOGS 1.1.1 Groundwater Standards and Guidance Values
	NAPL	TPH	up to 2	0	1	0	NYSDOH 310.13	PQL	NA

* = Trip blanks will only be analyzed for VOCs

APPENDIX C

Health and Safety Plan

HEALTH AND SAFETY PLAN

BROWNFIELD SITE CLEANUP
80 – 100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Prepared by: Day Environmental, Inc.
40 Commercial Street
Rochester, New York 14614-1008

Approved by: Davis E. Frederiksen, CIH
Certification #3388

Project No.: 3638R-05

Date: August 2005

TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

This Health and Safety Plan (HASP) outlines the policies and procedures necessary to protect workers and the public from potential environmental hazards during remedial activities conducted at 80-100 Charlotte Street, Rochester, New York (Site). The Site is a Brownfield property owned by the City of Rochester in Monroe County, New York. Figure 1 included as Attachment 1 depicts the general location of the Site. As outlined in this HASP, the above activities shall be conducted in a manner to minimize the probability of injury, accident, or incident occurrence.

Although the HASP focuses on the specific work activities planned for this Site, it must remain flexible due to the nature of this work. Conditions may change and unforeseen situations can arise that require deviations from the original HASP.

1.1 Site History/Overview

The Site is currently a vacant undeveloped parcel that is approximately 0.78 acres in size. Prior to September 2003, the site was developed with a commercial building consisting of approximately 18,988 square feet. The building was used for electric motor repair and electrical contractor facilities with a repair shop, truck bay, offices, and a warehouse. The commercial building consisted of a one and two-story steel and masonry building constructed in 1962. A petroleum underground storage tank (UST) was reportedly removed from the property in 1988. Prior to the commercial development, the Site's use was residential. The Site is located in the City of Rochester near the Inner Loop and bound by commercial properties. In September 2003, the City of Rochester demolished the building and removed the associated debris.

Day Environmental, Inc. (DAY) previously completed a Phase I Environmental Site Assessment (Phase I ESA) and Phase II Environmental Site Assessment (Phase II ESA) for the Site. The Phase II ESA identified petroleum impacts on surface soil, subsurface soil and groundwater at concentrations above New York State Department of Environmental Conservation (NYSDEC) guidance values on the northwest and/or southwest portions of the Site. Evidence of petroleum contamination was detected in unsaturated soils, saturated soils, and groundwater in the area of the former gasoline UST system. The petroleum impacts appear attributable to the historic on-site gasoline UST and adjoining off-site properties located west of the Site. Fill material was also identified on the Site that contains various metals at concentrations exceeding NYSDEC recommended soil cleanup objectives.

1.2 Planned Activities Covered by HASP

This HASP is intended to be used during this project for remedial activities. Currently, identified activities include:

- Waste Characterization Study
- Site Preparation and Control
- Soil Removal and Disposal,
- Monitoring Well Installations and Survey
- Groundwater Sampling and Slug Testing
- Soil Gas Sampling
- Confirmatory Soil Sampling

- Implementing an Environmental Management Plan (EMP) and environmental Engineering Controls (ECs)
- Miscellaneous on-site tasks as may arise during this project.

This HASP can be modified to cover other Site activities as deemed appropriate. The owner of the property, its contractors, and other site workers will be responsible for the development and/or implementation of health and safety provisions associated with normal construction activities or site activities.

2.0 KEY PERSONNEL AND MANAGEMENT

The Certified Industrial Hygienist (CIH), Project Manager (PM) and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the HASP.

2.1 Certified Industrial Hygienist

The CIH is responsible for the contents of the HASP and ensures that the HASP complies with federal, state and local health and safety requirements. If necessary, the CIH can modify the HASP to adjust for on-site changes that affect safety. The CIH will coordinate with the SSO on modifications to the HASP and will be available for consultation when required. The CIH will not necessarily be on-site during the field activities.

2.2 Project Manager

The PM has the overall responsibility for the project and will coordinate with the SSO to ensure that the goals of the project are attained in a manner consistent with the HASP requirements.

2.3 Site Safety Officer

The SSO has responsibility for administering the HASP relative to Site activities, and will be in the field full-time while Site activities are in progress. The SSO's operational responsibilities will be monitoring, including personal and environmental monitoring, ensuring personal protective equipment maintenance, and assignment of protection levels. The SSO will be the main contact in any on-site emergency situation. The SSO will direct field activities involved with safety and be responsible for stopping work when unacceptable health or safety risks exist. The SSO is responsible for ensuring that on-site personnel understand and comply with safety requirements.

2.4 Employee Safety Responsibility

Each employee is responsible for personal safety as well as the safety of others in the area. The employee will use the equipment provided in a safe and responsible manner as directed by the SSO.

2.5 Key Safety Personnel

The following individuals are anticipated to share responsibility for health and safety at the site.

Certified Industrial Hygienist	Davis Frederiksen, CIH
Project Manager	Jeffrey A. Danzinger
Site Safety Officer	Tony DiNardo, Chris C. Davidson or Nate Simon

3.0 SAFETY RESPONSIBILITY

Contractors, consultants, state or local agencies, or other parties, and their employees, involved with this project will be responsible for their own safety while on-site. Their employees will be required to understand the information contained in this HASP, and must follow the recommendations that are made in this document.

4.0 JOB HAZARD ANALYSIS

There are many hazards associated with remedial work on a site, and this HASP discusses some of the anticipated hazards for this Site. The hazards listed below deal specifically with those hazards associated with the management of potentially contaminated media (e.g., soil, groundwater, fill, etc.).

4.1 Chemical Hazards

Chemical substances can enter the unprotected body by inhalation, skin absorption, ingestion, or through a puncture wound (injection). A contaminant can cause damage to the point of contact or can act systemically, causing a toxic effect at a part of the body distant from the point of initial contact.

A list of selected volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals that have been previously detected in soil, fill and/or groundwater at the Site are presented below. This list also presents the permissible exposure limits (PELs) and levels that are considered immediately dangerous to life or health (IDLH). In addition, light-weight, medium-weight and heavy-weight total petroleum hydrocarbons (TPH), designated as gasoline, kerosene and lube oil respectively, were previously detected in soil and/or groundwater.

CONSTITUENT	OSHA PEL	IDLH
Benzene	1 ppm	500 ppm
Ethylbenzene	100 ppm	800 ppm
tert-Butylbenzene	NA	NA
sec-Butylbenzene	NA	NA
Isopropylbenzene	NA	NA
p-Isopropyltoluene	NA	NA
Naphthalene	10 ppm	250 ppm
n-Propylbenzene	NA	NA
Mixed xylenes	100 ppm	900 ppm
1,2,4-Trimethylbenzene	25 ppm	NA
1,3,5-Trimethylbenzene	25 ppm	NA
Benzo(b)fluoranthene	NA	NA
Fluoranthene	NA	NA
Phenanthrene	0.2 mg/m^3	NA
Pyrene	0.2 mg/m^3	NA
Arsenic	0.01 mg/m^3	5 mg/m^3
Barium	0.5 mg/m^3	50 mg/m^3
Cadmium	0.005 mg/m^3	9 mg/m^3
Lead	0.05 mg/m^3	100 mg/m^3
Mercury	0.1 mg/m^3	10 mg/m^3

Notes:
PEL = OSHA Permissible Exposure Limits (TWA for 8-hour day) NA = Not Available
IDLH = Immediately Dangerous to Life or Health Concentration

The potential routes of exposure for these analytes and chemicals include inhalation, ingestion, skin absorption and skin/eye contact. The potential for exposure through any one of these routes will depend on the activity conducted. The most likely routes of exposure for the activities that are performed during remediation of the Site include inhalation and skin contact.

4.2 Physical Hazards

There are physical hazards associated with this project, which might compound the chemical hazards. Hazard identification, training, adherence to the planned remedial measures, and careful housekeeping can prevent many problems or accidents arising from physical hazards. Potential physical hazards associated with this project and suggested preventative measures include:

- Slip/Trip/Fall Hazards - Some areas may have wet surfaces that will greatly increase the possibility of inadvertent slips. Caution must be exercised when using steps and stairs due to slippery surfaces in conjunction with the fall hazard. Good housekeeping practices are essential to minimize the trip hazards.

- Small Quantity Flammable Liquids - Small quantities of flammable liquids will be stored in "safety" cans and labeled according to contents.

- Electrical Hazards - Electrical devices and equipment shall be de-energized prior to working near them. All extension cords will be kept out of water, protected from crushing, and inspected regularly to ensure structural integrity. Temporary electrical circuits will be protected with ground fault circuit interrupters. Only qualified electricians are authorized to work on electrical circuits. Heavy equipment (e.g., backhoe, excavator, drill rig) shall not be operated within 10 feet of high voltage lines, unless proper protection from the high voltage lines is provided by the appropriate utility company.

- Noise - Work around large equipment often creates excessive noise. The effects of noise can include:

    - Workers being startled, annoyed, or distracted.

    - Physical damage to the ear resulting in pain, or temporary and/or permanent hearing loss.

    - Communication interference that may increase potential hazards due to the inability to warn of danger and proper safety precautions to be taken.

    Proper hearing protection will be worn as deemed necessary. In general, feasible administrative or engineering controls shall be utilized when on-site personnel are subjected to noise exceeding an 8-hour time weighted average (TWA) sound level of 90 dBA (decibels on the A-weighted scale). In addition, whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 dBA, employers shall administer a continuing, effective hearing conservation program as described in the Occupational Safety and Health Administration (OSHA) Regulation 29 CFR Part 1910.95.

- Heavy Equipment - Each morning before start-up, heavy equipment will be inspected to ensure safety equipment and devices are operational and ready for immediate use.

- Subsurface and Overhead Hazards - Before any excavation activity, efforts will be made to determine whether underground utilities and potential overhead hazards will be encountered. Underground utility clearance must be obtained prior to subsurface work.

4.3 Environmental Hazards

Environmental factors such as weather, wild animals, insects, and irritant plants can pose a hazard when performing outdoor tasks. The SSO shall make every reasonable effort to alleviate these hazards should they arise.

4.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Site workers will be encouraged to increase consumption of water or electrolyte-containing beverages such as Gatorade® when the potential for heat stress exists. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO.

4.3.2 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

5.0 SITE CONTROLS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas, and personal protective equipment staging/decontamination areas will be specified prior to beginning operations.

5.1 Site Zones

In the area where contaminated materials present the potential for worker exposure (work zone), personnel entering the area must wear the mandated level of protection for the area. A "transition zone" shall be established where personnel can begin and complete personal and equipment decontamination procedures. This can reduce potential off-site migration of contaminated media. Contaminated equipment or clothing will not be allowed outside the transition zone (e.g., on clean portions of the Site) unless properly containerized for disposal. Operational support facilities will be located outside the transition zone (i.e., in a "support zone"), and normal work clothing and support equipment are appropriate in this area. If possible, the support zone should be located upwind of the work zone and transition zone.

5.2 General

The following items will be requirements to protect the health and safety of workers during implementation of activities that disturb contaminated material.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination shall not occur in the work zone and/or transition zone during disturbance of contaminated material.

- Personnel admitted in the work zone shall be properly trained in health and safety techniques and equipment usage.

- No personnel shall be admitted in the work zone without the proper safety equipment.

- Proper decontamination procedures shall be followed before leaving the Site.

6.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of personal protective equipment (PPE) which are or may be required at this job site. Personnel entering the work zone and transition zone shall be trained in the use of the anticipated PPE to be utilized.

6.1 Anticipated Protection Levels

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Site mobilization	D	
Site prep/construction of engineering controls	D	
Extrusive work (e.g., surveying, etc.)	D	
Intrusive work (e.g., soil removal, advancement of test borings and wells)	C/Modified D/D	Based on air monitoring, and SSO discretion
Support zone	D	
Site breakdown and demobilization	D	

If visible dust is observed during project activities that have the potential to disturb contaminated soil or fill, then dust suppression will be implemented.

It is anticipated that work conducted as part of this project will be performed in Level D or modified Level D PPE. If conditions are encountered that require higher levels of PPE (e.g., Level C, B, or A), the work will immediately be stopped, and the proper health and safety measures will be implemented (e.g., develop and implement engineering controls, upgrade in PPE, etc.).

6.2 Protection Level Descriptions

This section lists the minimum requirements for each protection level. Modifications to these requirements can be made upon approval of the SSO. If Level A, Level B, and/or Level C PPE is required, Site personnel that enter the work zone and/or transition zone must be properly trained and certified in the use of those levels of PPE.

6.2.1 Level D

Level D consists of the following:

- Safety glasses
- Hard hat when working with heavy equipment
- Steel-toed or composite-toed work boots
- Protective gloves during sampling or handling of potentially contaminated media

- Work clothing as prescribed by weather

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed or composite-toed work boots
- Work gloves
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and polyvinyl chloride (PVC) acid gear will be required when workers have a potential to be exposed to impacted liquids or impacted particulates].

6.2.3 Level C

Level C consists of the following:

- Air-purifying respirator with appropriate cartridges
- Outer protective wear, such as Tyvek coverall [Tyveks (Sarans) and PVC acid gear will be required when workers have a potential to be exposed to impacted liquids or particulates].
- Hard hat
- Steel-toed or composite-toed work boots
- Nitrile, neoprene, or PVC overboots, if appropriate
- Nitrile, neoprene, or PVC gloves, if appropriate
- Face shield (when projectiles or splashes pose a hazard)

6.2.4 Level B

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator. Level B PPE is not anticipated to be required during this project. If the need for level B PPE becomes evident, the Site activities will be ceased until Site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM, CIH or SSO. Subsequently, the appropriate safety measures (including Level B PPE) must be implemented prior to commencing Site activities.

6.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully-encapsulating, vapor-proof suit capable of maintaining positive pressure. Level A PPE is not anticipated to be required during this project. If the need for level A PPE becomes evident, the Site activities will be ceased until Site conditions are further evaluated, and any necessary modifications to the HASP have been approved by the PM, CIH or SSO. Subsequently, the appropriate safety measures (including Level A PPE) must

be implemented prior to commencing Site activities.

6.3 Respiratory Protection

Any respirator used will meet the requirements of the OSHA 29 CFR 1910.134. Both the respirator and cartridges specified shall be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910). Air purifying respirators shall not be worn if contaminant levels exceed designated use concentrations. The workers will wear respirators with approval for: organic vapors <1,000 parts per million (ppm); and dusts, fumes and mists with a TWA < 0.05 mg/m^3.

No personnel who have facial hair, which interferes with respirator sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

Only workers who have been certified by a physician as being physically capable of respirator usage shall be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas that require respirator protection.

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 Personnel Decontamination

Personnel involved with activities that involve disturbing contaminated media will follow the decontamination procedures described herein to ensure that material which workers may have contacted in the work zone and/or transition zone does not result in personal exposure and is not spread to clean areas of the Site. This sequence describes the general decontamination procedure. The specific stages can vary depending on the Site, the task, the protection level, etc.

1. Leave work zone and go to transition zone
2. Remove soil/debris from boots and gloves
3. Remove boots
4. Remove gloves
5. Remove Tyvek suit and discard, if applicable
6. Remove and wash respirator, if applicable
7. Go to support zone

7.2 Equipment Decontamination

Contaminated equipment shall be decontaminated in the transition zone before leaving the Site. Decontamination procedures can vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steam cleaning the exterior of the equipment. Personnel performing this task will wear the proper PPE.

7.3 Disposal

Disposable clothing will be treated as contaminated waste and be disposed of properly. Liquids (e.g., decontamination water, etc.) generated by project activities will be disposed of in accordance with applicable regulations.

8.0 AIR MONITORING

Air monitoring will be conducted in order to determine airborne particulate and contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered and that chemical contaminants are not migrating off-site. Additional air monitoring may be conducted at the discretion of the SSO.

The following chart describes the direct reading instrumentation that will be utilized and appropriate action levels.

Monitoring Device	Action level	Response/Level of PPE
PID Volatile Organic Compound Meter	< 1 ppm in breathing zone, sustained 5 minutes	Level D
	1-5 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading below 1 ppm	Level D
	1-5 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading between 1 and 5 ppm	Level C
	6-25 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading between 1 and 5 ppm	Level C
	26-250 ppm in breathing zone, sustained 5 minutes; and benzene detector tube reading above 5 ppm	Level B, Stop work, evaluate the use of engineering controls
	>250 ppm in breathing zone	Level A, Stop work, evaluate the use of engineering controls
RTAM Particulate Meter	< 150 ug/m^3 over an integrated period not to exceed 15 minutes.	Continue working
	> 150 ug/m^3	Cease work, implement dust suppression, change in way work performed, etc. If levels can not be brought below 150 ug/m^3, then upgrade PPE to Level C.

8.1 Particulate Monitoring

During implementation of remedial activities where contaminated materials may be disturbed, air monitoring will include real-time monitoring for particulates using a real-time aerosol monitor (RTAM) particulate meter at the perimeter of the work zone in accordance with the 1989 NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031 entitled, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites." The TAGM uses an action level of 150 ug/m^3 (0.15 mg/m^3) over an integrated period not to exceed 15 minutes. If the action level is exceeded, or if visible dust is encountered, then work shall be discontinued until corrective actions are implemented. Corrective actions may include dust suppression, change

in the way work is performed, and/or upgrade of personal protective equipment, etc. Readings will be recorded and be available for review.

8.2 Volatile Organic Compound Monitoring

During implementation of remedial activities where contaminated materials may be disturbed, a photoionization detector (PID) will be used to monitor total VOCs in the ambient air. The PID will prove useful as a direct reading instrument to aid in determining if current respiratory protection is adequate or needs to be upgraded. The SSO will take measurements before operations begin in an area to determine the amount of VOCs naturally occurring in the air. This is referred to as a background level. Levels of VOCs will periodically be measured in the air at active work sites, and at the transition zone when levels are detected above background in the work zone.

8.3 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) includes real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when activities with the potential to release VOCs or dust are in progress at the Site. This CAMP is based on the New York State Department of Health (NYSDOH) Generic CAMP included as Appendix 1A of the NYSDEC document titled *"Draft DER-10, Technical Guidance for Site Investigation and Remediation"* dated December 2002. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of project work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air. Reliance on the CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Continuous monitoring will be conducted during ground intrusive activities. Ground intrusive activities include, but are not limited to, soil excavation and handling, advancement/installation of test borings or monitoring wells, etc.

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of groundwater samples from monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities.

8.3.1 VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the work zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish

background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

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

The 15-minute readings must be recorded and made available for review by regulatory agencies. Instantaneous readings, if any, used for decision purposes should also be recorded.

8.3.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-l0) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during work activities that have the potential to disturb contaminated media.

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

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

Readings must be recorded and made available for review by regulatory agencies.

9.0 EMERGENCY RESPONSE

To provide first-line assistance to field personnel in the case of illness or injury, the following items will be made immediately available on the Site:

- First-aid kit;
- Portable emergency eye wash; and
- Supply of clean water.

9.1 Emergency Telephone Numbers

The following telephone numbers are listed in case there is an emergency at the Site:

Fire/Police Department:	911
Poison Control Center:	(800) 222-1222
NYSDEC Spills	(585) 226-2466
NYSDEC Tim Walsh	 (585) 226-5437
NYSDOH Debbie McNaughton	 (585) 423-8069
City of Rochester Joseph Biondolillo	 (585) 428-6649
MCDOH Joe Albert After Hours	 (585) 753-5904 (585) 529-0756
Day Environmental, Inc. Jeff Danzinger Ray Kampff	 (585) 454-0210 x114 (585) 454-0210 x108
Nearest Hospital	Highland Hospital 1000 South Avenue, Rochester, NY 14620 (585) 473-2200 (Main) (585) 341-6880 (Emergency Department)
Directions to the Hospital (refer Figure 1):	Turn west onto Charlotte St. and travel approx. 0.1 mile or less; turn left (south) onto Scio St. and travel approx. 0.7 miles [Note: Scio St. turns into Broadway, which turns into Manhattan Square Drive, which turns into Woodbury Drive]; turn left (south) onto South Ave. and travel approx. 1.3 miles; turn left (east) onto Belleview Dr. and travel less than 0.1 mile; turn left (north) into the Hospital Emergency Dept.

9.2 Evacuation

A log of each individual entering and leaving the Site will be kept for emergency accounting practices. Although unlikely, it is possible that a site emergency could require evacuating all personnel from the site. If required, the SSO will give the appropriate signal for site evacuation (i.e., hand signals, alarms, etc.).

All personnel shall exit the site and shall congregate in an area designated by the SSO. The SSO shall ensure that all personnel are accounted for. If someone is missing, the SSO will alert emergency personnel. The appropriate government agencies will be notified as soon as possible regarding the evacuation, and any necessary measures that may be required to mitigate the reason for the evacuation.

9.3 Medical Emergency

In the event of a medical emergency involving illness or injury to one of the on-site personnel, the site should be shut-down and immediately secured. Emergency Medical Service (EMS) and the appropriate government agencies should be notified immediately. The area in which the injury or illness occurred shall not be entered until the cause of the illness or injury is known. The nature of injury or illness shall be assessed. If the victim appears to be critically injured, administer first aid and/or cardio-pulmonary resuscitation (CPR) as needed. Instantaneous real-time air monitoring shall be done in accordance with air monitoring outlined in Section 8.0 of this HASP.

9.4 Contamination Emergency

It is unlikely that a contamination emergency will occur; however, if such a emergency does occur, the Site shall be shut-down and immediately secured. If an emergency rescue is needed, notify Police, Fire Department and EMS units immediately. Advise them of the situation and request an expedient response. The appropriate government agencies shall be notified immediately. The area in which the contamination occurred shall not be entered until the arrival of trained personnel who are properly equipped with the appropriate PPE and monitoring instrumentation as outlined in Section 8.0 of this HASP.

9.5 Fire Emergency

In the event of a fire on-site, the Site shall be shut-down and immediately secured. The area in which the fire occurred shall not be entered until the cause can be determined. All non-essential site personnel shall be evacuated from the site to a safe, secure area. Notify the Fire Department immediately. Advise the Fire Department of the situation and the identification of any hazardous materials involved. The appropriate government agencies shall be notified as soon as possible.

The four classes of fire along with their constituents are as follows:

Class A:	Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.
Class B:	Flammable liquids, gases and greases.
Class C:	Energized electrical equipment.
Class D:	Combustible metals such as magnesium, titanium, sodium, potassium.

Small fires on-site may be actively extinguished; however, extreme care shall be taken while in this operation. All approaches to the fire shall be done from the upwind side if possible. Distance from on-site personnel to the fire shall be close enough to ensure proper application of the extinguishing material, but far enough away to ensure that the personnel are safe. The proper extinguisher shall be utilized for the Class(s) of fire present on the site. If possible, the fuel source shall be cut off or separated from the fire. Care must be taken when performing operations involving the shut-off values and manifolds, if present.

Examples of proper extinguishing agent as follows:

Class A:	Water Water with 1% AFFF Foam (Wet Water) Water with 6% AFFF or Fluorprotein Foam ABC Dry Chemical
Class B:	ABC Dry Chemical Purple K Carbon Dioxide Water with 6% AFFF Foam
Class C:	ABC Dry Chemical Carbon Dioxide
Class D:	Metal-X Dry Powder

No attempt shall be made against large fires. These shall be handled by the Fire Department.

9.6 Spill or Air Release

In the event of spills or air releases of hazardous materials on-site, the Site shall be shut-down and immediately secured. The area in which the spills or releases occurred shall not be entered until the cause can be determined and site safety can be evaluated. All non-essential site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The spilled or released materials shall be immediately identified and appropriate containment measures shall be implemented, if possible. Real-time air monitoring shall be implemented as outlined in Section 8.0 of this HASP. If the materials are unknown, Level B protection is mandatory. Samples of the materials shall be acquired to facilitate identification.

9.7 Locating Containerized Waste and/or Underground Storage Tanks

In the event that unanticipated containerized waste (e.g., drums) and/or USTs are located during the project, the Site shall be shutdown and immediately secured. The area where unanticipated containerized wastes and/or tanks are discovered shall not be entered until site safety can be evaluated. All non-essential Site personnel shall be evacuated from the Site to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The SSO shall monitor the area as outlined in Section 8.0 of this HASP.

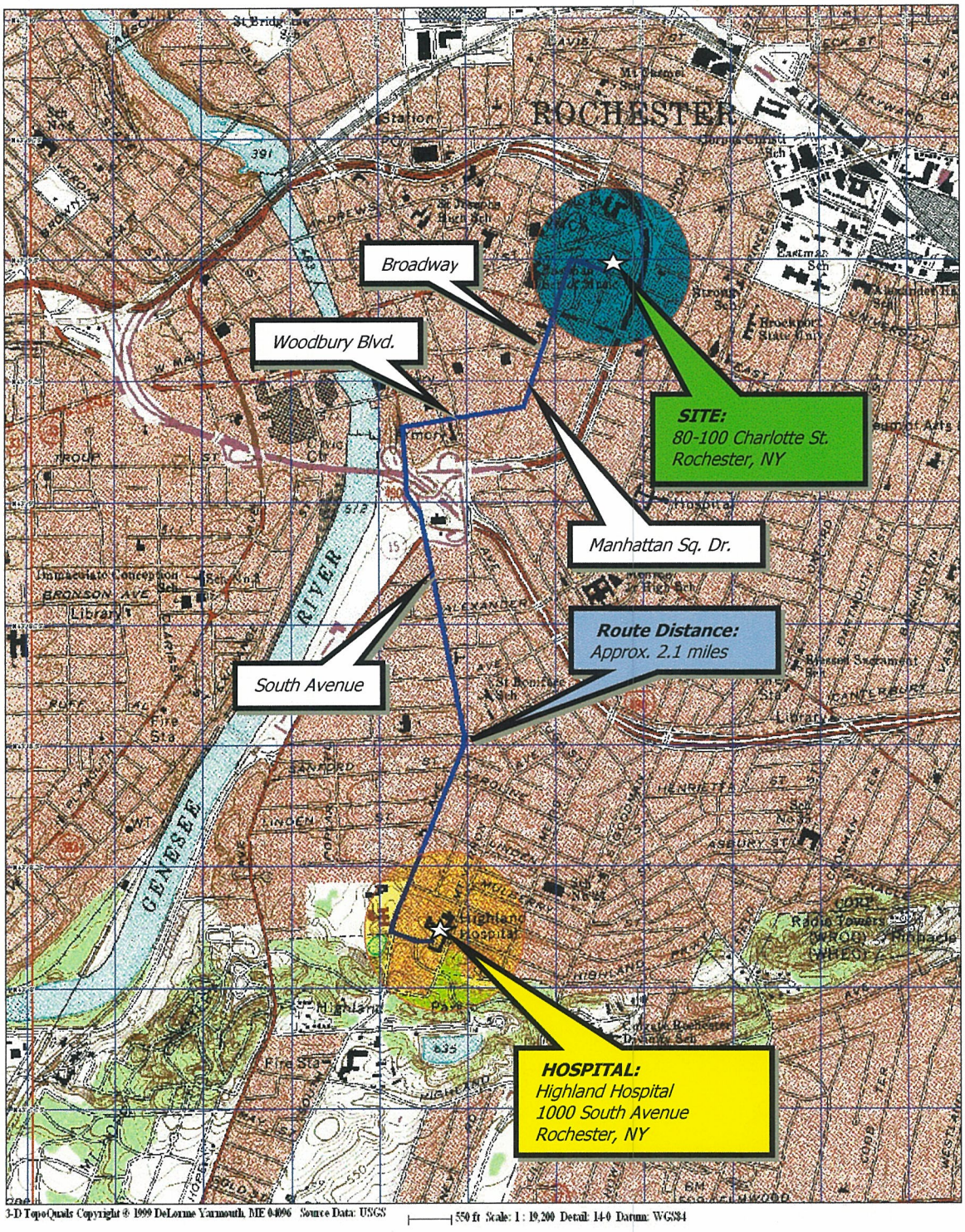
Prior to any handling, unanticipated containers will be visually assessed by the SSO to gain as much information as possible about their contents. As a precautionary measure, personnel shall assume that unlabelled containers and/or tanks contain hazardous materials until their contents are characterized. To the extent possible based upon the nature of the containers encountered, actions may be taken to stabilize the area and prevent migration (e.g., placement of berms, etc.). Subsequent to initial visual assessment and any required stabilization, properly trained personnel will sample, test, remove, and dispose of any containers and/or tanks, and their contents. After visual assessment and air monitoring, if the material remains unknown, Level B protection is mandatory.

10.0 ABBREVIATIONS

CAMP	Community Air Monitoring Program
CIH	Certified Industrial Hygienist
CPR	Cardio-Pulmonary Resuscitation
DAY	Day Environmental, Inc.
dBA	Decibels on the A-Weighted Scale
EMS	Emergency Medical Service
HASP	Health and Safety Plan
IDLH	Immediately Dangerous to Life or Heath
MCDOH	Monroe County Department of Health
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PM-10	Particulate Matter less than 10 micrometers in diameter
PPE	Personal Protection Equipment
ppm	Parts Per Million
PVC	Polyvinyl Chloride
RTAM	Real-Time Aerosol Monitor
SSO	Site Safety Officer
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TPH	Total Petroleum Hydrocarbons
TWA	Time-Weighted Average
ug/m^3	Micrograms Per Meter Cubed
UST	Underground Storage Tank
VOC	Volatile Organic Compound

ATTACHMENT 1

Figure 1- Hospital Route



Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad maps Rochester East (NY) 1995.

DATE **06-24-2005** DRAWN BY **RJM** SCALE **Shown**	DAY ENVIRONMENTAL, INC. ENVIRONMENTAL ENGINEERING CONSULTANTS ROCHESTER, NEW YORK 14614-1008 NEW YORK, NEW YORK 10165-1617	PROJECT TITLE **80-100 CHARLOTTE STREET** **ROCHESTER, NEW YORK** **HEALTH AND SAFETY PLAN** DRAWING TITLE **DIRECTIONS TO HOSPITAL**	PROJECT NO. **3638R-05** **FIGURE 1**