NYSDEC CONTRACT NO. D003826

FINAL REPORT

REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN DIAMOND CLEANERS

WORK ASSIGNMENT NO. D003826-16

Submitted to:

New York State Department of Environmental Conservation
Albany, New York

Submitted by:

MACTEC Engineering and Consulting, Inc.
Portland, Maine

Project Number: 3612052028

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Submitted by:

John W. Peterson
Project Manager

Approved by:

William J. Weber, P.E.
Program Manager

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1.0 INTRODUCTION

MACTEC Engineering and Consulting, P.C. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC), is submitting this Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) for the Diamond Cleaners (DC) site (Site) in Elmira, Chemung County, New York (Figure 1-1). The Site is listed as a Class 2 hazardous waste site, Site No. 8-08-030, in the Registry of Hazardous Waste Sites in New York State. This Work Plan has been prepared in accordance with the NYSDEC requirements in Work Assignment (WA) No. D003826-16, dated November 12, 2004, and with the July 1997 Superfund Standby Contract between MACTEC and the NYSDEC.

The RI and FS for the Site are being conducted using a phased approach in accordance with the WA, as well as with the United States Environmental Protection Agency (USEPA) RI/FS guidance (USEPA, 1988); NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4025 entitled "Guidelines for Remedial Investigations/Feasibility Studies" (NYSDEC, 1989); TAGM #4030 entitled "Selection of Remedial Actions at Inactive Hazardous Waste Sites" (NYSDEC, 1990); and the NYSDEC Draft DER-10 "Technical Guidance for Site Investigation and Remediation" (NYSDEC, 2002). This approach integrates the RI and risk assessment (RA) with the screening and evaluation of alternatives performed during the FS. This Work Plan presents a technical scope of work for completing the RI and FS activities and preparing the RI and FS reports.

The objectives of the RI are to determine the nature and distribution of contamination associated with the Site. The investigation will assess the potential threats to human health and the environment from the Site by locating potential contamination source areas, delineating the extent of potential groundwater contamination, and identifying areas of potential vapor/indoor air contamination. The FS will develop remedial objectives and evaluate potential remedial alternatives from an engineering, environmental, public health, and economic perspective and develop a preferred alternative.

The Work Plan is organized into three sections.

- Section 1.0 - Introduction.
- Section 2.0 – Site Background and Physical Setting: Consists of a review of existing Site information and presents a conceptual model of the Site.
- Section 3.0 – Scope of Work: Details work to be performed to complete the work assignment, including:
  - Task 1, Work Plan development;
  - Task 2, RI field program and report;
  - Task 3, FS and FS report preparation, and

- Task 4,.Citizens Participation

Potential additional task outlined in the WA, but not scoped in this work plan include:

- Pilot Study
- Site Assessments in areas not adjacent to Former Diamond Cleaners,
- Individual Source area investigation,
- Potential Interim Remedial Measures (IRMs), and
- Design and Installation of Air Venting Systems.

Additional tasks requested under this WA will be addressed with letter work plans, and amendments to the budget will be negotiated with the NYSDEC.

The Work Plan is supplemented by the following attached:

- Appendix A–The site specific Quality Assurance Project Plan (QAPjP);
- Appendix B–The site specific Health and Safety Plan (HASP);
- Appendix C–Citizens Participation Plan (CPP).

2.0 SITE BACKGROUND AND PHYSICAL SETTING

On March 2, 2005 MACTEC personnel visited the City of Elmira municipal offices (including Code Enforcement, Fire Department, Public Works/Engineering and Tax Assessment Office), the Elmira Public Library, and the Chemung County Real Property Office. Information pertaining to the history of Site operations and past releases of contamination was reviewed to help prepare the Work Plan for the RI/FS field investigation. The information collected, as well as information provided in the WA, is summarized below.

2.1 SITE LOCATION

The Site is located at 717 Lake St. in the north-central section of Elmira in Chemung County, New York (Figure 1-1). The Site consists of a 1 acre lot in a commercial and residential area. The lot contains a one story building with a grassy area in the rear of the building along with a gravel parking area south of the building and a paved parking area north of the building. The building was constructed in the 1950's and is currently unoccupied.

2.2 SITE HISTORY

History of the Site has been interpreted from Sanborn® Fire Insurance Maps dating back to 1898, City of Elmira Atlases dated 1878, 1896, and 1904, and tax records from the City of Elmira and Chemung County.

The Elmira City Atlas from 1878 indicates the Site was part of a larger property that was occupied by Elmira School Number 4. The school building is shown to be located north of the current Site property. Sanborn® Fire Insurance Maps from 1898 and 1903 along with Elmira City Atlases from 1896 and 1904 indicate no significant change from prior years, other than to change the name of the school to School Number 6. After 1904 but before 1931, based on the 1931 Sanborn® Fire Insurance Map, the Elmira Blind Center and Board of Education built onto the prior Public School No. 6 building. The addition extended onto the Site property and was occupied with repair shops, workshops, and storage. By 1950, according to the 1950 Sanborn® Fire Insurance Map, the building housed the City of Elmira Highway and Bridges Department workshops. Additionally, two outbuildings were constructed prior to 1950; one, listed as a "voting booth", was located north of the Site property, and one, of an unknown use, was located on the southern portion of the site. According to records received form the NYSDEC, the current Site building was constructed in the 1950's. Sanborn® Fire Insurance Maps confirm that by 1988 the structure, as it currently exists, had been constructed and the

outbuilding had been removed from the Site property. Subsequent Sanborn® Fire Insurance Maps (1988 through 1995) list the Site building as a dry cleaning facility and put the cleaning room in the southwest corner of the Site building.

The use of adjacent properties varied throughout the years. The Elmira City Atlas from 1878 shows a canal which follows the present day railroad spur. Across Lake St. from the Site are Stables, Dr. Offices, and a "Car House". The Elmira City Atlas from 1896 shows that the canal had been filled and railroad spur built in its footprint. Additionally, the properties across Lake St. were no longer listed. By 1904, according to the Elmira City Atlas, no significant changes to adjacent properties had occurred. However, the properties across Lake St. had changed and now included Shell Oil Co.(702-704 Lake St.) VanDyke Oil Co. (712 Lake St.), and Elmira Builders Supply (714-716 Lake St.).

Other than insurance maps and City Atlases, there is limited information regarding the development and ownership of the site prior to 1995. Historic records were lost as a result of flooding of the City Hall Basement (according to Andrew Avery of Public Works). Existing records indicate the property was owned by Custard and Kistler Laundry, Inc, until 1995 when it was sold to Earl D. Coleman. Subsequently, it was seized by Chemung County and purchased back from the county by Mr. Coleman in 1998. According to the Chemung County Real Property Office, the property has again been seized by the county and is currently planned to be auctioned on March 30, 2005.

2.3 PREVIOUS FIELD INVESTIGATIONS

In 2001, the NYSDEC contracted Teeter Environmental Services (Teeter) to perform a limited subsurface investigation of the property at 717 Lake St. and an adjacent property at 706-710 Benjamin St., owned by the same party. Potential contaminants of concern included chlorinated and non-chlorinated solvents used in the dry cleaning industry as well as petroleum contaminants potentially related to a decommissioned gasoline underground storage tank (UST) formerly located at the site.

Teeter performed 15 soil borings to depths ranging from 14 to 20 ft. below ground surface (bgs) using direct push methods. Teeter submitted 5 selected soil samples from the borings for chemical analysis. Additionally, Teeter collected 6 groundwater samples from 6 separate borings and submitted the samples for chemical analysis. Approximate boring locations and analytical sample locations are shown in Figure 2-2. Soil and groundwater analytical results are shown in Tables 2-1 and 2-2, respectively.

Results indicate that the soil and groundwater have been impacted by both chlorinated and non-chlorinated solvents. Chlorinated solvents were detected at concentrations in excess of the New York State (NYS) Class GA groundwater standards in all 6 boring locations were groundwater was sampled. Maximum exceedences in groundwater

include cis-1,2-Dichloroethene (1,2-DCE) at 1,070 µg/L in SB4 (NYSDEC GW Standard = 5 µg/L), Tetrachloroethene (PCE) at 158 µg/L in SB11 (NYSDEC GW Standard = 5 µg/L), and Vinyl Chloride at 280 µg/L in SB4 (NYSDEC GW Standard = 2 µg/L). Non-chlorinated hydrocarbons in excess of the NYSDEC Groundwater Standards were detected in 3 of the 6 boring locations where groundwater was sampled (SB4, SB6, SB8). Maximum exceedences in groundwater include n-Butylbenzene at 16.4 µg/L and 1,2,4-Trimethylbenzene at 25.7 µg/L in SB6 (NYSDEC GW Standard = 5 µg/L).

Air quality investigations have not been conducted at the Site.

2.4 PHYSICAL SETTING

Topography

The Site is located approximately 0.6 miles northeast of the center of the City of Elmira, New York (Figure 1-1), at approximately 859 feet above mean sea level (msl). The City of Elmira is situated in a relatively flat flood plain formed by the confluence of the Chemung River to the south and the Newtown Creek to the east. The flood plain is bordered on the west and east by sharp ridges, apparently formed by the down cutting of Newtown Creek.

The topography at the site slopes generally to the confluence of the Chemung River and Newtown Creek located approximately 1.3 miles southeast at an approximate elevation of 840 feet above msl.

The topography is relatively flat for approximately one mile to the east of the Site, before rising sharply up a ridge to an elevations over 1600 feet msl. The topography is also relatively flat to the west of the Site before similarly rising up a ridge to over 1600 feet above msl.

Climate

The climate of the area is characterized by moderately warm summers and cold winters. Mean monthly temperatures range from 24 degrees Fahrenheit (°F) in January to 70°F in July. Average annual precipitation is 34 inches. Average annual snowfall is 71 inches (National Climatic Data Center, 1999).

Surface Water

The surface at the Site consist of approximately 1/3 gravel, 1/3 pavement and 1/3 building. Rainwater from the roof flows via downspouts to the ground, where it either

infiltrates or flows to storm sewers. According to the Elmira Engineering Department, storm drainage from the site ultimately discharges to the Chemung River.

Groundwater

It is presumed, based on regional groundwater flow and topography, that the Chemung River and, to a lesser extent Newtown Creek, are local groundwater discharge areas. Little local groundwater information was found, however based on field data from the Teeter investigation, groundwater is expected at 12 to 14 feet bgs beneath the Site (Teeter, 2001).

Geology

Overburden soils at the site are greater than 20 feet thick according to data collected by Teeter (Teeter, 2001). Overburden consists of dark brown sand, silt, and gravel associated with a glacial outwash depositional environment (Teeter, 2001). Based on regional geologic mapping (Rickard and Fisher, 1970) bedrock is expected to consist of shale and siltstones associated with the Upper Devonian West Falls Group. Specifically, the Beers Hill Shale; Grimes Siltstone; Dunn Hill, Millport, and Moreland Shales (Rickard and Fisher, 1970).

2.5 SITE WALKOVER

On March 3, 2005 the following personnel from MACTEC and the NYSDEC conducted a walkover of the Site.

SITE WALKOVER ATTENDEES

NAME	TITLE	AFFILIATION/TELEPHONE
David Bufo	RI Lead	MACTEC 207-775-5401
Jeff McCullough	Environmental Engineer NYSDEC Project Manager	NYSDEC Division of Environmental Remediation, Albany 518-402-9768

The purpose of the Site walkover was to view the Site to assess possible contamination sources and logistical concerns for the field program. Access to the site was arranged by Jeffery McCullough, however access to the building was not obtained.

As a result of a significant snowfall on March 2, 2005, it was not possible to fully evaluate the condition of the property surrounding the building. In particular, evidence of staining, stressed vegetation, and past uses of portions of the property could not be evaluated.

The site consists of a concrete block building situated centrally on a flat parking area. Photographs indicate the parking area is unpaved south of the structure and paved on the north side of the building (Figure 2-1). Discarded wooden pallets were observed outside the northwest corner of the building.

It was possible to view the interior of the building through broken windows and the glass storefront. Limited interior inspection revealed that the building was empty except for a few discarded office items and trash/debris.

The surrounding area was also reviewed during the site walkover to identify potential contaminant sources and monitoring locations for both groundwater and soil vapor.

2.6 CONCEPTUAL SITE MODEL

A Site conceptual model was formed based on historical data reviewed. The conceptual model is designed to present the current understanding of the Site and to facilitate the RI/FS data gathering efforts. The conceptual model is outlined in the table below.

Media	Known or Suspected Source of Contamination	Type of Contamination (General)	COPCs (Specific)	Primary or Secondary Source Release mechanism	Migration Pathways	Potential Receptors
Soil	1) Cleaning Area 2) Former UST Area (Primary Sources Gone)	Solvents; fuels	PCE; TCE; xylene; ethylbenzene	Leaks and or Spills	Infiltration / percolation	Human: direct contact if excavation occurs in contaminated area (s)
Groundwater	Contaminated Soil (Secondary Source)	Solvents; fuels	PCE; TCE; Benzene; xylene; ethylbenzene	Infiltration / percolation from soils	Groundwater flow / utility trenches (sewer lines)	Human or ecological receptors are not expected to be exposed
Air / Soil Vapor	1) Contaminated soil or groundwater at and/or under the DC building. 2) Contaminated groundwater down gradient from the DC building.	Solvents; fuels	TCE; PCE; Benzene; xylene; ethylbenzene	Volatilization of contaminated groundwater and/or soil	Migration into buildings / residences	Human: Inhalation
Surface Water and Sediment	Erosion or discharge mechanisms and pathways are not currently expected to exist.	NA	NA	Contaminants in groundwater are expected to attenuate prior to potential discharge point(s) (e.g. Newtown Creek, Chemung River)	NA	Human or ecological receptors are not expected to be exposed
Building	No continuing sources of contamination related to site operations are expected to exist	NA	NA	Site operations have ceased.	NA	NA

Historical documentation and previously collected data indicates that chlorinated solvents were used at the Site. No documentation confirming discharges of chlorinated solvents was discovered, however limited site investigation revealed that chlorinated solvents were discharged at the Site, but no known primary source of chlorinated solvents appears to be present (i.e. no current use of solvents or indication of buried wastes at the Site). The mechanism for release of solvents is not currently know, however it is possible spills and handling of solvents resulted in interior and exterior releases to the environment via floor drains, foundation cracks, or direct spills in outside chemical storage areas. In addition, releases of fuels are suspected to have occurred in the vicinity of the former

UST as evidence by soil and groundwater sampling results in the vicinity of the former UST (Teeter, 2001).

Concentration of contaminants detected in soils during the 2001 subsurface investigation do not indicate the presence of dense nonaqueous phase liquids (DNAPL), but the potential presence of DNAPL will be evaluated during the RI. No remedial action related to solvents has been conducted at the site. As a result, soils potentially contaminated with solvents may be a continuing source to groundwater contamination through precipitation infiltration and to the air via vapor migration. Although a UST removal was conducted, historical and residual fuel contaminated soils may have contaminated groundwater through precipitation infiltration and/or vapor migration. Potential groundwater contamination will be evaluated during the RI.

Because no local private wells are expected in the vicinity of the Site, potential threat to human health through the exposure to contaminated groundwater is not anticipated; however, this will be confirmed during the RI. The most likely exposure point for human receptors is through indoor air contamination. There is a potential for chlorinated solvents and fuels to volatilize into soil vapor from soils at the Site, and potential groundwater contamination at and down gradient of the Site. There is a potential for the soil vapor to migrate into additional residences and local businesses at concentrations above the New York State Department of Health (NYSDOH) guidance values for indoor air.

Qualitative Human Health Exposure Assessment

A Qualitative Human Health Exposure (HHE) Assessment will be performed as part of the RI and is described in Section 3.2.4. The Site conceptual model has been developed to understand the nature of the Site and to develop data gathering needs to support this exposure assessment. Initial conceptual understanding of the potential human exposures indicates: 1) the potential threat to public health exists through exposure to contaminated groundwater; 2) there is a potential for worker exposure to contaminated soil (i.e. during soil excavation); 3) there is a potential for exposure to contaminated indoor air, resulting from vapor migrating from contaminated soil and groundwater. The potential threat to human health through the exposure to contaminated groundwater is not anticipated since potential receptors are not believed to exist at this time; however, this will be confirmed during the RI and potential exposures to volatile organic compounds (VOCs) in groundwater will be evaluated. Unless workers are excavating site soils, the potential exposure of the public to contaminated soil is not anticipated, however, potential exposure to VOCs in soil will also be evaluated during the RI. The most likely exposure point for human receptors is through soil vapor migration to indoor air at concentrations above the NYSDOH guidance values for indoor air. This exposure path too will be evaluated during the RI.

2.7 TECHNICAL OBJECTIVES

Based on existing data, dry cleaning solvents (PCE, TCE) have not been detected at levels above the NYSDEC TAGM 4046 "soil cleanup objectives to protect groundwater". Although one chlorinated solvent, methylene chloride, was detected above the soil cleanup objectives, it is a common laboratory contaminant, and the result has not been confirmed. Fuel related volatile compounds, however, exist in Site soils at concentrations above the NYSDEC TAGM 4046 "Soil Cleanup Objectives to Protect Groundwater". Existing groundwater data indicates that chlorinated solvents (including cis-1,2-DCE, trans-1,2 DCE, PCE, TCE, and vinyl chloride-all listed hazardous wastes under Title 6 of New York Codes, Rules and Regulations [6 NYCRR] Part 371 [NYS, 199a]) and fuel related volatile compounds exist in Site groundwater at concentrations in exceedance of the state Class GA groundwater standards as defined in 6 NYCRR Part 700-705 (NYS, 1999b). Based on potential groundwater and indoor air contamination, the Site poses a potential significant threat to public health and the environment as defined in 6 NYCRR 375 (NYS, 1998). Existing data reviewed was not sufficient to fully characterize the Site and therefore an RI will be performed. To complete the RI, the following information is needed:

- Historical source area and potential continuing source areas for chlorinated solvent contaminants need to be defined.

- The area and vertical extent of contaminants in Site groundwater, if present, needs to be defined.

- The extent of the solvent and fuel contamination source(s) in soil needs to be defined. Sampling needs to be conducted in the vicinity of the UST removal action to delineate any residual contamination.

- Other potential sources need to be assessed (i.e. floor drains, cracks, former storage areas).

- The interior of the Site building needs to be evaluated to determine if potential continuing sources of contamination exist.

- The potential and actual threat to human health and the environment needs to be defined. Potential present and future human health exposure pathways, such as through exposure to contaminated soils and groundwater, and vapor migration to indoor air need to be evaluated. This includes the collection of sufficient Site data to enable the completion of a qualitative RA.

- Sufficient data is needed to evaluate the remedial action alternatives for the Site to mitigate the potential or actual threat to human health and the environment.

- Data needs to be gathered to determine if additional IRMs will be required, and what remedies are the most applicable.

The RI field program described in Section 3 is planned to collect the information listed above and to further characterize the Site. This information will be used to evaluate the need for further action, develop remedial action alternatives, as well as evaluate the need for potential IRMs.

3.0 SCOPE OF WORK

Existing data indicates that there is a contravention of applicable standards, criteria and guidance values (SCGs) for fuel related compounds in Site soil, as well as a contravention of applicable SCGs for both chlorinated solvents and fuel related compounds in groundwater beneath the Site. The Site has the potential to impact indoor air in neighboring structures.

Existing data reviewed for Task 1 is not sufficient to evaluate the potential threat to human health and the environment posed by the Site, or to evaluate the remedial alternatives for the Site. Specifically, additional data collection is necessary to determine: 1) the vertical and areal extent of groundwater contamination, if present; 2) the extent of the source(s) of contamination; and 3) the migration paths and actual or potential receptors. The data collection and evaluation to satisfy these data needs will be conducted as Task 2 of the work assignment. Task 2 activities include the RI fieldwork, described below, and preparing the RI report. The objective of Task 2 activities is to gather sufficient data to determine the risk to human health and the environment, and to evaluate the remedial alternatives for the Site. Task 3, IRMs, will be completed if mitigation is deemed necessary to address imminent potential human exposure, and if they are requested by the NYSDEC. The evaluation of the feasibility of the remedial alternatives will be conducted under Task 4; the preparation and distribution of the FS report.

3.1 TASK 1 –WORK PLAN DEVELOPMENT

Task 1 of the WA is the preparation of the Work Plan. Task one included review of existing Site data, a limited historical review, a Site visit with the NYSDEC, and a scoping session with the NYSDEC. This Work Plan was prepared in accordance with the Draft DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, 2002). In addition, applicable or relevant and appropriate requirements (ARARS) and New York SCGs were evaluated during the development of the Work Plan. Action-specific ARARs will also be identified for the proposed alternatives and will be used to evaluate the effectiveness and administrative feasibility of each alternative. The Work Plan includes the field activities plan, the QAPjP, the HASP, and the CPP.

3.2 TASK 2 – REMEDIAL INVESTIGATION

The following subsections describe the RI fieldwork. The RI fieldwork will be conducted in accordance with the specifications presented in the Quality Assurance Program Plan (QAPP) ABB Environmental Services, Inc. (ABB-ES, 1994), a stand-alone document, and the Site-specific QAPjP, included as Appendix A to this Site Work Plan. Quality Control (QC) and Quality Assurance (QA) procedures for sample handling and sample shipment are presented in Section 5.0 of the QAPP. QA/QC sample frequencies are presented in the Site-

specific QAPjP. Health and Safety procedures for on-site activities are presented in the Program HASP (ABB-ES, 1994) and the Site-specific HASP, included as Appendix B to this Site Work Plan. Off-site laboratory analyses will be performed by Mitkem Corporation, a NYSDOH approved laboratory. Off-site laboratory analysis will comply with the NYSDEC Analytical Services Protocols (ASP) (NYSDEC, 2000).

The RI fieldwork will be conducted in a phased approach. The data reviewed from the first phase will be used to refine the data collection needs of a potential second phase. Additional phases will be determined as necessary by the NYSDEC and the NYSDOH. Evaluations of field data will be discussed with the NYSDEC prior to commencing additional fieldwork. Proposed sampling techniques and rational are provided in Table 3-1. Proposed sample IDs and analyses are provided in Table 3-2.

3.2.1 General Field Activities

General field activities, including mobilization, health and safety, and decontamination, are described in the following subsections. Upon approval of the Work Plan, MACTEC will complete procurement of subcontractors and begin mobilization. Subcontractors include:

1. Drilling contractor,
2. Geoprobe® contractor,
3. Analytical Laboratory, and
4. Survey.

Mobilization. Upon receiving the NYSDEC authorization, MACTEC and its subcontractors will mobilize to the Site and begin the RI fieldwork. Mobilization will include obtaining utility clearances and acquisition of the following:

- Transportation to and from the Site;
- Geoprobe® and drilling equipment and field supplies;
- health and safety equipment;
- decontamination supplies and equipment; and
- sampling equipment.

A field team orientation meeting will be held on-site with MACTEC and subcontractor personnel to familiarize field workers with Site history, health and safety requirements, equipment calibration procedures, and all other investigation methods and procedures.

Health and Safety. The Site-specific HASP is provided as Appendix B to this document. Based on available Site information, MACTEC anticipates that the RI fieldwork will be conducted in Level D personal protection. Specific investigation activities and required level of personal protection are set forth in the Site-specific HASP. Criteria for upgrading or downgrading the specified level of protection are also provided in the Site-specific HASP. Additional health and safety requirements are set forth in the Program HASP (ABB, 1994). Should Site conditions pose a threat to those present on-site, and/or should Site conditions warrant an upgrade from Level D, as defined by the HASP, work will stop and the situation will be reevaluated by the NYSDEC and MACTEC.

Decontamination. Sampling methods and equipment for this field program have been chosen to minimize decontamination requirements mitigating potential for cross-contamination. Disposable sampling equipment will be used as much as practical to minimize decontamination time and water disposal. Non-disposable sampling equipment will be decontaminated before and after the collection of each sample. Decontamination methods and materials are described in detail in Subsection 4.3 of the QAPP.

Non disposable sampling equipment will be decontaminated by 1) washing the sample collection equipment with potable water and Liquinox, rinsing with potable water, rinsing with deionized water, and then allowing the equipment to air dry, or 2) steam cleaning the equipment and then allowing the equipment to air dry. Drilling equipment will be decontaminated by steam cleaning with potable water prior to each boring, and before leaving the Site. Drilling equipment (i.e. drill rods and casing) will be decontaminated on a temporary decontamination pad constructed in the parking area of the Site. Decontamination fluids will be released on-site to the ground surface in the area of decontamination, so as to allow the liquids to infiltrate into the soil and not run off-site. In the event that decontamination fluids exhibit visual or olfactory evidence of contamination, fluids will be containerized for testing and off-site disposal.

Investigation Derived Wastes. The method of disposing investigation-derived wastes (IDW) generated during this RI will be based upon whether the wastes are considered hazardous or non-hazardous. The approach to field screening and handling of the IDW are described in the following paragraphs.

United States Department of Transportation (USDOT) -approved 55-gallon containers filled during the field investigation will be staged on-site in an area designated by the NYSDEC, and approved by the Site owner. Transport and disposal of these containers will be arranged by MACTEC on behalf of NYSDEC. Containers will be labeled as described in the Site-specific QAPjP (see Appendix A).

Disposable Sampling Equipment. Used disposable equipment will be double-bagged in polyethylene trash bags and sealed with twist ties. MACTEC personnel will measure the headspace in the closed bags with a photoionization detector (PID) at least one hour after sealing the bags. If the headspace reading is greater than 5 parts per million (ppm), the

tubing will be decontaminated by flushing with potable water and re-bagged. This process will be repeated until PID readings are below 5 ppm, or for a maximum of three times. If the headspace is below 5 ppm, the disposable equipment will be disposed of as non-hazardous municipal solid waste. If the headspace readings do not drop below 5 ppm, the disposable equipment will be placed in USDOT approved 55-gallon containers for off-site disposal.

Personal Protective Equipment. Used protective clothing will be double-bagged in polyethylene trash bags and sealed with twist ties. The bags will be disposed of as municipal solid waste.

Well Purge Water. Purge water will be released on-site to the ground surface in the area of well, so as to allow the liquids to infiltrate into the soil and not run off-site. In the event that purge water exhibits visual or olfactory evidence of contamination, fluids will be containerized in USDOT approved 55-gallon containers for off-site disposal.

Drill Cuttings. Direct push and drilling soil cuttings will be screened for VOCs with a PID. Soils with visual evidence of contamination or with sustained PID readings greater than 5 ppm will be containerized for off-site disposal in USDOT-approved 55-gallon drums. Soils with sustained PID readings of less than or equal to 5 ppm will be considered non-contaminated and will be used as backfill for the borings from which they were extracted. Remaining uncontaminated soils will be spread evenly on the ground surface in unpaved areas of the Site. If no on-site space is available, remaining soil will be containerized in USDOT 55-gallon drums for off-Site disposal.

3.2.2 Phase One

Phase one of the field program includes a detailed evaluation of the area surrounding and within the site building, as well as the area immediately downgradient from the Site. It includes:

1) Geoprobe® soil and/or groundwater sampling at 18 locations to evaluate potential and known source areas and characterize the vertical distribution of contaminants in soil and groundwater.
2) Surface soil sampling at 5 background locations to evaluate background conditions related to potential health risk at the site.
3) Installation of 4 microwells to evaluate site groundwater flow conditions; and,
4) Potential Geoprobe® soil gas sampling at 6 locations selected based on PID screening of soils collected during Phase 1 field activities to evaluate the potential vapor migration at the Site.

Detailed description of these activities is included in the following sections, and outlined on Table 3-1.

Historical Records Review

A limited historical records review and title search was conducted during the preparation of this work plan. MACTEC will collect additional information, as needed, to augment the existing data. Additional information will include locating building plans and an attempt to contact former Site employees. In addition, attempts will be made while on-site, to the extent practical, to locate additional floor drains and their discharge points.

Geoprobe® Sampling

Field investigation activities include the completion of Geoprobe® borings, and the collection and analysis of groundwater and soil samples. The purpose of the activities is to provide groundwater data for comparison to NYS Class GA Groundwater Quality Standards set forth under 6 NYCRR Parts 700-705 (NYS, 1999b), and to assist the NYSDEC in evaluating significant threat to public health and the environment as defined by 6 NYCRR Part 375 (NYS, 1998). Soil sample analyses will be used to assess whether hazardous waste constituents are present in Site soils, and, if possible, confirm a source of the chlorinated solvents.

Geoprobe® Sampling. MACTEC will use a Geoprobe® sampling device to collect soil and groundwater samples to identify potential chlorinated solvents and fuel contaminants. The Geoprobe® pushes and/or hammers rods and probe tips into the subsurface for sample collection as described in Subsection 4.6 of the QAPP. Samples will be collect over a four-day period. It is anticipated that up to 18 borings can be completed, including the collection of up to 14 soil samples and 40 groundwater samples for off-site analyses. MACTEC plans to advance 4 borings to bedrock or refusal (whichever comes first) and the remaining 14 to a depth of 10 feet below the water table.

MACTEC will work closely with the NYSDEC, the Site owner, and utility companies to obtain access to the exploration locations. Approximate boring locations are shown on Figure 3-1. Locations may vary, depending on field conditions and additional observations of the Site structure. Locations were chosen to complete characterize of soil in the vicinity of the potential source areas, as well as characterize general Site conditions at specific locations below the Site structure and surrounding the previous UST removal area.

Subsurface Soil Sampling. Discrete subsurface soil samples will be collected using a three or four-foot long 1-to-2 inch diameter core sampler with an acrylic liner. Soil samples will be collected continuously from the ground surface to the terminal depth of the boring. PID headspace readings will be used to screen soil samples for the presence of VOCs as each soil sample is removed from the sample

collection tube. Samples will be described using the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations will be recorded on the Data Record as discussed in Subsection 4.6 of the QAPP. Based on the PID readings and physical evidence such as color or odor, up to 14 unsaturated subsurface soil samples from seven of the borings, will be submitted to the off-site laboratory for analyses. Subsurface soil samples will be submitted in cut and capped sections of the acrylic liner to minimize exposure of the soils to air. In addition, the laboratory will be required to analyze VOC samples within 48 hours of receipt.

Groundwater Sampling. Groundwater samples will be collected using a small diameter stainless steel wire wound screen that will be exposed to the aquifer, after being pushed to the desired depth interval. A peristaltic pump or check valve (depending on sample depth) will be used for the collection of discrete groundwater samples. One tubing volume of water will be purged and one set of parameters including temperature, conductivity, pH, and turbidity will be collected before sampling. VOC samples will be collected at a low purge rate (approximately 100 milliliters per minute) to minimize potential volatilization.

To assess vertical extent of contamination and to aid in determining the location of the potential well installations, groundwater samples will be collected from two locations in each boring, the water table and 10 feet into the water table (10 feet below the first sample). Each boring will be completed to at least 10 feet into the water table, expected to be present at 12-14 feet bgs. In addition, rods will be driven to refusal at up to four locations to collect a deep overburden groundwater sample (anticipated to be collected at approximately 35-40 feet bgs). This will allow MACTEC to determine the depth of contamination within the water column in the upper overburden, and assess the potential for groundwater contamination in the deeper overburden. The actual number of samples per boring and sample collection depths will vary according to field conditions.

Sample Analysis. Geoprobe® soil and groundwater samples will be shipped to an off-site laboratory for analyses of target compound list (TCL) VOCs using USEPA OLM04.2 methods as described in the NYSDEC ASP of June 2000. Up to 5 of the soil samples will also be analyzed for semi-volatile organic compounds (SVOCs) using USEPA OLM04.2 methods, and two of the samples will be analyzed for TCL metals using USEPA ILM04.2 methods and pesticides and PCBs using USEPA OLM04.2 methods as described in the NYSDEC ASP of June 2000. Up to nine of the groundwater samples will be analyzed for SVOCs using USEPA OLM04.2 methods, and up to three of the groundwater samples will be analyzed for Pesticides and PCBs using USEPA OLM04.2 methods. Off-site laboratory analysis will include Category B deliverables.

Surface Soil Sampling.

Five discrete surface soil samples will be collected from locations considered to represent background conditions at the Site. Samples will be collected from 0"-2" using stainless steel spoons and bowls. PID headspace readings will be used to screen soil samples for the presence of VOCs as each soil sample is collected. Samples will be described using the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations will be recorded on the Data Record as discussed in Subsection 4.6 of the QAPP. All 5 background surface soil samples will be submitted to the off-site laboratory for analyses. Surface soils will be placed in approved sample containers.

In addition, ten discreet surface soil samples will be collected from Geoprobe® boring locations situated in close proximity to the existing building. Surface soils will be collected prior to initiating subsurface investigations with the Geoprobe®. Samples will be collected from 0"-2" using stainless steel spoons and bowls. PID headspace readings will be used to screen soil samples for the presence of VOCs as each soil sample is collected. Samples will be described using the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations will be recorded on the Data Record as discussed in Subsection 4.6 of the QAPP. All 10 surface soil samples will be submitted to the off-site laboratory for analyses. Surface soils will be placed in approved sample containers.

All surface soil samples will be shipped to an off-site laboratory for analyses of TCL SVOCs, and pesticides and PCBs using USEPA OLM04.2 methods, and TCL metals using USEPA ILM04.2 methods, as described in the NYSDEC ASP of June 2000. Four surface soil samples from Geoprobe® locations will also be analyzed for TCL VOCs using USEPA OLN04.2 methods. Off-site laboratory analysis will include Category B deliverables.

Groundwater Microwell Installation

To determine groundwater flow direction at the Site, four Geoprobe® borings will be completed as microwells.

Microwell well locations are shown in Figure 3-1. Groundwater is anticipated to be near 12 feet bgs, based on previous investigations. Well GW-2 will be installed in the presumed upgradient portion of the site (north of the building). GW-13 and GW-14 will be installed to the south of the Site in locations presumed to be downgradient. GW-10 will be installed in the presumed cross gradient direction of the Site to provide information regarding groundwater directly beneath the Site. Table 3-1 presents the rationale for the microwell locations. The exact locations of the microwells may vary based on property access. Microwells are anticipated with 10-foot screens set across the water table.

The microwells will be constructed of 1"outside diameter schedule 40 PVC with 10-foot well screens in accordance with Subsection 4.7 of the QAPP (ABB, 1994). Microwell screens will have 0.010-inch wide machine slots (unless geologic conditions dictate otherwise) with # 0 sand pack to 3 feet above the screen, a two foot bentonite seal above the sand pack and a bentonite grout backfill to the ground surface. The microwells will be completed with a locking cap and a six-inch flush mount cover.

Geoprobe® Soil Gas Sampling

Based on soil and groundwater PID screening results and discussions with the NYSDEC Project Manager, up to six soil gas samples will be collected to evaluate the potential vapor migration of contaminants from the groundwater. Soil gas samples will be collected using a Geoprobe® sampling device. Sample locations will be determined based on the results of the groundwater sampling.

The Geoprobe® rods will be pushed to between 6 and 8 feet bgs (expected to be below the rain infiltration line, but above the water table fringe zone). Soil gas collected just above the water table will give an indication of the possible vapor migration from potentially contaminated groundwater.

Soil gas samples will be collected from the Geoprobe® points. Upon reaching the target depth, the Geoprobe® rods are pulled back slightly, exposing the bottom of the open rods to the soil. The soil vapor sample is then collected from the desired depth with either a sealed tubing system, or through the open Geoprobe® rods which are sealed and attached to sample tubing at the ground surface. Approximately 2 liters of soil gas, plus the volume of the tubing, will be purged using a personal air monitoring pump before collecting samples. During the soil gas purge, vapors will be screened with a PID. Samples will be collected with SUMMA®-type canisters with flow valves (set to approximately 10 minutes per sample). Flow into the canisters will be less than 0.1 liters per minute, as requested by the NYSDOH. Samples will be sent to Mitkem Corporation for VOC analysis by USEPA Modified Method TO-15 using single ion monitoring (SIM) quantitation.

Site Survey and Base Map

Upon completion of Phase One field investigation activities, MACTEC's survey subcontractor will complete a survey of the Site and surrounding area and create a base map. Horizontal locations will be tied to the New York State Plane Coordinate System using North American Datum (NAD) of 1983. The site plan will provide horizontal locations of relevant Site features, including surrounding homes and businesses at a scale of 1 inch to 50 feet. Relevant features include, but are not limited to all structures, buildings, roads, fences, new monitoring wells, underground utilities, fire plugs, and power poles.

Vertical elevations of the four new micro wells will be tied to msl, North Atlantic Vertical Datum (NAVD) of 1988, and measured to an accuracy of 0.01 ft. Horizontal well measurements will be to an accuracy of 0.1 ft.

The base map will be used to accurately locate all Geoprobe® sample points, microwells, and any other media sampling locations.

3.2.3 Phase Two

Upon completion of phase one, phase two will be initiated. Phase two includes:

1) Installation of up to six new monitoring wells to increase groundwater analytical data accuracy and to allow permanent groundwater monitoring points.
2) Groundwater sampling of new wells to evaluate groundwater conditions and provide data for evaluating the potential for natural attenuation
3) Potential sub-slab vapor and indoor air sampling at the subject property and up to 5 additional private residences/businesses, to evaluate the potential vapor migration into residences/businesses. Detailed description of these activities is included in the following sections, and outlined on Table 3-1.

Groundwater Monitoring Well Installation

Further characterization of groundwater flow conditions and distribution of contamination at the Site, and northwest of the Site is required to define aquifer characteristics and potential receptors. Additional groundwater analytical data and permanent data monitoring points are required to determine the full extent of chlorinated solvent contamination in the vicinity of the Site, and to allow monitoring of that contamination.

Up to six 2-inch overburden monitoring wells (MW-1 to MW-6) are proposed. Well locations will be determined based on the findings of Phase 1, however it is anticipated that wells will be installed in one upgradient location, one potential cross-gradient location, one potential source area location, one downgradient location (well pair), and one off-site downgradient locations to quantitatively characterize groundwater quality. The exact numbers and locations of the wells may vary, based on analytical results of the Phase One sampling Program. Monitoring wells are anticipated to have 10-foot screens.

It is proposed that two of the wells be installed as a well pair (one water table well and one deeper overburden well). These will provide locations for assessing contamination in the deeper overburden aquifer and for measuring vertical gradients. Based on current site conceptual model, no bedrock wells are planned.

Each monitoring well boring will be advanced using HSA or flush joint 4-inch casing drive and wash drilling techniques. These techniques are described in Subsection 4.4.3 of the QAPP (ABB, 1994). Table 3-1 presents the rationale for the monitoring well locations. One unsaturated soil sample from each boring will be submitted to Mitkem Corporation for VOC analyses using USEPA OLM04.2 methods. In addition, one sample will be collected from each well boring at the well screen interval and shipped to Mitkem Corporation for total organic carbon (TOC) and grain size analyses by USEPA Method 415.1 and ASTM Method D422, respectively.

The monitoring wells will be constructed of 2-inch inside diameter schedule 40 polyvinyl chloride (PVC) with 10-foot well screens in accordance with Subsection 4.4.3 of the QAPP (ABB, 1994). Well screens will have 0.010-inch wide machine slots (unless geologic conditions dictate otherwise) with # 0 sand pack to 3 feet above the screen, a two foot bentonite seal above the sand pack and a bentonite grout backfill to the ground surface. The wells will be completed with a locking cap and a six inch flush mount cover.

Each of the newly installed monitoring wells will be developed using the procedures for well development presented in Subsection 4.4.3 of the QAPP (ABB, 1994). Field parameters, including pH, temperature, specific conductivity, and turbidity will be measured for each well volume removed. The wells will be developed until the turbidity of the well water discharge is less than 50 nephelometric units, or for a maximum duration of 2 hours. Wells will be allowed to equilibrate for approximately two weeks before sampling.

Upon completion of the first groundwater sampling event, hydraulic conductivity tests will be performed at each of the newly installed monitoring wells, and four of the existing monitoring wells to characterize shallow and deep aquifer characteristics. The procedures for conducting the hydraulic conductivity tests are presented in Subsection 4.8.2 of the QAPP (ABB, 1994). The hydraulic conductivity tests will consist of slug tests, using a solid mass of PVC (the slug) and a data logger. Two rising head tests will be conducted in all wells with screens that straddle the water table, and one rising and one falling head test will be conducted in wells with screens installed below the water table. Hydraulic conductivity test data will be analyzed by the methods of Hvorslev (1951) and Bouwer and Rice (1976).

Groundwater Sampling

No sooner than two weeks following the development of the newly installed monitoring wells, a round of groundwater samples will be collected for laboratory analysis. All new monitoring wells will be sampled using low-flow sampling procedures as described in the QAPjP, located in Appendix A. Samples will be collected from the least contaminated to the most contaminated locations as determined from the hydrogeology and known Site conditions. Field measurements for pH, temperature, specific conductivity, ORP,

dissolved oxygen, and turbidity will be collected from each well during pre-sample purging.

Groundwater samples will be analyzed for VOCs by USEPA OLM04.2 methods as descried in the NYSDEC ASP of June 2000. In addition, 30 of the wells will be sampled for monitoring natural attenuation (MNA) parameters. These include TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfide by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method 1945, carbon dioxide by HACH test kit method, Alkalinity by Method 310.1, chloride by Method 325.3, and iron and manganese by USEPA Method 6010B. The laboratory will provide NYSDEC Category B deliverables.

Approximately three months after the initial round of sampling, a second round of groundwater sampling will be completed. Samples will be analyzed for VOCs by USEPA OLM04.2 methods, with Category A deliverables.

New Monitoring Well Survey

MACTEC's survey subcontractor will survey the new monitoring wells after completion of field activities. Monitoring well locations will be added to the existing base map (see Subsection 3.1.2.3). Vertical elevation accuracy will be 0.01 foot and horizontal accuracy will be 0.1 foot. Horizontal positions will be tied into the NYS Plane Coordinate System. Vertical elevations will be tied to msl, NAVD 1988. The Site survey will be performed at Level D dermal and respiratory protection. Surveyed items will include:

- Horizontal locations of six new monitoring wells and;
- Vertical elevations of six new monitoring wells, including top of the riser, top of the protective casing, and the ground surface.

Indoor Air and Sub-Slab Vapor Sampling

Based discussions with the NYSDEC, sub-slab vapor sampling and indoor air sampling may be conducted at homes and business surrounding the DC property, as well as within the DC building, to investigate the potential for vapor migration of contaminants from the groundwater and soil into occupied indoor spaces. Up to 6 sub-slab vapor samples and 6 indoor air samples may be collected within the Site building and surrounding homes/businesses, and up to four ambient air sample will be collected from outside of the sampled buildings. Sample collection, if required, will be planned for the heating period from January through March.

Prior to collecting samples, an indoor air survey will be completed using the modified NYSDOH "Indoor Air Quality Questionnaire and Building Inventory" form, included in Appendix A. Sample collection procedures are further described in the QAPjP. Vapor

samples will be collected from below the building concrete slab. A one-inch diameter hole will be drilled with a hammer drill two inches into the building floor. The hole will be continued with a 3/8-inch drill bit, until the building slab is penetrated. The hole will be continued approximately 3-inches below the slab. The hole will then be vacuumed to remove drill cuttings/dust from the area. A ¼-inch piece of Teflon tubing will be inserted through a 1" diameter rubber stopper, and placed into the hole, so that the bottom of the tubing is below the slab floor and the stopper rests inside the one-inch hole, forming a seal. The stopper will then be covered with bees wax to provide an impenetrable seal for the migration of indoor air into the sub-slab. One 60 cubic centimeter (cc) volume of air will be purged from the tubing with a polyethylene syringe. The syringe will be capped and the air released outside the building as to not interfere with the indoor air sample collection. A 6-liter SUMMA®-type canister with a 24-hour flow valve will be connected to the tubing as described in the QAPjP.

Indoor air samples will be collected in 6-liter SUMMA®-type canisters from the vicinity of the sub-slab vapor sample collection points. Samples will be collected from approximately three to five feet above the floor level. Indoor air samples will be set up with 24-hour flow valves.

Ambient air samples will be collected in 6-liter SUMMA®-type canisters from the vicinity of the properties being sampled for indoor air and sub-slab vapor VOC contamination. Samples will be collected from approximately three to five feet above ground surface. Ambient air samples will be set up with 24-hour flow valves.

Once the sub-slab vapor sample canisters, indoor air sample canisters, and exterior ambient air canister have been set up with 24-hr flow valves for an individual location, the valves from all containers will be opened. The time of sample collection, canister vacuum (in inches Hg), weather conditions, and barometric pressure will be recorded in the field log book.

Approximately 24 hours after sample collection, the flow valves will be shut off. The time, remaining vacuum in the canister, and barometric pressure will be noted in the field log book. The samples will be shipped to Mitkem Corporation for analyses of VOCs via USEPA Modified Method TO-15 using SIM quantitation (low detection limit).

Upon completion of the sampling, the tubing and stopper will be removed from the building floor and the holes will be filled completely with a fast drying hydraulic concrete (i.e. Quickcrete).

3.2.4 Remedial Investigation Report

Upon completion of field investigations and receipt of analytical data, MACTEC will initiate the preparation of the RI Report.

The RI Report will include a summary of the Site background and history developed during Task 1, including results of investigations conducted prior to the RI. Additional background information reviewed during subsequent tasks will be included. The RI Report will summarize results of the field investigations and laboratory analytical activities performed during the field portion of Task 2. Boring logs and environmental sampling data will be included as appendices to the RI Report.

The RI Report will contain a revised contamination assessment, conceptual site model with a discussion of contaminant fate and transport, and a Site Qualitative RA, with supporting appendices. The report will include an Executive Summary and Conclusions and Recommendations that summarize the areas of concern, identify unacceptable exposure pathways, and recommend any future work. The RI report content will be developed once data have been reviewed and evaluated.

The information provided in the RI Report will be used to prepare and evaluate remedial alternatives for the Site during the FS.

The RI report will include the following:

Data Usability Summary Report (DUSR)

The RI Report will present results of laboratory analyses for soil, groundwater, floor, soil vapor, and indoor air samples collected during Task 2. To determine whether the laboratory data meets the project specific criteria for data quality and data use a DUSR will be prepared. The DUSR will be prepared in accordance with the "Guidance for the Development of Data Usability Reports" (NYSDEC, 1997) and included as an appendix to the RI Report.

A complete set of laboratory deliverables will be submitted to the NYSDEC as a separate attachment to the RI Report.

Contamination Assessment

Analytical results will be compared to the appropriate published SCGs, as indicated below. Reported concentrations of individual analytes indicating contravention of standards or guidelines will be noted in the report.

Soil Samples. Analytical results will be compared to the Recommended Soil Cleanup Objectives in the NYSDEC TAGM No. 94-4046 (NYSDEC, 1994).

Groundwater Samples. Analytical results will be compared to the NYS Class GA Groundwater Quality Standards from 6 NYCRR Parts 700-705 (NYS, 1999b), as well as to guidance values in the NYSDEC Technical and Operational Guidance Series 1.1.1 (NYSDEC, 1998).

Sub-Slab Vapor Samples and Indoor Air Samples. The sub-slab vapor and indoor air sample results will be compared to the ambient air samples collected over the same time period, as well as appropriate guidelines and standards. These include the NYSDOH guideline for TCE and PCE, as well as the NYSDOH and USEPA reference data for "typical" outdoor air concentrations.

Qualitative Human Health Exposure Assessment

The HHE will describe the potential human exposure pathways under the current and potential future land use if no further remedial action is taken. The HHE will also identify the exposure pathways and chemicals of greatest significance from a public health risk perspective. The information provided in the HHE will help support the development and evaluation of remedial alternatives.

The HHE will be performed in accordance with the NYSDEC technical guidance (NYSDEC, 2002). A conceptual exposure model will be developed and exposure pathway components evaluated, including: the potential contaminant source; the potential contaminant release and transport mechanisms; the potential point of exposure; the potential route of exposure; and the potential receptor population.

The conceptual exposure model will be used in conjunction with the information and data collected during the RI to identify exposure pathways that are potentially complete under the current and foreseeable future land uses.

The exposure pathways that are potentially complete will then be screened to identify the pathways and site related chemicals of greatest concern from a health risk perspective. This activity will be performed by comparing analytical data representative of the concentrations to which potential receptors could potentially be exposed to the appropriate SCGs. The results of this comparison will be used to make qualitative interpretations of the environmental media and chemicals that pose the greatest potential health risk. This information, in turn, will be used to help facilitate remedial and risk-management decisions.

Four copies of the Draft and seven copies of the Final RI Report will be sent to the NYSDEC Project Manager, Central Office, Albany. In addition, one copy of the Final RI Report will be submitted in electronic PDF format. The Draft report will be submitted for review and comment by the NYSDEC. The Final report will incorporate the NYSDEC review comments. The NYSDEC will be responsible for forwarding copies of the report to other state and county agencies.

3.3 TASK 3 - FEASIBILITY STUDY

Upon completion of the RI Report, a FS will be completed to develop and evaluate the most applicable remedial alternatives. Prior to proposing a remedy for the Site, Remedial Action Objectives (RAOs) will be developed. The proposed remedy for the Site will be aimed at restoring the Site to pre-release conditions, or, at a minimum, eliminating or mitigating all significant threats to public health and the environment posed by the contaminants. Scientific and engineering principles will be applied to determine the most appropriate remedy for the Site, with the goal of protecting public health and the environment and complying with the state SCGs. The proposed remedial action will be based on the criteria outlined in 6 NYCRR 375-1.10.

For the Site, the likely media to be addressed are contaminated soil (secondary source material) anticipated to be beside and below the DC building, contaminated groundwater as a result of contaminants leaching from secondary source material (soil), and contaminated air as a result of vapor migration into buildings from contaminated soil and groundwater. The contaminated air/vapor migration pathway into buildings and exposure to building occupants may be addressed through IRMs. However, the FS will consider the air/vapor pathway to determine that the IRMs, if implemented are adequate and cost effective. Based on the current conceptual model for the Site, surface water and sediment are not anticipated to be affected by Site contamination. Therefore, the FS will not plan to address surface water and sediment. DNAPL conditions may be present at the Site and will be considered during the RI Site characterization. If determined to be present, DNAPL will be addressed in the FS.

The FS will develop and evaluate alternatives related to contaminated soil and groundwater. Contaminated soil as secondary source material is anticipated to be present both in the Site yard and underneath the DC building, thus direct sampling and remediation (i.e., excavation) of all areas of contamination may not be practicable. Therefore, more indirect/in-situ remedial actions are likely alternatives for some contaminated soil areas. After alternatives for soil and groundwater have been identified, selected alternatives will be “screened” from further consideration to retain the most favorable and technically implementable alternatives. These alternatives will undergo a detailed analysis which will result in a recommended remedy. The analyses will include evaluation of: 1) overall protection of human health and the environment, 2) compliance with the SDGs, 3) long term effectiveness and permanence, 4) reduction of toxicity,

mobility, and volume, 5) short term effectiveness, 6) implement ability, and 7) cost. For this FS, three alternatives (including the no-action alternative) for each of the retained media (soil and groundwater) will receive a detailed analysis. Examples of soil alternatives might include:

1) No action
2) Soil vapor extraction (SVE)
3) Chemical Oxidation (gas phase oxidants)
4) Excavation

Groundwater alternatives might include:

1) No action
2) Air Sparging
3) Chemical oxidation
4) Groundwater extraction and treatment
5) Enhanced in-situ bioremediation and MNA

Soil and groundwater alternatives will be combined, as appropriate, in the detailed analysis of alternatives (e.g., SVE with air sparging, SVE with groundwater extraction and treatment, etc…).

At this time, bench scale or pilot tests are not anticipated to be performed to support the detailed analysis of alternatives.

Four copies of the Draft and six copies of the Final FS Report will be sent to the NYSDEC Project Manager, Central Office, Albany. The letter report will present remedial alternatives to be considered, along with the conceptual details of the remedial alternatives. One copy of the Draft and Final FS Report will be submitted directly to the NYSDOH. In addition, one copy of the Final FS Report will be submitted in electronic PDF format. The Draft report will be submitted for review and comment by the NYSDEC. The Final report will incorporate the NYSDEC review comments.

3.4 TASK 4 – CITIZENS PARTICIPATION

A citizens participation plan (CPP) is included as Appendix C. The main goal of the CPP is to foster communication and trust between the public and the NYSDEC in the effort to restore and maintain the environment and protect public health. As outlined in CPP, MACTEC will assist the NYSDEC with public meetings, including traveling to public meetings, preparation of presentation materials for public meetings, compiling mailing lists, mailing fact sheets, etc.

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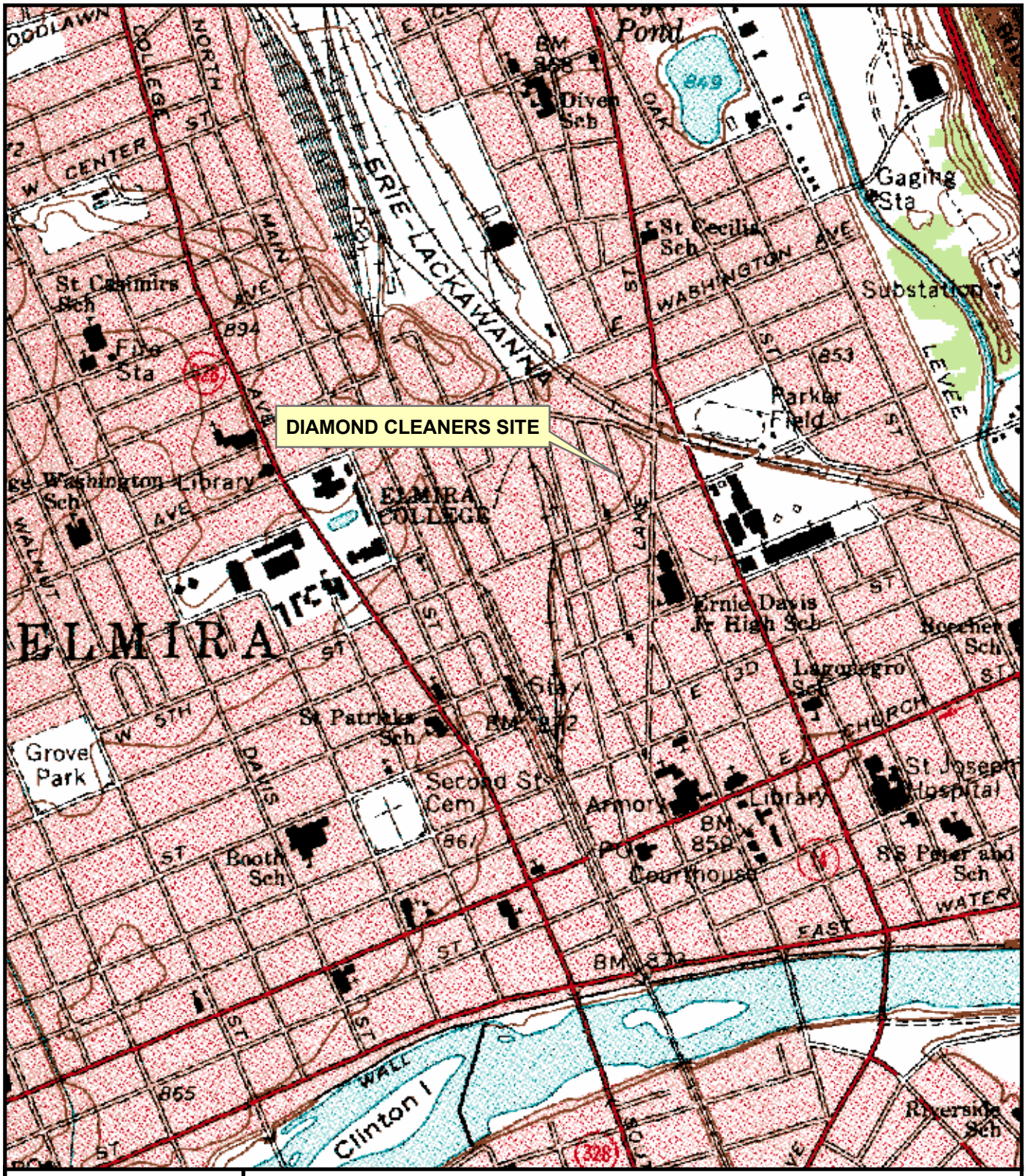
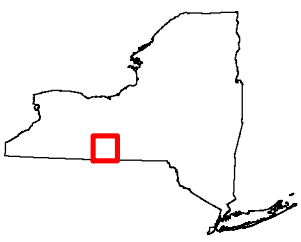
LIST OF ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
ARARs	applicable or relevant and appropriate requirements
ASP	Analytical Services Protocols
bgs	below ground surface
CC	cubic centimeter
cis-1,2-DCE	cis-1,2-dichloroethene
CPP	Community Participation Plan
DNAPL	dense nonaqueous phase liquids
DUSR	Data Usability Summary Report
EDR	Environmental Data Resources
°F	degrees Fahrenheit
FS	Feasibility Study
GPR	ground-penetrating radar
HASP	Health and Safety Plan
HHE	Human Health Exposure
MACTEC	MACTEC Engineering and Consulting, PC.
HSA	hallow stem auger
IDW	investigation-derived wastes
IRM	Interim Remedial Measure
msl	mean sea level
MNA	monitoring natural attenuation
NAD	North American Datum
NAVD	North Atlantic Vertical Datum
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSGS	New York State Geological Survey
ORP	oxidation reduction potential
PCBs	polychlorinated biphenyls

PCE	tetrachloroethene
DC	Diamond Cleaners
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
QA	Quality Assurance
QAPjP	Quality Assurance Project Plan
QAPP	Quality Assurance Program Plan
QC	Quality Control
RA	risk assessment
RAOs	Remedial Action Objectives
RI	Remedial Investigation
SARA	Superfund Amendment and Reauthorization Act
SCGs	standards, criteria and guidance values
SIM	selective ion monitoring
Site	Diamond Cleaners site
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
TAGM	Technical and Administrative Guidance Memorandum
TCE	trichloroethene
TCL	Target Compound List
TOC	total organic carbon
µg/L	micrograms per liter
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WA	Work Assignment
Work Plan	Remedial Investigation/Feasibility Study Work Plan

FIGURES





N

Source:
USGS Elmira Quadrangle-1969

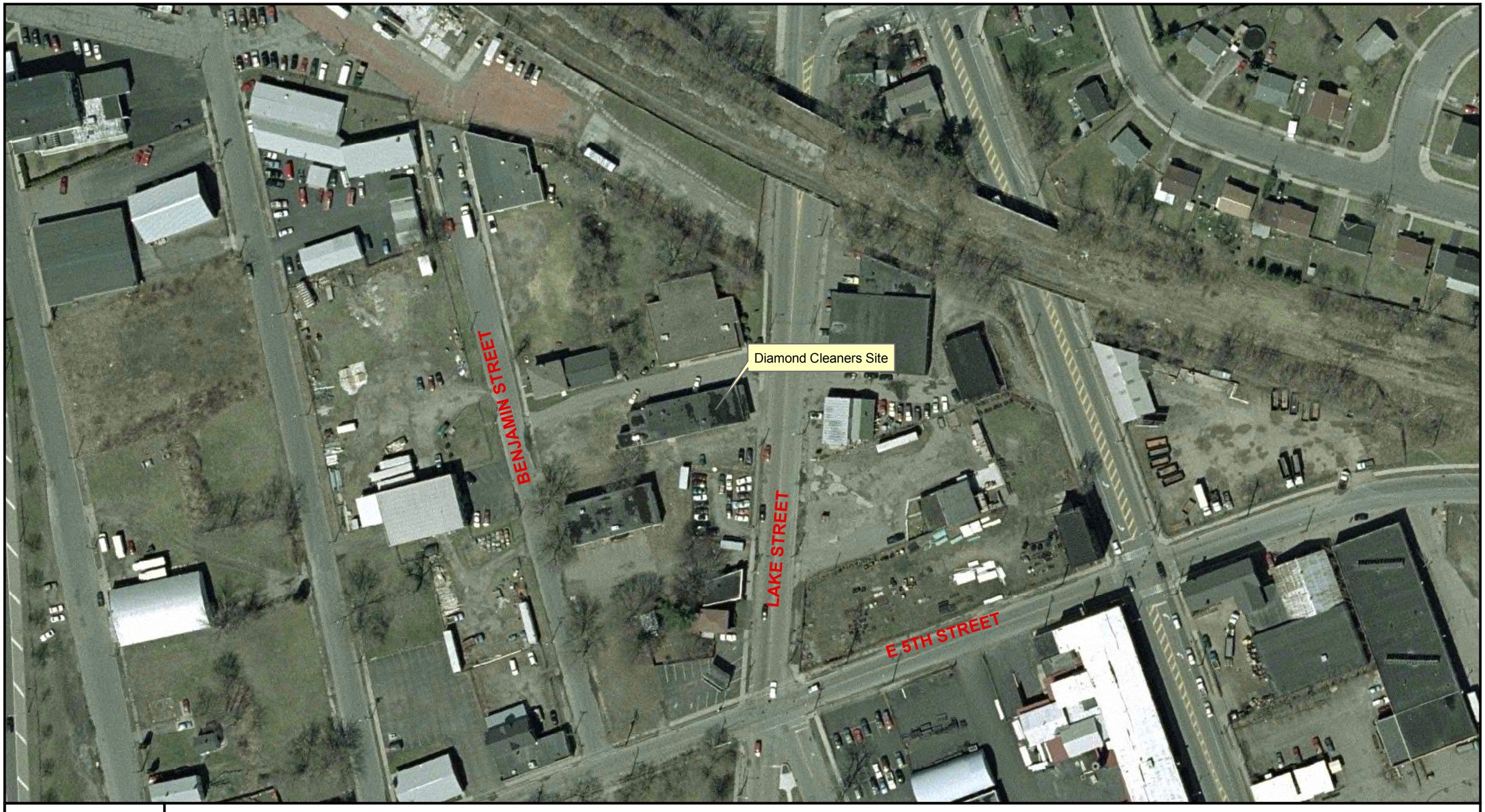
0 550 1,100
Feet

Prepared by CRS | Checked by XXX

FIGURE 1-1
SITE LOCATION
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC Engineering and Consulting

Document: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.5 Databases\GIS Data\DC site location.mxd PDF: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.3 Drawings\DC Site location13200.pdf 03/31/2005 5:23 PM crstaples



N

0 50 100 Feet

Prepared by CRS | Checked by XXX

Note: 2002 Aerial photo from NYS GIS Clearing House.

FIGURE 2-1
SITE MAP
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC Engineering and Consulting

Document: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.5 Databases\GIS Data\Base Map.mxd PDF: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.3 Drawings\Site MAP_1200.pdf 03/30/2005 1:58 PM crstaples

N

0 20 40 Feet

Prepared by CRS | Checked by XXX

Legend

Teeter Engineering Geoprobe Borings (approximate locations)

- Soil Only
- Chlorinated VOCs in GW = 50 < 100 (µg/L)
- Chlorinated VOC in GWs = 150 < 450 (µg/L)
- Chlorinated VOCs in GW = >1000 (µg/L)
- Approximate Property Lines (Source: City of Elmira Tax Maps)

Note: 2002 Aerial photo from NYS GIS Clearing House.

FIGURE 2-2
PREVIOUS BORING LOCATIONS
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC Engineering and Consulting

Document: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.5 Databases\GIS Data\Teeter Borings.mxd PDF: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.3 Drawings\Teeter_borings.pdf 03/30/2005 2:05 PM crstaples

N

0 25 50 Feet

Prepared by CRS | Checked by XXX

Legend

- Geoprobe Water Samples/Microwell
- Geoprobe Water Sample
- Geoprobe Water/Soil Sample
- Approximate Property Lines (Source: City of Elmira Tax Maps)
- Sub-Slab/Indoor Air Sample
- Surface Soil Sample

Note: 2002 Aerial photo from NYS GIS Clearing House.

FIGURE 3-1
PROPOSED SAMPLE LOCATIONS
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

MACTEC Engineering and Consulting

Document: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.5 Databases\GIS Data\Proposed Geoprobe.mxd PDF: P:\Projects\nysdec1\projects\Diamond Cleaners\4.0 Project Deliverables\4.3 Drawings\Proposed_Sample.pdf 03/30/2005 2:54 PM crstaples

TABLES

TABLE 2-1
PREVIOUS INVESTIGATIONS - SOIL ANALYTICAL RESULTS
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

	Boring	SB2	SB3	SB6	SB10	SB14
	Depth (ft bgs)	12'-16'	8'-12'	10'-14'	10'-14'	12'-16'
		Result (µg/Kg)	Result (µg/Kg)	Result (µg/Kg)	Result (µg/Kg)	Result (µg/Kg)
Analyte	NYS Guidance (µg/Kg)					
Chlorinated Hydrocarbons						
Methylene Chloride	100	**269.0**	ND<2.8	ND<119	5.6	5.0
Tetrachloroethene	1,400	ND<234	15.2	556.0	ND<2.9	74.7
Non-Chlorinated Hydrocarbons						
n-Butylbenzene	10,000	2,940.0	ND<2.8	**102,000.0**	304.0	3.0
sec-Butylbenzene	10,000	1,580.0	3.1	**42,200.0**	ND<2.9	ND<2.8
Isopropylbenzene	5,000	969.0	ND<2.8	**14,600.0**	ND<2.9	ND<2.8
4-Isopropyltoluene	10,000	346.0	ND<2.8	**11,200.0**	ND<2.9	ND<2.8
n-Propylbenzene	10,000	ND<234	ND<2.8	**63,600.0**	ND<2.9	ND<2.8
Styrene		ND<234	ND<2.8	ND<119	3.8	3.6
Toluene	1,500	ND<234	ND<2.8	ND<119	2.9	ND<2.8
1,2,4-Trimethylbenzene	10,000	2,200.0	3.7	**61,400.0**	4.8	ND<2.8
1,3,5-Trimethylbenzene	3,310	1,380.0	ND<2.8	**19,200.0**	ND<2.9	ND<2.8
Xylenes	1,200	**1,638.0**	ND<2.8	**27,980.0**	6.2	ND<2.8
MTBE	120	ND<468	ND<5.6	ND<238	6.2	ND<2.8
Napthalene	13,000	ND<234	ND<2.8	821.0	ND<2.9	ND<2.8

Notes:
Depth (ft bgs) = Sample depth in feet below ground surface.
µg/Kg = micrograms per kilogram
NYS Guidance = Values from NYSDEC Technical and Administrative Guidance Memorandum #4046, Soil Cleanup Objectives to Protect Groundwater Qualtity.
Values in **BOLD** excede the Guidance value.
Samples analyzed for Volatile Aromatic and Aliphatic Hydrocarbons by EPA Method 8021.
ND = Not detected
Data from Teeter Environmental Services, 2001

Table Created By: DB
Table Checked By: CRS

TABLE 2-2
PREVIOUS INVESTIGATIONS - GROUNDWATER ANALYTICAL RESULTS
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

	Boring	SB1	SB4	SB6	SB8	SB11	SB13
	Depth (ft bgs)	20'-24'	20'-24'	18'-22'	16'-20'	14'-18'	16'-20'
		Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)
Analyte	GW Standard (µg/L)						
Chlorinated Hydrocarbons							
cis-1,2-Dichloroethene	5	**5.2**	**1,070.0**	**19.9**	**282.0**	**72.2**	**57.3**
trans-1,2-Dichloroethene	5	ND<0.5	ND<2.5	ND<1.0	2.5	ND<0.5	ND<0.5
Methylene Chloride	5	ND<0.5	2.5	ND<1.0	ND<0.5	ND<0.5	ND<0.5
Tetrachloroethene	5	**43.3**	**115.0**	**136.0**	**98.5**	**158.0**	**116.0**
Trichloroethene	5	**13.4**	**20.4**	**12.8**	**20.7**	**12.1**	**16.0**
Vinyl Chloride	2	ND<0.5	**280.0**	1.5	**3.1**	ND<0.5	**2.6**
Non-Chlorinated Hydrocarbons							
Benzene	1	0.7	ND<2.5	ND<1.0	ND<0.5	0.6	0.5
n-Butylbenzene	5	ND<0.5	ND<2.5	**16.4**	4.8	0.7	0.5
sec-Butylbenzene	5	ND<0.5	**6.5**	**7.7**	2.6	ND<0.5	ND<0.5
Ethylbenzene	5	ND<0.5	**7.7**	**6.7**	ND<0.5	ND<0.5	ND<0.5
Isopropylbenzene	5	ND<0.5	4.9	3.3	0.7	ND<0.5	ND<0.5
4-Isopropyltoluene	5	ND<0.5	**7.0**	4.9	ND<0.5	ND<0.5	ND<0.5
n-Propylbenzene	5	ND<0.5	ND<2.5	ND<1.0	ND<0.5	ND<0.5	ND<0.5
Styrene	5*	ND<0.5	**5.3**	ND<1.0	ND<0.5	ND<0.5	ND<0.5
Toluene	5	1.1	2.6	ND<1.0	0.6	1.0	0.7
1,2,4-Trimethylbenzene	5	0.8	**5.2**	**25.7**	**9.5**	0.8	0.7
1,3,5-Trimethylbenzene	5	ND<0.5	ND<2.5	**7.1**	2.7	ND<0.5	ND<0.5
Xylenes	5	0.9	**11.8**	4.0	1.7	1.3	0.5
MTBE	10	1.4	ND<5.0	2.0	ND<1.0	ND<1.0	ND<1.0
Napthalene	10	ND<0.5	ND<2.5	ND<1.0	ND<0.5	1.6	ND<0.5

Notes:
Depth (ft bgs) = Sample depth in feet below ground surface.
µg/L = micrograms per liter
GW Standard = Values from NYS Technical and Operational Guidance Series 1.1.1.
Values in **BOLD** excede the Standard or Guidance value.
Samples analyzed for Volatile Aromatic and Aliphatic Hydrocarbons by EPA Method 8021.
ND = Not detected
* = guidance value, not standard
Data from Teeter Environmental Services, 2001

Table Created By: DB
Table Checked By: CRS

TABLE 3-1
PROPOSED FIELD TASKS AND METHODOLOGY
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

LOCATION ID	DESCRIPTION AND METHODOLOGY	RATIONALE	ANALYTICAL
PHASE ONE			
GS-4 to GS-6, GS-11, GS-16 to GS-18	Collect 14 soil samples from 7 geoprobe points outside the Site building and in the vicinity fo the former UST.	Characterize soil in the overburden to assess exterior soil conditions, as well as evaluate potential source areas for continuing releases to the environment.	TCL VOCs at all locations. SVOCs at five locations. TAL metals,and Pesticides/PCBs at two locations.
GW-1 to GW-18	Collect up to 36 groundwater samples from 18 geoprobe points (two depths per geoprobe point).	Evaluate impacts to groundwater from site contaminants and evaluate potential background groundwater conditions.	TCL VOCs at all locations. SVOCs at up to nine locations, and Pesticides/PCBs at up to three locations, based on analytes previously detected.
GW-2, GW-10, GW-13, Gw-14	Install 4 microwells (peizometers) at the site. One in the presumed upgradient direction, two dowgradient and one cross gradient.	Installation of microwells to evaluate groundwater flow direction.	None
SS-1 to SS-15	Collect up to 15 surface soil samples from 0-2" at background locations and Geoprobel boring locations close to the site building	Characterize background surface soil condtions and on-site surface soil conditions related to potential health risk at the site.	TAL metals, SVOCs, and Pesticides/PCBs at all locations. TCL VOCs at 4 of 10 Geoprobel surface soil locatons.
GV-01 to GV-06	Collect up to 6 soil vapor samples with 1-liter,20 minute flow, summa canister from 6 geoprobe boring locations.	Characterize soil vapor concentrations and potential for impacts to ambient air contamination. (locations based on geoprobe groundwater and soil PID results)	VOCs by Modified TO-15
PHASE TWO			
BS-1 (MW-1) to BS-6 (MW-6)	Install up to six borings. Collect up to one soil samples at each location .	Borings used for installation of groundwater monitoring wells to evaluate groundwater quality and flow direction.	Soil samples will be collected for VOCs at all location. TOC and Grain Size will be collected at all locations at the well screen interval.
MW-1 to MW-6	Install up to 6 monitoring wells (one well pair with deep well <70'). Collect up to one groundwater sample at each location using low flow techniques . In addition, conduct hydraulic conductivity testing on each well. Two rounds of analytical sampling will be conducted.	Installation of groundwater monitoring points to evaluate groundwater quality and flow direction. Conduct hydraulic conductivity testing to evaluate hydrogeologic conditions and groundwater flow characteristics for potential future remedial design.	Groundwater samples will be collected for VOCs at all location. Two samples will be analyzed for TAL metals. Monitoring Natural Attenuation Parameters will be collected at all locations during the first sampling round.
SV-1 to SV-6	Collect up to 6 sub-slab vapor samples with 6-liter, 24-hour flow, summa canister from local homes and businesses.	Characterize soil vapor concentrations and potential for indoor air contamination in the Site building and at adjacent properties.	VOCs by Modified TO-15
IA-1 to IA-6; AA-1-AA-4	Collect up to 6 indoor air samples to coincide with the 6 sub-slab vapor samples. Collect using 6-liter, 24-hour flow, Summa Canister. In addition, four ambient air sample will be collected.	Characterize indoor air concentrations for comparison to guidance values.	VOCs by Modified TO-15

Notes:
TCL-VOCs = Target Compound List Volatile Organic Compounds analyzed by USEPA OLM04.2 methods for soil and water using NYSDEC ASP protocols.
TAL metals = Target Analyte List metals analyzed by USEPA ILM04.2 methods for soil and water using NYSDEC ASP protocols.
SVOCs = Semi-Volatile Organic Compounds analyzed by USEPA OLM04.2 methods for soil and water using NYSDEC ASP protocols.
Pesticides/PCBs = Pesticides and polychlorinated biphenyls analyzed by USEPA OLM04.2 methods for soil and water using NYSDEC ASP protocols.
Modified TO-15 = Air and vapor samples analyzed for a modified VOC list by USEPA Method TO-15 using Selective Ion Monitoring quantitation.
Monitoring Natural Attenuation Parameters = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1,
Sulfate by NYSDEC ASP Method 375.4, Sulfite by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by HACH Method,
Alkalinity by USEPA Method 310.1, and chloride by USEPA Method 325.3, and iron and manganese will be analyzed by USEPA Method 8260B.
In addition, oxygen and reduction/oxydation potential will be measured during well sampling stabilization.

Table Created By: DB
Table Checked By: CRS

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

							Water Samples					Soil/Sediment/Bulk Samples					Air Samples
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	VOCs (TO-15)
PHASE ONE																	
Geoprobe Soil Sampling																	
Boring	Soil	GS-4	DCGS004___01XX	1								1	1	1	1	1	
Boring	Soil	GS-4	DCGS004___01XX									1				1	
Boring	Soil	GS-5	DCGS005___01XX									1				1	
Boring	Soil	GS-5	DCGS005___01XX		1	1						1	1	1	1	1	
Boring	Soil	GS-6	DCGS006___01XX									1				1	
Boring	Soil	GS-6	DCGS006___01XX									1				1	
Boring	Soil	GS-11	DCGS011___01XX									1				1	
Boring	Soil	GS-11	DCGS011___01XX									1				1	
Boring	Soil	GS-16	DCGS016___01XX									1				1	
Boring	Soil	GS-16	DCGS016___01XX									1				1	
Boring	Soil	GS-17	DCGS017___01XX									1				1	
Boring	Soil	GS-17	DCGS017___01XX									1	1			1	
Boring	Soil	GS-18	DCGS018___01XX									1	1			1	
Boring	Soil	GS-18	DCGS018___01XX									1	1			1	
Geoprobe Groundwater Sampling																	
Boring	Water	GW-1	DCGW001___01XX				1										
Boring	Water	GW-1	DCGW001___01XX				1										
Boring	Water	GW-2	DCGW002___01XX				1										
Boring	Water	GW-2	DCGW002___01XX				1										
Boring	Water	GW-3	DCGW003___01XX				1										
Boring	Water	GW-3	DCGW003___01XX				1										
Boring	Water	GW-4	DCGW004___01XX	1			1	1	1								
Boring	Water	GW-4	DCGW004___01XX				1										
Boring	Water	GW-5	DCGW005___01XX				1										
Boring	Water	GW-5	DCGW005___01XX		1	1	1	1	1								
Boring	Water	GW-6	DCGW006___01XX				1										
Boring	Water	GW-6	DCGW006___01XX				1										
Boring	Water	GW-7	DCGW007___01XX		1		1										
Boring	Water	GW-7	DCGW007___01XX				1										
Boring	Water	GW-8	DCGW008___01XX				1										
Boring	Water	GW-8	DCGW008___01XX				1										
Boring	Water	GW-9	DCGW009___01XX				1										
Boring	Water	GW-9	DCGW009___01XX				1										
Boring	Water	GW-9	DCGW009___01XX				1										
Boring	Water	GW-10	DCGW010___01XX				1										
Boring	Water	GW-10	DCGW010___01XX				1										
Boring	Water	GW-11	DCGW011___01XX				1										
Boring	Water	GW-11	DCGW011___01XX				1										
Boring	Water	GW-12	DCGW012___01XX				1										
Boring	Water	GW-12	DCGW012___01XX				1	1	1								
Boring	Water	GW-13	DCGW013___01XX				1										

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

							Water Samples					Soil/Sediment/Bulk Samples					Air Samples
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	VOCs (TO-15)
Boring	Water	GW-13	DCGW013___01XX				1										
Boring	Water	GW-13	DCGW013___01XX				1										
Boring	Water	GW-14	DCGW014___01XX				1										
Boring	Water	GW-14	DCGW014___01XX				1										
Boring	Water	GW-14	DCGW014___01XX	1	1	1	1										
Boring	Water	GW-15	DCGW015___01XX				1										
Boring	Water	GW-15	DCGW015___01XX				1										
Boring	Water	GW-15	DCGW015___01XX				1										
Boring	Water	GW-16	DCGW016___01XX				1	1									
Boring	Water	GW-16	DCGW016___01XX				1	1									
Boring	Water	GW-17	DCGW017___01XX				1	1									
Boring	Water	GW-17	DCGW017___01XX				1	1									
Boring	Water	GW-18	DCGW018___01XX				1	1									
Boring	Water	GW-18	DCGW018___01XX				1	1									
Surface Soil Sampling																	
Surface	Soil	SS-1	DCSS001___01XX	1	1	1						1	1	1	1	1	
Surface	Soil	SS-2	DCSS001___02XX									1	1	1	1	1	
Surface	Soil	SS-3	DCSS001___03XX									1	1	1	1	1	
Surface	Soil	SS-4	DCSS001___04XX									1	1	1	1	1	
Surface	Soil	SS-5	DCSS001___05XX									1	1	1	1	1	
Surface	Soil	SS-6	DCSS001___06XX									1	1	1	1	1	
Surface	Soil	SS-7	DCSS001___07XX									1	1	1	1	1	
Surface	Soil	SS-8	DCSS001___08XX									1	1	1	1	1	
Surface	Soil	SS-9	DCSS001___09XX									1	1	1	1	1	
Surface	Soil	SS-10	DCSS001___10XX									1	1	1	1	1	
Surface	Soil	SS-11	DCSS001___11XX									1	1	1	1	1	
Surface	Soil	SS-12	DCSS001___12XX									1	1	1	1	1	
Surface	Soil	SS-13	DCSS001___13XX									1	1	1	1	1	
Surface	Soil	SS-14	DCSS001___14XX									1	1	1	1	1	
Surface	Soil	SS-15	DCSS001___15XX									1	1	1	1	1	
Geoprobe Soil Gas Sampling																	
Soil Gas	Vapor	GV-01	DCGV00100601XX		1												1
Soil Gas	Vapor	GV-02	DCGV00200601XX														1
Soil Gas	Vapor	GV-03	DCGV00300601XX														1
Soil Gas	Vapor	GV-04	DCGV00400601XX														1
Soil Gas	Vapor	GV-05	DCGV00500601XX														1
Soil Gas	Vapor	GV-06	DCGV00600601XX														1
PHASE TWO																	
Well Borings																	
Boring	Soil	BS-1(MW1)	DCBS001___01XX	1	1	1						1				1	
Boring	Soil	BS-2(MW2)	DCBS002___01XX									1				1	
Boring	Soil	BS-3(MW3)	DCBS003___01XX									1				1	

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

							Water Samples					Soil/Sediment/Bulk Samples					Air Samples
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	VOCs (TO-15)
Boring	Soil	BS-4(MW4)	DCBS004___01XX									1				1	
Boring	Soil	BS-5(MW5)	DCBS005___01XX									1				1	
Boring	Soil	BS-6(MW6)	DCBS006___01XX									1				1	
Well Sampling																	
WELL	Groundwater	MW-1	DCMW001___01XX	1	1	1	1				1						
WELL	Groundwater	MW-2	DCMW002___01XX				1				1						
WELL	Groundwater	MW-3	DCMW003___01XX				1				1						
WELL	Groundwater	MW-4	DCMW004___01XX				1				1						
WELL	Groundwater	MW-5	DCMW005___01XX				1				1						
WELL	Groundwater	MW-6	DCMW006___01XX				1				1						

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
DIAMOND CLEANERS SITE
ELMIRA, NEW YORK

							Water Samples					Soil/Sediment/Bulk Samples					Air Samples
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	VOCs (TO-15)
Additional Round Well Sampling																	
WELL	Groundwater	MW-1	DCMW001__02XX	1	1	1	1										
WELL	Groundwater	MW-2	DCMW002__02XX				1										
WELL	Groundwater	MW-3	DCMW003__02XX				1										
WELL	Groundwater	MW-4	DCMW004__02XX				1										
WELL	Groundwater	MW-5	DCMW005__02XX				1										
WELL	Groundwater	MW-6	DCMW006__02XX				1										
Residence/Business Interior Sampling																	
Soil Gas	Vapor	SV-1	DCSV00100101XX		1												1
Soil Gas	Vapor	SV-2	DCSV00200101XX														1
Soil Gas	Vapor	SV-3	DCSV00300101XX														1
Soil Gas	Vapor	SV-4	DCSV00400101XX														1
Soil Gas	Vapor	SV-5	DCSV00500101XX														1
Soil Gas	Vapor	SV-6	DCSV00600101XX														1
Air	Indoor Air	IA-1	DCIA001XXX01XX		1												1
Air	Indoor Air	IA-2	DCIA002XXX01XX														1
Air	Indoor Air	IA-3	DCIA003XXX01XX														1
Air	Indoor Air	IA-4	DCIA004XXX01XX														1
Air	Indoor Air	IA-5	DCIA005XXX01XX														1
Air	Indoor Air	IA-6	DCIA006XXX01XX														1
Air	Ambient Air	AA-1	DCAA001XXX01XX		1												1
Air	Ambient Air	AA-2	DCAA002XXX01XX														1
Air	Ambient Air	AA-3	DCAA003XXX01XX														1
Air	Ambient Air	AA-4	DCAA004XXX01XX														1
TOTAL SAMPLES				7	12	7	52	9	3	0	6	35	20	17	17	35	22

Notes:
Sample ID = 14-digit sample identification as outlined in the QAPjP. The 8,9, and 10 digit locations represent the sample depth below ground surface (__ = be determined in field)
MS/MSD = matrix spike and matrix spike duplicate sample collected
DUP = Duplicate sample collected
RINS = rinseate sample collected
VOCs water and air = Target Compond List Volatile Organic Compounds analyzed by NYSDEC ASP 2000 - OLM04.2 methods for soil and water.
SVOCs = Semi-Volatile Organic Compounds analyzed by NYSDEC ASP 2000 OLM04.2 methods.
PEST/PCBs = Pesticides and polychlorinated biphenyls analyzed by NYSDEC ASP 2000 OLM04.2 methods.
TAL metals = Target Analyte List metals analyzed by NYSDEC ASP 2000 ILM04.2 methods.
MNA Parameters = Monitoring Natural Attenuation Parameters = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfide by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by Hach Method, Alkalinity by USEPA Method 310.1, chloride by USEPA Method 325.3, and iron and manganese will be analyzed by USEPA Method 6010B. In addition, oxyen and reduction/oxydation potential will be measured during well stabilization.
TO-15 = Air and vapor samples analyzed for a modified VOC list by USEPA Method TO-15 using selective ion monitoring quantitation.
Sample totals do not include QA/QC samples.

Table Created By: DB
Table Checked By: CRS

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

This QAPjP identifies sections of the QAPP (ABB-ES, 1994) that apply to the activities described in the site Project Work Plan (Work Plan), describes variances to those procedures, and specifies the analytical methods used for laboratory analysis of environmental samples.

1.0 GENERAL PROCEDURES AND PRACTICES

The general procedures used to conduct the RI at the DC site will be taken from the following sections of the QAPP:

Section 2.0	Program Organization and Responsibilities (Personnel for this project are identified in the DC PMWP)
Section 9.0	Internal Quality Control
Section 11.0	Preventive Maintenance
Section 12.0	Data Assessment
Section 13.0	Corrective Action
Section 14.0	Reports to Management

2.0 FIELD PROCEDURES AND SAMPLING

The following field investigation techniques and procedures set forth in the QAPP will be used at the site:

QA/QC Procedures	Section 3.0
Decontamination	Subsection 4.3
Sample Handling	Sections 4.0 and 5.0
General Soil Sampling Methodology	Subsection 4.6
General Water Sampling Methodology	Subsection 4.6
Terraprobe Sampling	Subsection 4.6.5
Hydraulic Conductivity Testing	Subsection 4.8.2.2
Field Instrument Calibration	Section 6.0

Variances to the above procedures are described in the following subsections 2.1 to 2.6.

2.1 Low Flow Overburden Groundwater Sampling

The following procedure was developed in accordance with the USEPA guidance document "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells", dated July 30, 1996. A Low Flow Groundwater Sampling Data Sheet will be completed for each sample.

Basic Materials and Equipment Required

- Geopump™ or Bladder Pump with Teflon™ or Teflon™ lined tubing capable of reaching the estimated depth of the well screen;
- Air compressor or compressed gas for bladder pump power supply;
- Water quality unit(s) capable of measuring pH, temperature, specific conductance, dissolved oxygen, redox potential and turbidity;
- Water level meter;
- Photoionization Detector;
- Graduated measuring device and stopwatch;
- Sample bottles and labels;
- Calculator, field data sheets, and logbook; and
- Well construction data.

Procedure

1. Remove well cap and immediately measure VOC concentrations at the well mouth using a PID.

2. If the well casing does not have a reference point [usually an indelible ink mark on the highest rim of the PVC casing], make one, and document it in the field logbook.

3. A static water level measurement will be collected using the top of riser as a reference point. Submersion of the water level meter probe should be minimized within the standing water column to avoid disturbance of colloidal particles.

4. The pump will be lowered into the water column so that the pump intake is located at the mid-point of the saturated screen interval. The pump should be lowered slowly into the water column to minimize the amount of mixing in the well. The discharge line should be secured to minimize movement of the pump during sampling activities.

5. Assemble air lines, bladder pump control box, and in-line water quality monitoring system for bladder pump. Assemble tubing and in-line water quality monitoring system for peristaltic pump. The water quality system should include the following parameters monitored in-line: pH, temperature, specific conductance, redox potential, dissolved oxygen. Turbidity will be monitored separately from those parameters monitored in-line.

6. The depth to water in the well will be re-measured after pump insertion and compared to the initial water level measurement; if the readings vary by greater than 0.5 feet, wait a period of 5 minutes and re-measure the water level and document the measurement before purging is initiated.

7. The initial purging rate should be at the lowest rate obtainable with the pump. The pump start time should be recorded and the flow rate will be measured and recorded using a graduated measuring device and a stopwatch. Purging rates should not exceed 500 milliliters per minute. During the initial period of pumping, an estimated 5 to 10 minutes, the depth to water in the well should be measured frequently (approximately once per minute) to enable timely pumping rate adjustments in attempts to minimize significant drawdown (i.e., = 0.3 feet) in the well. If significant drawdown is observed, pumping rates should be decreased until drawdown is no longer occurring.

8. The initial groundwater sample discharged from the tubing will be monitored for in-line field parameters as described above and documented along with start time a Low Flow Groundwater Sampling Data Sheet.

9. In-line field parameters (as depicted in step 5) and the depth to water will be measured at five minute intervals (initially the water level will be measured more frequently as described in step 7). The data and the associated time will be documented on the Low Flow Groundwater Sampling Data Sheet. Attempts will be made to minimize the drawdown in the well during pumping to less than 0.3 feet, by adjusting the pump flow rate. Drawdown for each well will vary depending on the recharge capacity of the overburden and bedrock units.

10. During pump start-up, drawdown may exceed the 0.3 feet target and recover as flow adjustments are made. Purge volume calculations should include the stabilized drawdown value, not the initial drawdown. Do not allow the water level to fall below the intake of the pump (if the static water level is above the well screen, do not allow the water level to fall below the top of the well screen). The final purge volume must be greater than the stabilized drawdown volume, plus the extraction of the tubing volume.

11. Purging requirements are met once at least the minimum required purge volume is met (See #10) and when in-line (collected via a flow through cell) water quality readings (three consecutive readings at five minute intervals) meet the following criteria:

    - Turbidity (± 10% for values greater than 10 NTU);
    - Temperature (± 10%)
    - Dissolved Oxygen (±10%);
    - Specific Conductance (±3%);
    - pH (± 0.1 unit); and
    - Redox Potential (± 10 millivolts).

    If the final drawdown measures greater than 0.3 feet, the volume of water drawdown will be calculated and the calculated volume purged in addition to the minimum purge volume.

    If the above criteria are not achieved, due to excessive drawdown, drawdown below the pump intake or excessive purging (> 1 hours) without stabilization of water quality measurements, alternative sampling procedures can be initiated. Details of reasons why low flow criteria were not obtainable should be clearly documented in the log book and on the sample sheet. The following three options may be implemented, depending on the specific situation.

    a) Continue purging until parameter stabilization is achieved.

    b) Discontinue purging activities and do not collect a sample.

    c) Discontinue purging and collect samples documenting in the field logs the circumstances surrounding the sample collection.

    If, while purging, the recharge rate is less than the lowest pumping rate obtainable with the pump, purge the saturated interval to dryness regardless of the water quality measurements. The well should be sampled as soon as the water level has recovered sufficiently to collect the appropriate volume needed for all anticipated samples (ideally the intake should not be moved during this recovery period). Samples may then be collected regardless of field water quality parameter readings.

12. Following purging procedures, the flow through cell will be disconnected, the flow rate re-adjusted to approximately 100 milliliter per minute (ml/minute). Samples will then be collected directly through the pump/tubing in the appropriate sample bottles.

VOC samples should be collected first and directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal disturbance.

During purging and sampling, the tubing should remain filled with water so as to minimize possible changes in water chemistry upon contact with the atmosphere. If the sampling tube is not completely filled to the sampling point, use one of the following procedures to collect the samples, 1) add a clamp, connector (Teflon or stainless steel) or valve to constrict the discharge end of the tubing; 2) insert a small diameter Teflon tube into the discharge end of the pump tubing, collect samples from the insert tubing. 3) collect non-VOC samples first, then increase the flow rate slightly until the water completely fills the tubing, collect samples and document the new flow rate, water quality readings, and associated drawdown measurements.

If sample containers are not pre-preserved, add preservatives immediately after sample collection. Check pH value (with pH paper) all preserved samples to ensure proper preservation. Do not check VOC samples or other samples with zero headspace.

If filtered samples are to be collected, collect samples using the same low flow technique. The filter should be pre-rinsed with 25-50 ml of groundwater prior to sample collection. The flow rate may have to be increased due to restrictions to flow subsequent to filter placement on the discharge line.

Label each sample with the appropriate sample identification code, sample date, and time of the last sample collected sample time. Samples requiring cooling (i.e., VOCs) will be placed in a cooler immediately after collection and kept at a temperature of 4 degrees Celsius until relinquished to the on-site laboratory or sample manager.

13. The bladder pump will then be removed and decontaminated using the following procedure: flushed with a Liquinox and potable water mixture (approximately 3 gallons), rinsed with potable water (approximately 3 gallons) and rinsed with deionized water (approximately 3 gallons). The peristaltic pump will be removed and tubing decontaminated using the following procedure: flushed with a Liquinox and potable water mixture (approximately 2 gallons), rinsed with potable water (approximately 2 gallons) and rinsed with deionized water (approximately 2 gallons). Dedicated peristaltic pump tubing will be used where possible.

Required Documentation

The following items represent the minimum required information to be documented in the field logbooks or field data records. Each individual shall document, in the field logbook or field data record, the following appropriate level of detail for each well location prior to setting up on the next exploration location.

- Page number, job number, well ID and date at the top of each page;
- Clock time of all water levels measurements and reference point used;
- Calculation for one purge volume and the total volume purged;
- Clock time purging initiated;
- All purging rate adjustments and clock time adjustment made;
- All in-line water quality readings (i.e., pH, temperature, specific conductance, dissolved oxygen, redox potential, and turbidity);
- Drawdown measurements;
- Analytical parameters collected and associated volumes;
- Assign sample identification code;
- Decontamination of pump;
- Brief description of any problems or occurrences; and
- Time of demobilization.

2.2 Investigation Derived Waste

Decontamination of equipment will follow procedures described in the QAPP except for disposal of purge water. Well water purged prior to groundwater sampling will be considered contaminated and placed in USDOT-approved 55-gallon containers if visual and olfactory signs of contamination are noted. If no visual and olfactory signs of contamination are noted, water will be considered non-hazardous and will be allowed to infiltrate into the ground surface at the site.

Soil cuttings will be screened for VOCs with a PID. Soils with visual evidence of contamination, or with PID readings greater than 5 ppm will be containerized in USDOT-approved 55-gallon containers for off-site disposal. Soils with sustained PID readings of less than or equal to 5 ppm will be considered non-contaminated and will be used as backfill for the borings at the approximate interval from which they were extracted. Remaining uncontaminated soils will be spread evenly on the ground surface in unpaved areas of the Site.

Off-site transport and disposal of RI-generated wastes (hazardous and non-hazardous) will be the responsibility of MACTEC.

2.3 Sampling and Analysis Program

Data Quality Objectives (DQOs) for the DC site sampling activities are summarized in Table A-1. DQOs are described in accordance with USEPA guidelines (USEPA, 1987) and the NYSDEC Analytical Services Protocols (ASP) (NYSDEC, 2000).

Analytical data requirements were established using the methods described in the ASP. Analytical methods to be used for laboratory analysis are presented in Table A-2. Analytical Level B deliverables as described in the ASP will be provided by the laboratory for first round data. Analytical Level A deliverables will be provided for subsequent rounds from the same location. DUSR will be issued based on DEC guidelines (NYSDEC, 1997).

2.4 Sub Slab Vapor and Indoor Air Sampling

Prior to commencing the residential and commercial sub-slab and indoor air sampling, the owner/occupant of the building will be interviewed and the Indoor Air Quality Questionnaire and Building Inventory Form will be completed by the sampler (Appendix A-1).

Indoor air samples will be collected as outlined in the SOP included as Appendix A-2. Sub-slab vapor samples will be collected as outlined in the SOP included as Appendix A-3. Ambient air samples will be collected as outlined in the SOP included as Appendix A-4.

2.5 Sampling Identification

Sample identification will adhere to the 14-digit system outlined in Subsection 4.1 of the QAPP with the following exception and clarifications:

Digits 1,2 Sample identification will begin with the site designator DC.

Digits 3,4 Sample Type will include the following identifications:
AA- Ambient Air
BS – Boring Soil
GS – Geoprobe® Soil
IA – Indoor Air
SV – Soil Vapor

2.6 Drum Labeling

Drums will be labeled with the following information:

- Drum contents;
- Site name and the NYSDEC Site Number; and
- Date drum filling began and date drum was sealed.

Upon completion of the project, the NYSDEC Project Manager will be notified in writing about the location, number, and any relevant information regarding drums staged on the site. Drums are to be stored on wooden pallets. Drums shall be staged as directed by the NYSDEC. Final off-site transport and disposal of RI-generated wastes will be coordinated by MACTEC.

REFERENCES

ABB Environmental Services, 1994. *Program Quality Assurance Program Plan*. Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 1994.

New York State Department of Environmental Conservation (NYSDEC), 1997. "Guidance for the Development of Data Usability Reports"; Division of Environmental Remediation; September 1997.

New York State Department of Environmental Conservation (NYSDEC), 2000. *"Analytical Services Protocols"*; 6/00 Edition; June 2000.

United States Environmental Protection Agency (USEPA), 1987. *"Data Quality Objectives for Remedial Response Activities"*; Office of Emergency and Remedial Response and Office of Waste Programs Enforcement; Washington DC; EPA/540/G-87/003; March 1987.

United States Environmental Protection Agency (USEPA), 1996. "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells"; July 30,1996.

TABLES

Table A-1
Analytical DQO Levels

Parameter	Use	Data Quality Level
PH Temperature Specific Conductance Turbidity	Provides physical and chemical data on groundwater samples for use during sampling collection.	Level I
PID screening	Provides qualitative real-time information on air quality in the breathing zone for health and safety decisions, and to identify potentially contaminated groundwater.	Level I
TCL VOCs, SVOCs, TAL metals, Pesticides/PCBs, MNA parameters, and sub-slab soil vapor and indoor air.	Provides analytical information to: 1) compare to standards and guidance values, 2) evaluate geochemistry for interpretation regarding MNA.	Level III

Notes:

TCL = target compound list
VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
TAL = target analyte list
PCB = polychlorinated biphenyl
MNA = monitoring natural attenuation. Parameters include TOC, nitrate, nitrite, sulfate, sulfide, methane/ethane/ethane, carbon dioxide, alkalinity, chloride, iron, and manganese.

Table A-2
Summary of Analytical Methods

Media	Parameter	Method
Groundwater from monitoring wells	TCL VOCS, SVOCS, TAL metals, pesticides/PCBs, and MNA	OLM04.2 and ILM02.1 using NYSDEC ASP 2000 and MNA methods.
Sub-slab Soil Vapor and Indoor Air	TCL VOCs	TO-15
Soil from Geoprobe® and drilling borings	TCL VOCs	OLM04.2

Notes:
TCL = target compound list
VOCs = volatile organic compounds
SVOCs = semi volatile organic compounds
TAL = target analyte list
PCB = polychlorinated biphenyl
MNA = monitoring natural attenuation
MNA methods = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfite by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by HACH Method, Alkalinity by USEPA Method 310.1, chloride by USEPA Method 325.3, and iron and manganese by USEPA Method 8260B.

APPENDIX A-1

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

Performed by _____ Date Performed _____

Company Name _____ Phone No. _____

1. Occupant

Name:_____
Street Address:_____
Town:_____
County:_____
Home Phone No._____Office Phone No._____

2. Owner or Landlord
(if different from above)

Name:_____
Street Address:_____
Town:_____
County:_____
Home Phone No._____Office Phone No._____

A. Building Construction Characteristics:

Type (circle appropriate responses): Single Family Multiple Dwelling Commercial

Ranch	2-Family
Raised Ranch	Duplex
Split Level	Apartment House_____Units
Colonial	Number of Floors_____
Mobile Home	Other specify_____

Building Age_____ General Description of Building Construction Material _____

Is the building insulated? Yes / No How air tight is the building_____

B. Basement Construction Characteristics (circle all that apply):

1. Full basement, crawlspace, slab on grade, other_____
2. Basement floor: concrete, dirt, other _____
3. Concrete floor: unsealed, painted, covered; with _____
4. Foundation walls: poured concrete, block, laid up stone, other_____
5. The basement is: wet, damp, dry___Sump present? y / n ____water in sump y / n
   If the basement has a moisture problem, how many times a year?_____

   Comment:_____
6. The basement is: finished, unfinished_____
   If finished, how many rooms?_____
   How many used for more than 2 hours/day?_____
7. Identify potential soil vapor entry points (e.g., cracks, utility ports, floor drains, etc.)____
8. Describe how air tight the basement is:_____

_____

C. HVAC (circle all that apply):

1. The type of heating system(s) used in this residence is/are:

Hot Air Circulation	Heat Pump
Hot Water Radiation	Unvented Kerosene Heater
Steam Radiation	Wood Stove
Electric Baseboard	Other (specify)_____

2. The type(s) of fuel(s) used is/are: Natural Gas, Fuel Oil, Electric, Wood, Coal, Solar, Other (specify)_____
3. Is the heating system's power plant located in the basement or other area:_____
4. Is there air conditioning? Yes / No Central Air, or Window Units?
   Specify the location_____
5. Are there air distribution ducts present? Yes / No
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return. How tight are the duct joints?

_____
_____

D. Potential Indoor Sources of Pollution

1. Has the house ever had a fire? Yes / No
2. Is there an attached garage? Yes / No
3. Is a vehicle normally parked in the garage? Yes / No
4. Us there a kerosene heater present? Yes / No
5. Is there a workshop, hobby, or craft area in the residence? Yes / No
   If Yes, where and what _____
6. Is there a kitchen exhaust fan? Yes / No Where is it vented?_____
7. Is there a clothes dryer? Yes / No Where is it located?_____
   Where is it Vented?_____
8. Has a new carpet been installed in the home within the last year? Yes / No
   If yes, where?_____
9. Has any painting been completed in the last 6-months. Yes / No
   If yes, where?_____
10. Has the house ever been fumigated? If yes describe date, type, and location of treatment._____
11. Does anyone in the home regularly use or work in a dry cleaning service? Yes/No
    If Yes, explain (i.e. how often)_____
12. Does anyone in the home use solvents at work? Yes / No
    If yes, what solvents, and are clothes washed at home?_____
    _____
13. Use attached page to complete inventory of products used and stored in the building. Any product that contains volatile organic compounds, or chemicals similar to the target compounds should be listed, along with PID readings.

E. Water and Sewage (Circle appropriate responses):

Source of Water:

Public Water Drilled Well Driven Well Dug Well Other(specify)_____

Do you have a private well for purposes other than drinking? Yes / No
If yes, what is it used for_____

Water Specifications:

Well Diameter_____ Grouted or Ungrouted_____
Well Depth _____ Type of Storage Tank_____
Depth to Bedrock_____ Size of Storage Tank_____
Feet of Casing_____ Describe type(s) of treatment_____

Water Quality:

Taste and/or odor problems y / n If so describe_____
How long has the taste and/or odor been a present_____

Sewage Disposal: Public Sewer Septic Tank Leach Field Other (specify)_____
Distance from well to septic system_____Type of septic tank additive_____

F. Plan View:

Draw a plan view sketch for each floor of the residence and if applicable, indicate air sample locations, possible indoor air pollution sources and PID meter readings.

G. Potential Outdoor Sources of Pollution:

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on the spill location (if known), potential air contamination sources (industry, gas stations, repair shops, etc.), outdoor sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the location of the well and septic system if applicable, and a qualifying statement to help locate the site on a topographic map.

PRODUCT INVENTORY FORM

Product and Contents	PID Reading

APPENDIX A-2

INDOOR AIR SAMPLING

STANDARD OPERATING PROCEDURES USING SUMMA®-TYPE CANISTERS

Indoor Air Sampling
Standard Operating Procedures Using SUMMA®-Type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of indoor air samples from residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection of indoor air samples using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection.

For the purposes of evaluating the potential vapor migration from soils and groundwater into indoor air, samples will be collected from the lowest usable area of the building. Indoor air samples may be collected from one of the following areas:

1) Unfinished basement or unfinished first floor of slab-on-grade building;
2) Finished basement or finished first floor of slab-on-grade building; or
3) First floor living area above a dirt-floored crawl space.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister - .laboratory provided
- Pressure gage with integrated 24-hour metering valve- laboratory provided
- Two, 9/16-inch, open-end wrenches
- PID – part per billion range detector for screening indoor air
- Wristwatch
- Digital camera
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Indoor Air Sample Collection:

The following section provides a general guidance on the collection of indoor air samples; the sequence can be modified as needed based on site specific conditions at the time of sample collection.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form

B. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample. Record relevant information on Building Inventory Form and document with digital photographs.

C. Using the PID, screen indoor air in the location intended for sampling and in the vicinity of potential VOC sources (i.e. paints, glues, household cleaners, dry cleaned clothes, etc.) to assess the potential gross presence of VOCs. Record PID readings on the sampling form. Items or materials exhibiting PID readings shall be considered probable sources of VOCs and, given approval of the owner or occupant, will be removed prior to sampling. If practical, sampling will be rescheduled for 24-hours later.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister at breathing zone height (approximately 3 to 5 feet above floor). Canister can be placed on a stable surface, such as a table or bookshelf, or affixing to a wall or ceiling support with nylon rope. Avoid placing canisters near windows or other potential sources of drafts and air supply vents.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.

B. Complete COC and place requisite copies in shipping container.

C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Duplicate samples will be collected "side-by-side" over the same time interval.

APPENDIX A-3

SUBSTRUCTURE SOIL GAS SAMPLING STANDARD OPERATING PROCEDURES USING SUMMA® -TYPE CANISTERS

Substructure Soil Gas Sampling
Standard Operating Procedures Using SUMMA ® type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of substructure soil gas samples from beneath residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection substructure soil gas using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection. Substructure soil gas samples may be collected from one of the following areas:

Area 1) Subslab soil gas sample obtained via a temporary installed sampling port through apparent vapor barrier (such as floor slab or plastic liner); or
Area 2) Air sample obtained from crawl space or basement without an apparent vapor barrier.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister -laboratory provided
- Pressure gage with integrated 24-hour metering valve -laboratory prol1ided
- Two, 9/16-inch, open-end wrenches
- Photo Ionization Detector (PID) -for screening crawl space
- Utility Knife
- Electric hammer drill with 1-inch and 3/8-inch diameter drill bits
- Two 50-foot long electrical extension cords
- ¼-inch outer diameter (O.D.) Teflon® tubing
- ¼-inch stainless steel valve and stainless steel "tee" type fitting
- 60 cc polyethylene syringe for purging tubing
- 1-inch diameter rubber stopper with ¼-inch port
- Quick-drying expansive Portland cement
- Wristwatch
- Digital camera
- Flashlight
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Substructure Soil Gas Sample Collection:

The procedures for substructure soil gas sample collections will be dependant on location category. During the occupant/owner interview and building survey the lowest accessible portion of the building (e.g., crawl space, basement, or first floor of slab-on-grade construction) will be observed to assess which substructure sampling area category is applicable. The steps provided below should be considered a general guidance on the collection of substructure soil gas samples for each location category; the sequence can be modified as needed based on site- or project-specific conditions at the time of sample collection.

Area 1: Subslab soil gas sample obtained via temporary installed sampling port through apparent vapor barrier (i.e. floor slab or plastic liner).

Selection and preparation of sample collection point

A. Observe the condition of the building floor slab for apparent penetrations such as concrete floor cracks, floor drains, or sump holes. Note the floor conditions on the sampling form and select a potential location or locations for a temporary subsurface probe. The location or locations should be central to the building away from foundation walls and apparent penetrations. Review the proposed location or locations with the occupant/owner describing how the sampling port or ports will be installed. After receiving' permission from the occupant/owner, mark the proposed location(s) and describe the location(s) on the sampling form.

B. Using the PID, screen indoor air in the area of floor penetrations such as concrete floor cracks, floor drains, or sump holes. Record the indoor air PID readings on the sampling form.

Installation of temporary subsurface sample point

A. Drill a 1-inch diameter hole about to 2 inches into the concrete slab using an electric hammer drill.

B. Extend the hole through the remaining thickness of the slab using a 3/8-inch drill bit. Extend the hold about three inches into the subslab material using either the drill bit or a steel probe rod. Vacuum hole to remove excess dust.

C. Insert a section of ¼-inch O.D. Teflon® tubing to the bottom of the floor slab. Seal the annular space between the 1-inch hole and 1/4-inch tubing by seating a tapered laboratory-grade rubber plug perforated with a 1/4.-inch hole into the probe hole and if necessary capping the stopper with a beeswax seal. The beeswax will be melted with an electric heat gun.

D. Connect the ¼ -inch Teflon® tubing to a stainless steel valve using compression fittings. Open the in-line valve and purge the probe tubing using a polyethylene 60 cc syringe. Close the valve, remove and cap the syringe, and connect the ¼-inch Teflon® tubing and in-line valve to a SUMMA®-type canister. The air/soil gas syringe will be discharge out of doors. For duplicate sample locations connect a second canister before purging by installing a 1/4-inch stainless steel "tee" fitting between the probe discharge tubing and the stainless steel valve.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister adjacent to the temporary sampling port.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Connect subsurface probe to end of in-line particular filter via ¼-inch O.D. Teflon® tubing and "swagelok®-type" fittings.

J. Open canister valve and in-line stainless steel valve to initiate sample collection.

K. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

L. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.
B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.
C. Close canister valve.
D. Disconnect Teflon® tubing and remove pressure gage / flow valve from canister.
E. Reinstall brass plug on canister fitting and tighten.
F. Remove SUMMA®-type canister from sample collection area.
G. Remove temporary probe and rubber stopper and fill the hole with a quick drying hydraulic cement. Finish flush with floor surface.

Area 2: Air sample obtained from crawl space or basement without an apparent vapor barrier.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form
B. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample. Record relevant information on Building Inventory Form and document with digital photographs.
C. Using the PID, screen indoor air in the location intended for sampling and in the vicinity of potential VOC sources (i.e. paints, glues, household cleaners, dry cleaned clothes, etc.) to assess the potential gross presence of VOCs. Record PID readings on the sampling form. Items or materials exhibiting PID readings shall be considered probable sources of VOCs and, given approval of the owner or occupant, will be removed prior to sampling. If practical, sampling will be rescheduled for 24-hours later.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister at breathing zone height (approximately 3 to 5 feet above basement floor or about 1 foot above floor of crawl space). Canister can be placed on a stable surface, such as a table or bookshelf, or affixing to a wall or ceiling support with nylon rope. Avoid placing canisters near windows or other potential sources of drafts and air supply vents.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.
B. Complete COC and place requisite copies in shipping container.
C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Area 2- type duplicate samples will be collected "side-by-side" over the same time interval. Area 1- type duplicate samples will be obtained using a stainless steel "tee" type fitting and 1/4-inch O.D. Teflon- tubing connected to the same subsurface probe.

APPENDIX A-4

AMBIENT (OUTDOOR) AIR SAMPLING STANDARD OPERATING PROCEDURES USING SUMMA®-TYPE CANISTERS

Ambient (Outdoor) Air Sampling
Standard Operating Procedures Using SUMMA®-type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of ambient (outdoor) air samples from residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection of ambient air samples using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister - .laboratory provided
- Pressure gage with integrated 24-hour metering valve- laboratory provided
- Two, 9/16-inch, open-end wrenches
- PID – part per billion range detector for screening indoor air
- Wristwatch
- Digital camera
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Ambient (outdoor) Air Sample Collection:

The following section provides a general guidance on the collection of ambient air samples; the sequence can be modified as needed based on site specific conditions at the time of sample collection.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form.

B. Choose an area for sample collection that is upwind of the property (properties) being assessed, if possible. Collect sample away from wind breaks, if possible.

C. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample (i.e. fuel tanks, gasoline, paint storage, etc.). Record relevant information on Building Inventory Form and document with digital photographs.

D. Using the PID, screen ambient air in the location intended for sampling to assess the potential gross presence of VOCs. Record PID readings on the sampling form.

Preparation of SUMMA® canister and collection of sample

A. Place SUMMA®-type canister approximately 5 feet above ground (or equivalent to the mid-point of the ground story of the building(s). Canister can be placed on a stable surface, or suspended from structure with nylon rope.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.

B. Complete COC and place requisite copies in shipping container.

C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Duplicate samples will be collected "side-by-side" over the same time interval.

APPENDIX B

HEALTH AND SAFETY PLAN

MACTEC Engineering and Consulting, Inc.

HEALTH AND SAFETY PLAN

MACTEC Engineering and Consulting, Inc. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC), is implementing a Remedial Investigation/Feasibility Study (RI/FS) of the Diamond Cleaners site (Site) in Elmira, Chemung County, New York. The Site is listed as a Class 2 hazardous waste site, Site No. 8-08-030, in the Registry of Hazardous Waste Sites in New York State. This Health and Safety Plan (HASP) has been prepared in accordance with the requirements or the NYSDEC as identified in Work Assignment (WA) No. D003826-16, dated February 1, 2005, under the July 1997 Superfund Standby Contract between MACTEC and the NYSDEC.

The purpose of this HASP is to protect the health and safety of on-site personnel and the surrounding community during remedial activities at the Diamond Cleaners site. This HASP is based on the MACTEC Program HASP (ABB-ES, 1994) and consists of a site-specific HASP Addendum to document site-specific aspects of the Diamond Cleaners RI/FS.

Prior to initiation of remedial activities, MACTEC will notify the local fire, police, and potential emergency responders to advise them of the remedial activities that will take place and the schedule of these activities. The Diamond Cleaners tenants will also be notified should the building be occupied at the time of the investigation. If necessary adjacent property owners will be notified, however, the Diamond Cleaners site is a low hazard site and notification of adjacent property owners is not anticipated as a necessary procedure unless specific access is required to adjacent properties.

In the event of an emergency or corresponding evacuation procedure, evacuation procedures documented in the HASP Addendum will be followed and the emergency contacts notified.

Attachement:

MACTEC Engineering and Consulting
Health and Safety Plan Addendum
(See Program Health and Safety Plan for more details)

Site: **Diamond Cleaners Site** Contact: John Peterson

Street Address: 1707 Lake Road

Proposed Date(s) of Investigation: 5/1/2005 Job Number: 3612052028 Task 01

Prepared by: C.Staples Date: 3/28/2005

Approved by: Cindy Sundquist Date: 3/30/2005

Proposed Activity(s): Geoprobe-soil and water sampling, well installation, well groundwater sampling, soil gas and indoor air sampling (see field sampling plan)

Known or Suspected Chemicals (include PELs): See attached table.

HAZARD EVALUATION (Check all that apply):

Overall Hazard Estimation:		Serious		Moderate	X	Low		Unknown		None
Major Exposure Route(s):		Dermal	X	Inhalation		Ingestion		Puncture		
Contaminant Location(s):		Surface	X	Underground	X	Soil		Sediment	X	Water
		Tank		Other (list):						
Health Hazard(s):		Liquid		Solid		Sludge		Corrosive		Ignitable
	X	Volatile		Radioactive		Reactive		Unknown		
Safety Hazard(s):		Height	X	Equipment		Cold Stress	X	Noise		Eye
		Near Water		Confined Space	X	Heat Stress	X	Machinery		Burns
		Lifting		Slips/Falls		Other (list):				

EQUIPMENT (check all that apply): Initial Level of Personal Protection: Modified D

PPE Selected: ***	X	Cartridge Respirator-See Below	X	Coveralls		Gloves
		Escape Respirator	X	Safety Glasses	X	-inner - vinyl
	X	Safety Boots/Shoes		Face Shield	X	-outer - nitrile
		Chemical Resistant Boots	X	Hard Hat		Tyveks
		Disposable Boot Covers	X	Ear Protection		regular
		Other (list):				coated
Monitoring Equipment:		Combustible Gas/Oxygen Meter		Explosimeter		OVA
		Hydrogen Sulfide Meter	X	Draeger Tubes	X	PID
		Radiation Alert Meter		list: vinyl chloride 0.5/a		
		Dosimeter Badge		Other (list):		
Emergency Equipment:	X	First Aid Kit		Fire Extinguisher	X	Eye Wash
		Other (list):				

CONTAMINANT LEVELS FOR MODIFICATION OF PROTECTIVE EQUIPMENT:

*** Cartridge Respirator - GMC w/N95 prefiltered (or equivalent) (change twice daily).

Drilling and Direct Push: Monitor breathing zone with a 10.6 eV Lamp (10.0 or 10.2 ok too) PID. If PID readings are detected in the breathing zone above background, monitor with a Vinyl Chloride 0.5/a Drager tube. If VC readings are greater than 0.5 ppm, upgrade to Level B PPE. Otherwise, continue working until PID readings reach or exceed 10 ppm. If PID is greater than 10 ppm, upgrade to Level B PPE. VOCs will also be continuously monitored at the perimerter of the designated work zone for each location as a measure of protection for the downwind community. The continuous monitoring will be performed in acordance with NYSDOH gCAMP rev 1 06/00 (see attached).

Drilling and direct push sampling are not anticipated to be performed in source areas, therefore particulate monitoring will not be performed on a continuous basis. Significant amounts of dust is not anticipated to be generated during drilling and direct push sampling. Dust suppression measures will be used to minimize the generation of dust. In the event that dust conditions do arise, a respirable dust meter will be used to monitor particulates in accordance with NYSDOH gCAMP rev 1 06/00. If particulate levels exceed 100 ug/m^3 above background or greater than 150 ug/m^3, work will be stopped and dust control measures and continuous particulate monitoring will be instituted prior to work being resumed.

GW Sampling and Survey: Monitor breathing zone with a 10.6 eV Lamp (10.0 or 10.2 ok too) PID. If PID readings are detected in the breathing zone above background, monitor with a Vinyl Chloride 0.5/a Drager tube. If VC readings are greater than 0.5 ppm upgrade to Level B PPE. Otherwise, continue working until PID readings reach or exceed 10 ppm. If PID is greater than 10 ppm, upgrade to Level B PPE.

DECONTAMINATION/DISPOSAL: All personnel and/or equipment leaving contaminated sites are subject to decontamination. Under no circumstances (except emergency evacuation) will personnel be allowed to leave the site prior to decontamination. The decontamination procedures to be used at the site are as follows:
Remove all protective clothing and place PPE in double lined garbage bags. If PID headspace within bag is less than 5ppm, the PPE will be disposed of as municipal waste. Drilling equipment in contact with subsurface soil and water will be cleaned with a pressure sprayer over the boring location. The boring will be backfilled with bentonite pellets.

EMERGENCY MEDICAL TREATMENT/FIRST AID: First aid will be rendered to any person injured on-site, as appropriate. The injured person will then be transported to a medical facility for further examination and/or treatment. An ambulance will be used to transport the injured person to the hospital unless one is not readily available or could result in excessive delay. In this case, other transport is authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.

EMERGENCY EVACUATION: In the event of an emergency requiring evacuation, the HSO assumes the role of on-site coordinator. Evacuation responses will occur at three levels: (1) withdraw from the immediate work area (100+ feet upwind); (2) site evacuation; and (3) evacuation of surrounding area. If the residences and commercial operations require evacuation, the local agencies will be notified and assistance requested. Designated on-site personnel will initiate evacuation of the immediate off-site area without delay.

EMERGENCY TELEPHONE NUMBERS:

Local Police Department	(607) 735-8600 or 911
Local Fire Department	911
Local Rescue Service	911
Primary Hospital: St. Josephs Hospital	(607) 733-6541
Secondary Hospital: Arnolt Ogden Medical Center (Trauma Center)	(607) 737-4100
NYSDEC Spill Hotline	(800) 457-7362
NYSDEC Region 8	(585)-226-2466
Health Resources	(800) 350-4511
National Poison Control Center	(800) 492-2414
Chemical Manufacturing Association-Chemical Referral Center	(800) 262-8200
Cameron O'Connor (NYDOH)	(716) 847-4385
Health and Safety Manager: Cindy Sundquist	(207) 775-5401 (w) (207) 650-7593 (cell)

AUTHORIZED PERSONNEL:

DAVID BUFO*+	(207)-828-3317

* Current First-aid Certification

\+ Current CPR Certification

FIELD TEAM REVIEW: I have read and reviewed the health and safety information in the HASP. I understand the information and will comply with the requirements of the HASP.

Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____

ROUTES TO EMERGENCY MEDICAL FACILITIES

PRIMARY HOSPITAL:

Facility Name: St. Josephs Hospital
Address: 555 E. Market Street, Elmira, NY
Telephone Number: 607-733-6541

DIRECTIONS TO PRIMARY HOSPITAL (attached map):

1. Depart Lake St, go South - Drive less than 0.1 mile - less than a minute
2. Make sharp left on E 5th St - Drive less than 0.1 mile - less than a minute
3. Turn right on Madison Ave Drive less than 0.2 mile - less than a minute
4. Turn left on E Clinton St - Drive less than 0.1 mile - less than a minute
5. Turn right on Dewitt Ave - Drive less than 0.4 mile - less than a minute
6. Turn left on E Market St - Drive less than 0.1 mile - less than a minute

Arrive St. Josephs Hospital - 555 E Market ST
Total: 0.8 mile(s)

ALTERNATE HOSPITAL:

Secondary Hospital: Arnolt Ogden Medical Center (Trauma Center)
Address: 600 Roe Street, Elmira, NY
Telephone Number: 607-737-4100

DIRECTIONS TO ALTERNATE HOSPITAL (attach map):

See attached map

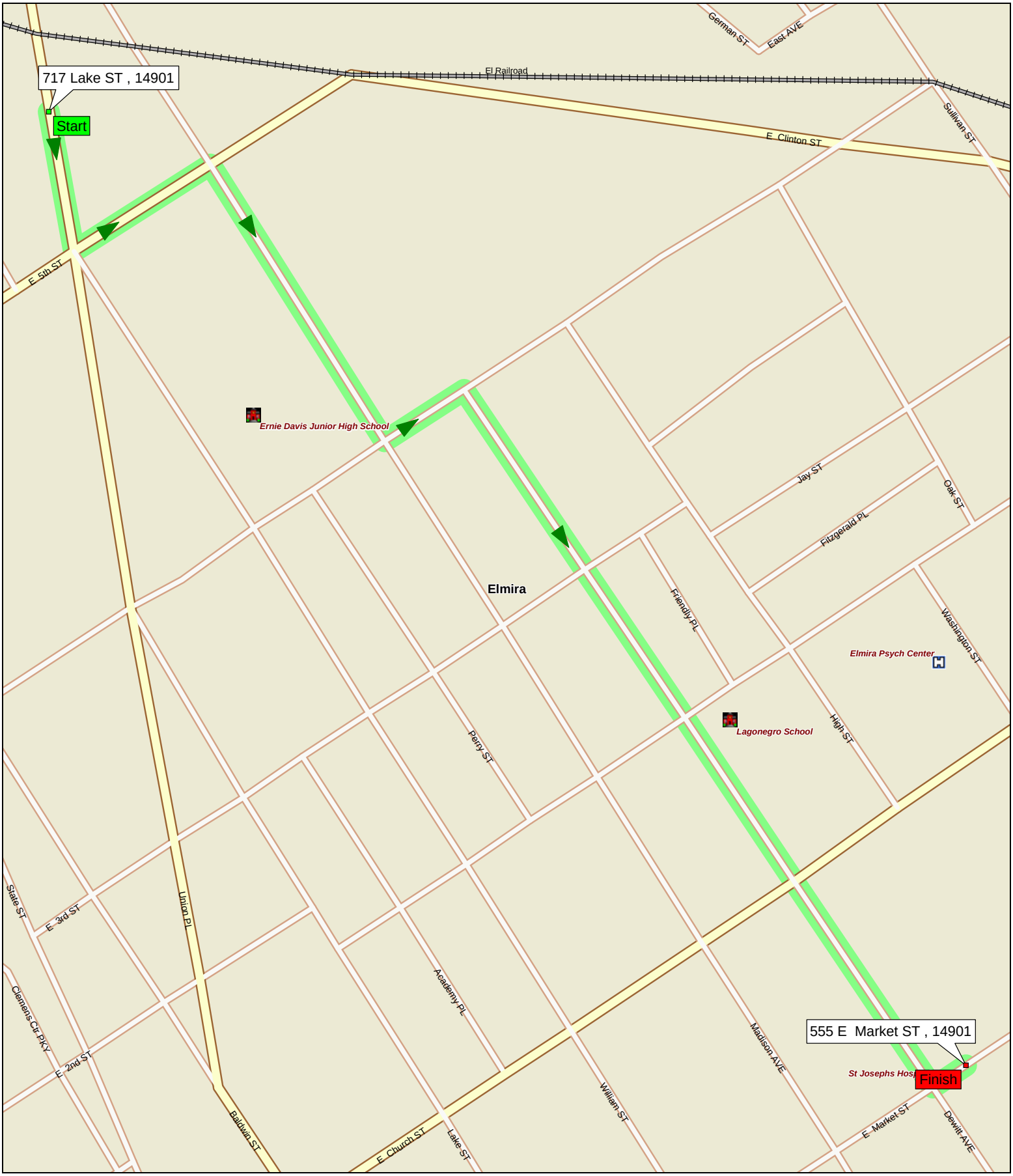
HIGHEST CONCENTRATIONS OF PREVIOUSLY DETECTED COMPOUNDS
HEALTH AND SAFETY PLAN
DIAMOND CLEANERS SITE, ELMIRA, NEW YORK

Parameter	Groundwater Concentration (µg/L)	Soil Concentration (µg/Kg)	Year Detected	PELs/TLV	
Site Contaminants					
Chlorinated Hydrocarbons					
PCE	20.7	556	2001	25	ppm
TCE	158	ND	2001	50	ppm
cis-1,2-DCE	1070	ND	2001	200	ppm
trans-1,2-DCE	2.5	ND	2001	200	ppm
Vinyl Chloride	280	ND	2002	1	ppm
Non-Chlorinated Hydrocarbons					
Benzene	0.7	ND	2001	0.5	ppm
Toluene	2.6	2.9	2001	50	ppm
Ethylbenzene	7.7	ND	2001	100	ppm
Xylenes	11.8	27,980	2001	100	ppm
n-Butylbenzene	16.4	102,000	2001	NA	ppm
sec-Butylbenzene	7.7	42,200	2001	NA	ppm
Isopropylbenzene	4.9	14,600	2001	50	ppm
4-Isopropyltoluene	7.0	11,200	2001	NA	ppm
n-Propylbenzene		63,600	2001	NA	ppm
Styrene	5.3	4	2001	20	ppm
Toluene	2.6	3	2001	50	ppm
1,2,4-Trimethylbenzene	25.7	61,400	2001	25	ppm
1,3,5-Trimethylbenzene	7.1	19,200	2001	25	ppm
MTBE	2.0	6	2001	40	ppm
Napthalene	1.6	821	2001	10	ppm

Note:

PELs/TLV = Permissible Exposure Limits/Threashold Limit Value
ppm = parts per million
ND = not detected
NA = not available

Primary Hospital Map



Printed by RouteMAP from ESRI.

Primary Hospital Driving directions (Page 1)

Depart 717 Lake ST , 14901

1. Depart Lake St, go South
Drive less than 0.1 mile - less than a minute

2. Make sharp left on E 5th St
Drive less than 0.1 mile - less than a minute

3. Turn right on Madison Ave
Drive 0.2 mile(s) - less than a minute

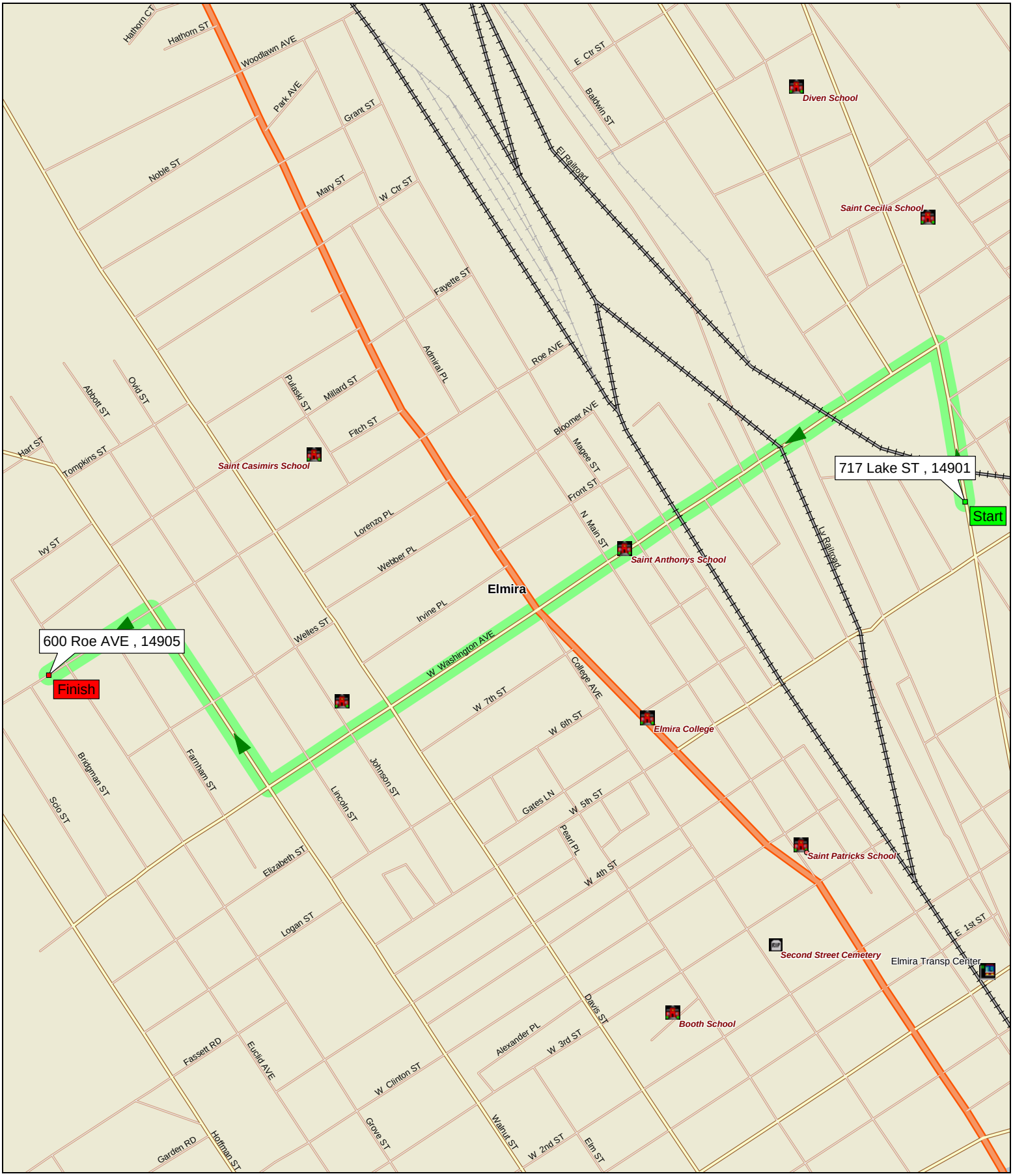
4. Turn left on E Clinton St
Drive less than 0.1 mile - less than a minute

5. Turn right on Dewitt Ave
Drive 0.4 mile(s) - less than a minute

6. Turn left on E Market St
Drive less than 0.1 mile - less than a minute

Arrive 555 E Market ST , 14901
Total: 0.8 mile(s) - less than a minute

Secondary Hospital Map



Printed by RouteMAP from ESRI.

Secondary Hospital Driving Route (Page 1)

Depart 717 Lake ST , 14901

1. Depart Lake St, go North
Drive 0.2 mile(s) - less than a minute

2. Make sharp left on [E] Washington Ave
Drive 1.0 mile(s) - 2 minutes

3. Turn right on Walnut St
Drive 0.3 mile(s) - less than a minute

4. Turn left on Roe Ave
Drive 0.2 mile(s) - less than a minute

Arrive 600 Roe AVE , 14905
Total: 1.6 mile(s) - 3 minutes

APPENDIX C

CITIZEN PARTICIPATION PLAN

1.0 INTRODUCTION

A major goal of citizen participation (CP) is to foster communication and trust between the public and the NYSDEC in the effort to restore and maintain the environment and protect public health. Citizen participation also provides opportunities to gather the public's knowledge and information. This input will be needed to make informed decisions about the RI/FS to be conducted at the DC site, and the proposed remedial actions that may follow. Effective public input will help residents in the Rochester area and the NYSDEC to develop and implement a plan for Site restoration that is environmentally sound and that has public acceptance and high probability of timely implementation.

This CP plan identifies the CP activities to be conducted during the RI/FS and Site restoration evaluations at the DC site. A glossary of terms associated with New York's hazardous waste site citizen participation program is attached as Appendix A.

2.0 SITE BACKGROUND

The Site is located at 717 Lake St. in the north-central section of Elmira in Chemung County, New York. The Site is situated on a 1 acre lot in a commercial and residential area. The lot contains a one story building with a grassy area in the rear of the building along with a gravel parking area. The building was constructed in the 1950's and is currently unoccupied.

The Site is located in a mixed residential/commercial zoned area. The Site itself is surrounded primarily by commercial property.

History of the site has been interpreted from Sanborn® Fire Insurance Maps dating back to 1898, City of Elmira Atlases dated 1878, 1896, and 1904, and tax records from the City of Elmira and Chemung County.

The Elmira City Atlas from 1878 indicates the subject property was not yet subdivided. The property which encompassed the subject site as occupied by Elmira School Number 4. The school building is shown to be located north of what is now 717 Lake St. Sanborn® Fire Insurance Maps from 1898 and 1903 along with Elmira City Atlases from 1896 and 1904 indicate no significant change from prior years other than to change the name of the school to School Number 6. After 1904 but before 1931 based on the 1931 Sanborn® Fire Insurance Map, the Elmira Blind Center and Board of Education built onto the prior Public School No. 6 building adjacent to the subject property. The expansion encompassed the subject property and was occupied with repair shops, workshops, and storage. By 1950, according to the 1950 Sanborn® Fire Insurance Map, the building housed the City of Elmira Highway and Bridges Department workshops. Additionally, two outbuildings were constructed prior to 1950, one which is listed as a "voting both" on

the north portion of the property adjacent to 717 Lake St. The other found on the southern portion of the subject property, is of an unknown use. According to records received form the NYSDEC, the current building was constructed in the 1950's. Sanborn® Fire Insurance Maps confirm that by 1988 the structure, as it exists currently had been constructed and the outbuilding had been removed from the subject property. Subsequent Sanborn® Fire Insurance Maps (1988 through 1995) list the subject property as a dry cleaning facility and put the cleaning room in the southeast corner of the structure.

Adjacent properties throughout the years varied from residential units to stables to oil companies. The Elmira City Atlas from 1878 shows a canal which follows the present day railroad spur. Across Lake St. from the subject property are Stables, Dr. Offices, and a "Car House". The Elmira City Atlas from 1896 shows that the canal had been filled and railroad spur built in its footprint. Additionally, the properties across Lake St. were no longer listed. By 1904, according to the Elmira City Atlas, no significant changes to adjacent properties had occurred. However the properties across Lake St. had changed and now included Shell Oil Co.(702-704 Lake St.) VanDyke Oil Co. (712 Lake St.), and Elmira Builders Supply (714-716 Lake St.).

There is limited information regarding the development and ownership of the site prior to 1995. Records prior to that were lost as a result of flooding of the City Hall Basement (according to Andrew Avery of Public Works). Existing records indicate the property was owned by Custard and Kistler Laundry, Inc, until 1995 when it was sold to Earl D. Coleman. Subsequently, it was seized by Chemung County and purchased back from the county by Mr. Coleman in 1998. According to the Chemung County Real Property Office, the property has again be seized by the county and is currently planned to be auctioned on March 30, 2005.

The Site was withdrawn from the Voluntary Cleanup Program (VCP) by the owner and listed as a Class 2 site in the NYSDEC registry.

On March 3, 2005 personnel from MACTEC and the NYSDEC conducted a walkover of the Site. The Site walkover consisted of viewing the Site to assess possible contamination sources and logistical concerns for the field program.

Historical documentation and previously collected data indicate the potential for historic discharge of chlorinated solvents and fuel compounds at the Site; a contaminant source (i.e. current use of solvents, fuels, or signs of buried wastes) does not appear to be present at the Site. Releases of chlorinated solvents may have occurred both outside and inside the Site building as a result of spills or other material handling. In addition, releases of fuels have occurred in the vicinity of the former UST.

Contaminated soils may have contributing to the contamination of groundwater through rainwater infiltration, groundwater flow through residual contamination, and/or vapor migration. Limited groundwater samples from the Site area have been collected to date.

Although not expected, there is a potential threat to human health through the exposure to contaminated groundwater. The most likely exposure point for human receptors is the presence of chlorinated solvent and fuel related compound concentrations in soil vapor resulting from potentially contaminated soils at the Site, and potentially contaminated groundwater at and downgradient of the Site. Soil vapor has the potential to migrate into local businesses and residences at concentrations above the NYDOH guidance values for indoor air.

3.0 PROJECT DESCRIPTION

This section describes the objectives of the DC RI/FS and presents a summary of proposed investigation tasks.

3.1 PROJECT OBJECTIVES

To complete the RI, the following information is needed:

- Historical source area and continuing source areas for chlorinated solvent contaminants need to be defined.
- The areal and vertical extent of contaminants in Site groundwater, if present, needs to be defined.
- The extent of the solvent and fuel contamination source(s) in soil needs to be defined. Sampling needs to be conducted in the vicinity of the UST removal action to delineate any residual contamination.
- Other potential sources need to be assessed (i.e. floor drains, cracks, former storage areas).
- The interior of the Site building needs to be evaluated to determine if potential continuing sources of contamination exist.
- The potential and actual threat to human health and the environment needs to be defined. Potential present and future human health exposure pathways, such as through exposure to contaminated soils and groundwater, and vapor migration to indoor air need to be evaluated. This includes the collection of sufficient Site data to enable the completion of a qualitative RA.
- Sufficient data is needed to evaluate the remedial action alternatives for the Site to mitigate the potential or actual threat to human health and the environment.

- Data needs to be gathered to determine if additional IRMs will be required, and what remedies are the most applicable.

Proposed field investigations tasks planned to meet project objectives are described below.

3.4 GEOPROBE® SOIL AND GROUNDWATER SAMPLING

A Geoprobe® sampling device will be used to collect soil and groundwater samples to identify potential chlorinated solvents and fuel related compounds. The Geoprobe® pushes and/or hammers rods and probe tips into the subsurface for sample collection. Samples will be collect over a three-day period. It is anticipated that up to 40 borings can be completed, including the collection of up to 14 soil samples and 36 groundwater samples for off-site analyses. The actual number of borings completed will depend on the location, number, and depth of samples collected from each boring.

3.5 SURFACE SOIL SAMPLING

Surface soil samples will be collected at 5 locations which are anticipated to represent background conditions near the site. Analytical results from these samples will be used to evaluate background conditions related to health risk parameters at the site.

3.6 GEOPROBE® SOIL GAS SAMPLING

Based on groundwater and soil sampling PID results, up to 10 soil gas samples may be collected using a Geoprobe® sampling device. Samples will be collected from approximately six to eight feet bgs to evaluate potential vapor migration of contaminants towards private residences/businesses.

3.7 GROUNDWATER MONITORING WELL INSTALLATION

To determine groundwater quality upgradient, at, and downgradient of the Site, up to six groundwater microwells will be installed. Characterization of groundwater flow conditions and distribution of potential contamination at the Site, and downgradient of the Site is required to define aquifer characteristics and potential receptors. Groundwater analytical data and will be used to assess the extent of potential contamination in the vicinity of the Site, and to allow monitoring of that contamination, if present.

3.8 SITE SURVEY AND BASE MAP

Upon completion of Phase One, a Site survey will be completed, including the vertical and horizontal locations of the newly installed monitoring wells, and a Base Map will be produced. The base map will be used to indicate locations of all sampling locations.

3.9 INDOOR AIR AND SUB SLAB VAPOR SAMPLING

Based on Geoprobe® soil gas results and discussions with the NYSDEC, sub-slab vapor sampling and indoor air sampling may be conducted to evaluate potential vapor migration of contaminants from the groundwater and soil beneath the Site and surrounding residences/business into occupied indoor spaces. Up to 6 sub-slab vapor samples and 6 indoor air samples may be collected within the DC facility building and neighboring buildings, as well as up to four ambient air samples from the exterior of the buildings.

3.10 PROJECT SCHEDULE

Depending on the number of Phases completed, it is anticipated that field investigations and laboratory analysis will require two and-a-half months to complete. A Draft RI Report will be submitted to the NYSDEC for review in the fall of 2005.

4.0 CITIZEN PARTICIPATION ACTIVITIES

This section of the CP Plan lists the CP activities to be conducted during the RI/FS. The CP activities include, but are not limited to the following:

- Develop, maintain, and update a project contact list,
- Establish document repositories (documents will be sent to these locations for public review; the documents include work plans, RI/FS report, Proposed Remedial Action Plan [PRAP], Record of Decision [ROD], and fact sheets),
- Schedule public meetings (will include an optional meeting during the RI and a meeting after the PRAP, with 30 day comment period),
- Prepare fact sheets (announcing availability of work plan/start of RI, announcing the PRAP and the ROD release) will be prepared and distributed as necessary,
- Schedule availability sessions may be held as necessary to keep public apprised of project status,
- Prepare a responsiveness summary (after 30 day PRAP comment period), and
- Release of reports (including RI/FS Report).

5.0 PROJECT CONTACTS

Project contacts are:

- David Bufo, RI Lead, MACTEC (207) 828-7834
- Jeffrey B. McCullough, Project Manager, NYSDEC (518) 402-9812

6.0 DOCUMENT REPOSITORIES AND LIST OF AVAILABLE DOCUMENTS

TBD.

7.0 PUBLIC CONTACT LIST

TBD.

The CPP will be updated as necessary to reflect changes and updates to the above items.

APPENDIX A
TO APPENDIX C

HAZARDOUS WASTE SITE PROGRAM GLOSSARY AND ACRONYMS

SOURCE:

Citizen Participation in New York's Hazardous Waste Site Remediation Program:

A GUIDEBOOK

June 1998

New York State Department of Environmental Conservation Division of Environmental Remediation

Appendix D

Hazardous Waste Site Program Glossary and Acronyms

GLOSSARY

This glossary defines terms associated with New York's hazardous waste site citizen participation program, and important elements of the hazardous waste site remedial program. Words in **bold** in the definitions are defined elsewhere in the glossary. A list of acronyms often used in the remedial program begins on page D-7.

Administrative Record — Part of a site's **Record of Decision** which lists and defines documents used in the development of NYSDEC's decision about selection of a remedial action.

Availability Session — A scheduled gathering of program staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.

Citizen Participation — A program of planning and activities to encourage communication among people affected by or interested in hazardous waste sites and the government agencies responsible for investigating and remediating them.

Citizen Participation Plan — A document which must be developed at a site's **Remedial Investigation** stage. A CP Plan describes the citizen participation activities that will be conducted during a site's remedial process.

Citizen Participation Record — A document prepared at a major remedial stage which describes the citizen participation activities required at that stage. A CP Record also directs a scoping process to determine if additional citizen participation activities are appropriate and feasible.

Citizen Participation Specialist

A staff member from an NYSDEC central office or regional office who has specialized training and experience to assist a **project manager** and other staff to plan, conduct and evaluate a site-specific citizen participation program.

Classification

A process to place a hazardous waste site within a category which defines its hazardous waste status and its threat or potential threat to public health and the environment. Sites are listed along with their classifications in the **Registry of Inactive Hazardous Waste Disposal Sites.**

Class 1 - causing or representing an imminent danger of causing irreversible or irreparable damage to public health or environment -- immediate action required.
Class 2 - significant threat to public health or environment -- action required.
Class 2a - temporary classification assigned to a site for which there is inadequate or insufficient data for inclusion in any other classification.
Class 3 - does not present a significant threat to public health or environment -- action may be deferred.
Class 4 - site properly closed -- requires continued management.
Class 5 - site properly closed -- no further action required.
Delisted - site no longer considered an inactive hazardous waste disposal site.

Comment Period

A time period for the public to review and comment about various documents and DER actions. For example, a 30-day comment period is provided when DER issues a **Proposed Remedial Action Plan (PRAP),** and when DER proposes to **Delist** a site from the **Registry of Inactive Hazardous Waste Disposal Sites.**

Consent Order

A legal and enforceable agreement negotiated between NYSDEC and a **responsible party**. The order sets forth agreed upon terms by which a responsible party will undertake site investigation and/or cleanup, or pay for the costs of those activities. The order includes a description of the remedial actions to be taken by the responsible party with NYSDEC oversight, and a schedule for implementation.

Contact List — Names, addresses and/or telephone numbers of individuals, groups, organizations, government officials and media affected by or interested in a particular hazardous waste site. The size of a contact list and the categories included are influenced by population density, degree of interest in a site, the stage of the remedial process and other factors. It is an important tool needed to conduct outreach activities.

Delist — Action by which DER removes a hazardous waste site from the **Registry of Inactive Hazardous Waste Disposal Sites** upon determination that: the site contains inconsequential amounts of hazardous waste; or that a remediated site no longer requires **Operation and Maintenance;** or that a remediated site does not require Operation and Maintenance. A proposal to delist a site triggers a public notification and **comment period** process.

Division of Environmental Enforcement (DEE) — A unit within the New York State Department of Environmental Conservation which works with the **Division of Environmental Remediation** and others to negotiate with **responsible parties** to achieve agreements for the investigation and remediation of hazardous waste sites. A negotiated agreement is contained in a **consent order.**

Division of Environmental Remediation — Formerly the **Division of Hazardous Waste Remediation,** a major program unit within the New York State Department of Environmental Conservation created to manage the hazardous waste site remedial program from site discovery through **Operation and Maintenance** activities. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.

Division of Hazardous Waste Remediation — (See **Division of Environmental Remediation**

Document Repository — A file of documents pertaining to a site's remedial and citizen participation programs which is made available for public review. The file generally is maintained in a public building near the hazardous waste site to provide access at times and a location convenient to the public.

Enforcement — NYSDEC's efforts, through legal action if necessary, to compel a **responsible party** to perform or pay for site remedial activities. NYSDEC may perform this effort by itself or in concert with other agencies.

Environmental Quality Bond Act (EQBA) — The 1986 Environmental Quality Bond Act which gives New York State bonding authority of up to $1.2 billion to fund the State's share of the total cost of remediating hazardous waste sites in New York State.

Fact Sheet — A written discussion about part or all of a site's remedial process, prepared and provided by DER to the public. A fact sheet may focus on: a particular element of the site's remedial program; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a site's **contact list**, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.

Interim Remedial Measure (IRM) — A discrete action which can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined hazardous waste problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.

National Priorities List — The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from a special trust fund.

New York State Department of Health — Agency within the executive branch of New York State government which: performs health-related inspections at suspected hazardous waste sites; conducts health assessments to determine potential risk from environmental exposure; reviews Risk Assessments prepared during the **Remedial Investigation and Feasibility Study**; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.

New York State Department of Law — Agency within the executive branch of New York State government which takes the lead on hazardous waste sites requiring civil enforcement through court action. Litigation can involve negotiations and court action with **responsible parties** to clean up sites; natural resource damage claims, and recovery of remedial costs.

New York State Registry of Inactive Hazardous Waste Disposal Sites

The "Registry." A document which NYSDEC is directed by law to maintain and which lists and provides information about every hazardous waste site in New York State which meets criteria established through a definition of hazardous waste and a **classification** system.

Operable Unit

A discrete part of an entire site that produces a release, threat of release, or pathway of exposure. An Operable Unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each Operable Unit.

Operation and Maintenance

A period in which remedial action may be conducted following construction at a site (for example, operation of a "pump and treat" system), or which is performed after a remedial action to assure its continued effectiveness and protection of people's health and the environment. Activities can include site inspections, well monitoring and other sampling.

Preliminary Site Assessment (PSA)

A PSA is DER's first investigation of a site. A PSA is performed to determine if a site meets New York State's definition of an inactive hazardous waste disposal site by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment.

Project Manager

An NYSDEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist or hydro geologist) responsible for the day-to-day administration of remedial activities at, and ultimate disposition of, a hazardous waste site. The Project Manager works with legal, health, **citizen participation** and other staff to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)

An analysis by DER of each alternative considered for the remediation of a hazardous waste site and a rationale for selection of the alternative it recommends. The PRAP is created based on information developed during the site's **Remedial Investigation and Feasibility Study**. The PRAP is reviewed by the public and other state agencies.

Public Meeting — A scheduled gathering of **Division of Environmental Remediation** staff with the affected/interested public to give and receive information, ask questions and discuss concerns about a site's remedial program. Staff from other NYSDEC divisions, legal and health staff, and staff from consultants and a responsible party often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.

Reclassification — A process by which DER redefines the threat posed by a hazardous waste site to public health and the environment by developing and assessing site information and, based on findings and conclusions, assigning a new **classification** code.

Record of Decision (ROD) — A document which provides definitive record of the cleanup alternative that will be used to remediate a hazardous waste site. The ROD is based on information and analyses developed during the **Remedial Investigation/Feasibility Study** and public comment.

Remedial Construction — The physical development, assembly and implementation of the remedial alternative selected to remediate a site. Construction follows the **Remedial Design** stage of a site's remedial program.

Remedial Design — The process following finalization of a **Record of Decision** in which plans and specifications are developed for the **Remedial Construction** of the alternative selected to remediate a site.

Remedial Investigation/ Feasibility Study (RI/FS) — The RI fully defines and characterizes the type and extent of hazardous waste contamination at the site. The FS, which may be conducted during or after the RI, uses information developed during the RI to develop alternative remedial actions to eliminate or reduce the threat of hazardous waste contamination to public health and the environment.

Responsible Party — An individual or business who: currently owns or operates a hazardous waste site; or historically owned or operated a site when hazardous waste was disposed; or generated hazardous waste at a site; or transported hazardous waste to a site.

Responsiveness Summary — A written summary of major oral and written comments received by DER during a **comment period** about key elements of a site's remedial program, such as a **Proposed Remedial Action Plan**, and DER's response to those comments.

Site Issues and Community Profile Scoping Sheet — A document prepared to support each **Citizen Participation Record**. Each Scoping Sheet identifies issues and information important to DER and the community and information that needs to be exchanged at a particular remedial stage. The Scoping Sheet also summarizes information about the surrounding community, including demographics, special needs, etc.

Superfund — The common name for the Federal program established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended in 1986. The Superfund law authorizes the U.S. Environmental Protection Agency to investigate and clean up sites nominated to the **National Priorities List**.

Title 3 Project — Remediation of a municipally owned site through the State Superfund Title 3 Program whereby New York State pays 75 percent of eligible costs for remediation and the municipality pays 25 percent.

Toll-Free "800" Number — An information line maintained by the **Division of Environmental Remediation** to provide convenient access for people who have questions, concerns or information about hazardous waste sites and their remedial programs.

ACRONYMS

AG -- New York State Attorney General's Office
ARAR -- Applicable, Relevant and Appropriate Requirement
C & D -- Construction and Debris
CERCLA -- Comprehensive Environmental Response, Compensation and Liability Act of 1980
CO -- Consent Order
CP -- Citizen Participation
CPP -- Citizen Participation Plan
CPS -- Citizen Participation Specialist
CQC/CQA -- Construction Quality Control/Construction Quality Assurance
DEE -- Division of Environmental Enforcement
DER -- Division of Environmental Remediation, formerly the Division of Hazardous Waste Remediation
DHWR -- Division of Hazardous Waste Remediation, now the Division of Environmental Remediation
DOD -- Department of Defense
DOL -- Department of Law
DOW -- Division of Water
ENB -- Environmental Notice Bulletin

EQBA	--	1986 Environmental Quality Bond Act
EPA	--	Environmental Protection Agency
F & W	--	Division of Fish and Wildlife
FDA	--	Food and Drug Administration
FSF	--	Federal Superfund
FOIL	--	Freedom of Information Law
FS	--	Feasibility Study
FY	--	Fiscal Year
GPM	--	Gallons Per Minute
HeLP	--	Health Liaison Program
IRM	--	Interim Remedial Measure
mg/kg	--	milligrams per kilogram
NAPL	--	Non-Aqueous Phase Liquid
NPL	--	National Priorities List
NYSDEC	--	New York State Department of Environmental Conservation
NYSDOH	--	New York State Department of Health
O & M	--	Operation and Maintenance
OSHA	--	Occupational Safety and Health Administration
OU	--	Operable Unit
PAH	--	Poly-Aromatic Hydrocarbon
PCB	--	Poly-Chlorinated Biphenyl
PM	--	Project Manager
ppm/ppb/ppt	--	parts per million/parts per billion/parts per trillion
PRAP	--	Proposed Remedial Action Plan
PRP	--	Potentially Responsible Party
PRS	--	Priority Ranking System
PSA	--	Preliminary Site Assessment
QA/QC	--	Quality Assurance/Quality Control
RA	--	Remedial Action
RCRA	--	Resource Conservation and Recovery Act
RD	--	Remedial Design
RFP	--	Request for Proposals
RHWRE	--	Regional Hazardous Waste Remediation Engineer
RI	--	Remedial Investigation
RI/FS	--	Remedial Investigation/Feasibility Study
ROD	--	Record of Decision
RP	--	Responsible Party
SSF	--	State Superfund
TAGM	--	Technical and Administrative Guidance Memorandum
TCLP	--	Toxicity Characteristic Leaching Procedure
TSDF	--	Treatment, Storage and Disposal Facility
ug/l	--	micrograms per liter
USGS	--	U.S. Geological Service
VCP	--	Voluntary Cleanup Program
VOC	--	Volatile Organic Compound