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FINAL
WORK PLAN
SOIL VAPOR INTRUSION EVALUATION
NEW CASSEL INDUSTRIAL AREA
(Site No.:1-30-043 A, B, C, F, K, N and V)
North Hempstead, Nassau County, New York

Prepared for

New York State Department of Environmental Conservation
Investigation and Design Engineering Services
Standby Contract No. D004437
Work Assignment No. D004437-8

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Section 1
Introduction

This Work Plan for the New Cassel Industrial Area Sites 1-30-043 A, B, C, F, K, N, and V was prepared by Camp Dresser & McKee (CDM) for the New York State Department of Environmental Conservation (NYSDEC) under the Engineering Services for Investigation and Design, Standby Contract No. D004437. The Work Plan was developed in accordance with the *"Standby Contract Work Assignment No. D004437-8, Soil Vapor Intrusion Investigation at the New Cassel Industrial Area Sites (Site No.:1-30-043A, B, C, F, K, N and V)"*. This Work Plan is consistent with the *"Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006"* and the applicable elements of the *"Draft Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, dated December 2002"*. The focus of this Work Assignment is to determine if volatile organic compounds (VOCs) are present in the soil vapor adjacent to structures/buildings located on the following sites:

- Site A - 570 Main Street — Site ID: 130043A
- Site B - 567 Main Street — Site ID: 130043B
- Site C - 125 State Street — Site ID: 130043C
- Site F – 68 Kinkel Street — Site ID: 130043F
- Site K – 62 Kinkel Street — Site ID: 130043K
- Site N – 750 Summa Avenue — Site ID: 130043N
- Site V – 29 New York Avenue — Site ID: 130043V

To make this determination, soil vapor samples are proposed. In addition to the collection of soil vapor samples, groundwater samples will be collected to determine if residual groundwater contamination is present at the water table and how groundwater quality relates to potential VOCs in soil vapor. Based on the results, the soil vapor pathway shall be assessed to determine if soil vapors are a concern to the inhabitants/workers within the structures located in the vicinity of each site.

Historical documents describing existing conditions, history and past land use practices were provided to CDM by the NYSDEC. The information in these documents was used to provide a general description of the sites and historical/remedial activities conducted. In addition, these references were used in the development of proposed sample locations. The following NYSDEC provided background documents were utilized in the development of this Work Plan:

- Record of Decision, 2003. New Cassel Industrial Area Site, Town of North Hempstead, Nassau County, New York, Offsite Groundwater South of the New Cassel Industrial Area Operable Unit No. 3.

- Remedial Investigation/Feasibility Study Report, Volume 1, 2000. New Cassel Industrial Area Offsite Groundwater, Town of North Hempstead, Nassau County.

- Multisite PSA Report , 1996. New Cassel Industrial Area Site, North Hempstead, Nassau County.
- Summary Report on New Cassel Industrial Area, Site ID#130043, 1995.
- Work Plan, 2006. New Cassel Operable Unit 4, Site No.1-30-043A-V, Vapor Intrusion Investigation, Work Assignment #D00490-40
- Environmental Investigation, 750 Summa Avenue Westbury, New York. 1996.
- Record of Decision, 1998. Tishcon Corporation Site at 125 State Street Westbury (V), North Hempstead (T) New Cassel Industrial Area Nassau County, New York Site Number 1-30-043C.
- Record of Decision, 2000. IMC Magnetics Site, Town of North Hempstead, Nassau County, Site Number 1-30-043A Operable Unit-02 On-Site Groundwater.
- Record of Decision, 2000. Atlas Graphics Site, Town of North Hempstead, Nassau County, Site Number 1-30-043B Operable Unit-01 On-Site Soil and Groundwater.
- Record of Decision, 1997. Former Tishcon Site, Westbury, North Hempstead, New Cassel Industrial Area, Nassau County, New York, Site Number 1-30-043F.
- Record of Decision, 2002. Tishcon at 29 New York Avenue Site, Town of North Hempstead, Nassau County, New York, Site Number 1-30-043V.

This Work Plan is comprised of the following sections:

- **Section 1-Introduction**
  This section presents the site description and history, including the location, operational and remedial history as well as the project objectives
- **Section 2-Scope of Work**
  This section presents the scope of work for the following three tasks of this work assignment:
  1. Task 1: Work Plan Develop
  2. Task 2: Soil Vapor Investigation
  3. Task 3: Site Investigation Report
- **Section 3-Project Schedule**
  The project schedule for the performance of the above three tasks is presented in this section.

- **Section 4-Budget Estimate**
  A detailed work assignment budget is presented in this section, itemized by tasks and sub-tasks utilizing schedule 2.11 in accordance with the contract's budget reporting requirements, cost rates and factors contained in the base contract.

- **Section 5-Staffing Plan**
  The staffing plan identifies the roles and responsibilities of the CDM project team. CDM has assembled a team of environmental engineers and scientists experienced with vapor intrusion and NYSDEC regulations.

- **Section 6-Subcontracting**
  This section identifies the services provided by subcontractors on this work assignment. The name and location of each proposed subcontractor is also presented in this section.

- **Section 7- MBE/WBE Utilization Plan**
  The Minority Business Enterprise (MBE) and Woman Business Enterprise (WBE) Utilization Plan is presented in this section. CDM's subcontractors have been carefully selected to provide the most reasonable cost-effective services while achieving the contract-specific MBE/WBE utilization goals.

- **Section 8- References**
  This section presents a complete list of the references cited in the Work Plan.

The following appendices are also included in this Work Plan:

- **Appendix A-Critical Historical Figures**
  Information presented on critical figures from background documents and analytical data contained in the NYSDEC provided background documents were used to develop the proposed sampling locations. The critical figures are presented in Appendix A.

- **Appendix B-Quality Assurance Project Plan**
  The site-specific Quality Assurance Project Plan (QAPP) presented in Appendix B specifies the detailed procedures and methods used during the field investigation activities to ensure quality during the execution of this work assignment.

- **Appendix C-Health and Safety Plan**
  The site-specific Health and Safety Plan (HASP) presented in Appendix C specifies the health and safety procedures to ensure safe work practices are employed.

- **Appendix D-Schedule 2.11**

The schedule 2.11 presented in Appendix D contains a detailed cost estimate by task and subtask of all work elements contained in this work assignment.

- **Appendix E-Subcontractor Backup**
  Appendix E contains individual quotes for drilling, laboratory and validation services to provide documentation for reasonable competitive costs.

1.1 Site Background and History

The following subsections describe the New Cassel site, and provide a brief overview of operational and remedial activities conducted.

1.1.1 Location

The New Cassel Industrial Area site (herein identified as the "site") is located in the town of North Hempstead, Nassau County, New York (NY). The site is heavily developed and covers approximately 170 acres which are bounded by the Long Island Railroad to the north, Frost Street to the east, Old Country Road to the south, and Grand Boulevard to the southwest (Figure 1-1). The site and surrounding areas, in general, are comprised of several light industrial and commercial properties intermixed with private residences located to the north and south. Hempstead Bay is located approximately 6 miles southwest of the site and the nearest water supply well is approximately 1,800 feet southeast of the site.

1.1.2 Operational and Remedial History

The New Cassel Industrial Area was first developed during the early 1950s and is home to approximately 200 industrial and commercial businesses. Business practices associated with past light industrial activities within the area have resulted in extensive VOC contamination of groundwater in the vicinity of the site. Previous investigations conducted within the area indicated that multiple parties were responsible for the contamination resulting in individual "sites". To address this, the NYDEC classified the entire industrial area as a hazardous waste site in 1998 and is collectively referred to as the New Cassel Industrial Area (LM&S 1996; NYDEC 2003). The focuses of this Work Plan and subsequent field investigation address several of these sites. A brief description of operational and remedial activities conducted within each are presented below.

1.1.2.1 Site A - 570 Main Street

Site A is located at 570 Main Street and is approximately over two acres in size. From the early 1950s until 1992, the site was occupied by IMC Magnetics Inc (IMC)., a manufacturer of induction motors, fans, blowers, stepper motors and other rotating machinery. In 1995 the site was given a Class 2 Registry status by the NYDEC due to the presence of onsite contaminated soils and groundwater. Primary contaminants consisted of chlorinated hydrocarbons, petroleum hydrocarbons and metals; however, further investigations revealed the presence of chlorinated VOCs. Subsequently, to remediate site soil contamination identified during a 1996 Remedial Investigation (RI), IMC installed and operated a soil vapor extraction (SVE) system.

In addition, an RI/FS conducted at the site confirmed the presence of a chlorinated VOC groundwater plume. To address the groundwater contamination, in-situ oxidation using hydrogen peroxide injection was selected as the remedy. Treatment began in December 2001 and was still ongoing upon completion of the October 2003, Record of Decision (ROD) for Operable Unit (OU) 3 (NYDEC 2003).

1.1.2.2 Site B - 567 Main Street

Site B is located at 567 Main Street and is approximately one acre in size. In 1950 a warehouse was constructed onsite for use as a construction vehicle storage facility. Warehouse operations ceased in 1977, and the property was sold to Atlas Graphics Inc., a photo engraving manufacturing operation. The operation used a reported 312 gallons per year of tetrachloroethene (TCE). At the time of purchase, the building was connected to a cesspool for its sanitary waste disposal. In 1977, a discharge of approximately 50 gallons of TCE to the cesspool was documented. Investigations conducted on site showed elevated levels of TCE in both soil and groundwater, and in 1995 the site was assigned a Class 2 status by NYSDEC. In February 2000, a ROD was issued for the site selecting air sparging/soil vapor extraction (AS/SVE) as the remedy to address the contaminated soils and groundwater. The system was constructed in October 2000 followed by initial treatment activities in November 2000 (NYDEC 2003).

1.1.2.3 Site C - 125 State Street

Site C is located at 125 State Street and is approximately one acre in size. From 1984 to 1996 the site was occupied by the Tishcon Corporation (Tishcon). Manufacturing operations at Tishcon consisted primarily of the production of dietary supplements and vitamin products via a dry blending process. From 1985 to 1993, methylene chloride, 1,1,1-trichloroethane (1,1,1-TCA) and methanol were used in tablet coating processes conducted at the facility. As part of operating procedures, equipment was rinsed in a driveway fitted with several storm drains. An investigation conducted by the Nassau County Department of Health (NCDH) indicated the presence of chlorinated VOCs and metals in four storm drains at the site, and requested that contaminated material be removed from storm drains and a distribution box on the property in August 1993. The site was placed on the Registry in 1995 and issued a Class 2 status. The excavation and restoration of contaminated areas was completed as part of an Interim Remedial Measure (IRM) in October 1997. A ROD for the site was issued in January 1998, and required the excavation and restoration of remaining contaminated source areas. Excavation and disposal of the material was conducted in early 1999, and the site was reclassified by NYDEC to a Class 4 ranking in March of 2000 (NYDEC 2003).

1.1.2.4 Site F – 68 Kinkel Street

Site F is located at 68 Kinkel Street and is approximately one-quarter of an acre in size. From 1982 to 1983, Tishcon conducted operations at the site which involved the encapsulation of materials. It was reported that during these processes, 1,650 gallons of TCE as well as 8,000 gallons of methylene chloride and 3,000 gallons of shellac

were used. The site was added to the NYDEC Registry under Class 2 status in 1995. A State Superfund investigation was completed in July 1996, and in January 1997, a ROD requiring no action was issued. The site was delisted from the Registry in December of 1997 (NYDEC 2003).

1.1.2.5 Site K - 62 Kinkel Street

Site K is located at 62 Kinkel Street, west of the intersection of Old Country Road and the Wantagh State Parkway. The LAKA Tool and Stamping Company (Co), Incorporated (Inc.), occupied and conducted metals stamping at the site from 1971 to 1978. LAKA Industries, Inc., the parent company, operated the site from 1979 to 1984 as a machine shop specializing in tools, dies and precision stamping; both companies used TCE and lubricating oils as part of their operating procedures. In 1996, the site was issued a Class 2 status. Subsequently, a RI/FS was conducted to define the nature and extent of contamination at the site. Results of the RI/FS confirmed the presence of soil contamination in the vicinity of an onsite cesspool and an area located in a catch basin found downgradient of the site. To address the soil contamination, the NYSDEC issued a ROD in February 2000, followed by the excavation of contaminated soils in May 2001; however, remedial activities did not address groundwater contamination (NYDEC 2003).

1.1.2.6 Site N - 750 Summa Avenue

Site N is located at 750 Summa Avenue and is currently occupied by EZ-EM, a company that specializes in imaging and diagnostic for treating gastrointestinal diseases. EZ-EM along with other parties owned the property since 1982. Prior to EZ-EM ownership, Micro Industries, a machine shop occupied the site from 1971 to 1982. From 1968 to 1971 Advance Food Service Equipment Manufacturing occupied the site as a stainless steel kitchen equipment supplier. Advance Food Service stored and used 1,1,1-TCA and other solvents during their occupancy. In 1978, the NCDH required a floor drain near a vat used for degreasing operations be sealed as sludges sampled from a dry-well contained levels 1,1,1-TCA. In 1985, the vat was removed from the site. Degreaser sludges containing a mixture of 1,1,1-TCA and waste oil were stored in drums in the rear of the facility according to records from 1978. The site was classified on the Registry as a Class 4 ranking (LM&S 1996; NYPIRG website).

1.1.2.7 Site V - 29 New York Avenue

Site V is located at 29 New York Avenue and is approximately one acre in size. The site was developed in 1952, and was used to manufacture electronic equipment until the late 1970s. From 1979 to 1991 Tishcon occupied the site until it was sold to Equity 1 Associates in 1991. In 1995 the site was issued a Class 2 status on the Registry as part of the Tishcon Brooklyn Ave site. A 1996 study investigating soils/sediments collected from onsite catch basins showed levels of 1,1,1-TCA-related compounds above cleanup criteria. Based on these results, the NYSDEC listed the Tishcon 29 New York Ave site as a separate Class 2 site on the Registry in March 1998. In December 1999, a RI was completed and results were presented to the NYSDEC followed by the removal of contaminated materials from an onsite cesspool in August 2000. Based on

the results of that investigation a no further action ROD was signed in March 2002, and the site was delisted from the Registry later that year (NYDEC 2003).

1.1.3 Site Geology and Hydrogeology

The site is located above the Upper Glacial Aquifer (UGA) which consists of Upper Pleistocene deposits of poorly sorted sand and gravel to approximately 80 feet below ground surface (bgs). Beneath the UGA lies the Magothy aquifer which is comprised of finer sands, silt and small amounts of clay. Previous investigations have indicated that the Magothy formation may sometimes be found at considerable shallower depths (60-80 ft bgs) within the area when compared to other portions of Long Island. Within the New Cassel Industrial Area, the UGA and Magothy formations are in direct hydraulic connection as no other hydro-geologic units are found between them; however, clay lenses are often found within the upper portions of the Magothy. Previous investigations conducted onsite indicated that the water table is between 55-65 bgs and that groundwater flow is in a southwesterly direction.

1.2 Project Objectives

The object of this investigation is to determine if VOCs are present in site soil vapors and groundwater. In order to achieve this objective, the following activities will be conducted:

- Task 1 – Work Plan Development
  The development of a site specific work plan which includes a site specific Health and Safety Plan (HASP) and QAPP

- Task 2 – Site Characterization
  The investigation will include:
  - Conduct a soil vapor investigation that will include the collection of soil vapor samples at five direct push locations within each site. Samples will be collected from three depth intervals, approximately 8 feet bgs, 25 feet bgs and immediately above the water table which is expected to be about 55-65 feet bgs.

  - Conduct a ground water investigation that will include the collection of approximately five groundwater samples within each site from existing wells, or as grab samples from temporary direct push locations within the vicinity of the soil vapor samples.

  - Proper disposal of investigative derived waste (IDW) generated during the investigation

  - Proper decontamination of investigative equipment

  - Identify the sample locations utilizing a Global Positioning System (GPS)

- Task 3 – Site Investigation Report

Section 2
Scope of Work

2.1 Task 1 - Work Plan Development

This Work Plan includes a site specific Quality Assurance Project Plan (QAPP) presented in Appendix B and a site specific Health and Safety Plan (HASP) presented in Appendix C. The QAPP presents the field activities that will be performed, defines the procedures and methods that will be used to collect field data including project samples, and focuses on the analytical methods and quality assurance/ quality control (QA/QC) procedures that will be used to analyze project samples, ensure the data are of known and acceptable quality, and manage the resultant data. The HASP describes the site health and safety for the field activities that will be performed.

2.2 Task 2 – Soil Vapor Investigation

This task includes soil vapor, and groundwater sampling at up to five locations in the vicinity of each site. The proposed sample locations are illustrated on Figures 2-1 through 2-7.

This task will include:

- Collect five soil vapor samples at foundation depth (approximately 8 feet) and submit for VOC analysis.
- Collect five soil vapor samples from 25 ft bgs and submit for VOC analysis.
- Collect five soil vapor samples from two feet above the groundwater table and submit for VOC analysis
- Collect five groundwater samples in the vicinity of the soil vapor samples. Samples will be collected at the surface of the groundwater table and submitted for VOC analysis.

These samples will be collected in accordance with the *"Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006"* and the applicable elements, more specifically Section 3.7 of the *"Draft Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, dated December 2002"*. Final sample results will be provided within the standard turnaround time (30 days).

2.2.1 Soil Vapor Sample Collection

Soil vapor samples will be identified and collected from five locations within each site. As per the DER-10 guidance, samples were located within areas of known historical contamination using information presented in the previously cited background documents provided by the NYSDEC. Figures presented in these

documents aided in the selection of the proposed sample locations, and are presented in Appendix A.

Three separate soil vapor boreholes will be co-located at each location to collect three vapor samples, approximately 8 feet bgs, 25 feet bgs and 2 feet above the water table interface, which is estimated to be approximately 60 feet below site grade. The shallow, intermediate and deep co-located vapor borehole will be drilled at one location and setup for the collection of vapor samples. Drilling will be initiated at the second location prior to initiating the collection of vapor samples from the first location to minimize standby time during vapor sample collection. This procedure will be repeated at each separate location. Soil vapor boreholes will be installed using direct-push technology used to drive steel rods equipped with a detachable steel drive point to the desired depth. The soil vapor sampling procedure for both the shallow (8 feet bgs), intermediate (25 feet bgs) and deep (60 feet below grade) locations is provided in the QAPP (Appendix B).

The tubing will be connected to a vacuum/volume system which is a combined diaphragm pump and calibrated gauge system specifically designed for soil gas sampling. The tubing is fitted with a needle valve regulator which can easily be throttled to a flow rate of less then 100 milliliters (ml) per minute. Syringes will be utilized to purge the tubing if obtaining a flow rate of 100 ml/min is difficult with vacuum/volume system. Approximately three probe volumes (i.e. volume of sample probe and tubing) will be purged at a flow rate less than 100 ml per minute. The poly tubing has an inside diameter of ¼ inch and a volume of 9.65 ml/foot. Purging for the eight foot vapor locations, assuming 3 feet of extra tubing at the surface to work with, yields a purging volume of 318.45 ml over a 3.18minute time frame. Purging for the 25 foot vapor locations assuming 3 feet extra tubing at the surface yields a purging volume of 810.6 ml over an 8.10 minute time frame. Purging for the 60 foot vapor locations assuming 3 feet extra tubing at the surface yields a purging volume of 1,823.85 ml over an 18.23 minute time frame. The purge vapors will be screened using the photoionization detector (PID) meter. The PID readings will be observed and recorded on the appropriate field form. The vacuum/volume system will be disconnected and the end of the tubing will be connected directly to the summa canister intake valve. The samples will be collected using laboratory-certified clean summa canisters with flow regulators and a vacuum of 28 inches Hg ± 2 inches. A vacuum of 5 inches Hg ± 1 inch must be present when sample collection is terminated.

Tracer gas will be used during the soil vapor investigation in accordance with the NYSDOH guidance for evaluating soil vapor intrusion and Section 4.5.2 of the QAPP. The flow rate during sampling will not exceed 100 milliliters per minute to minimize outdoor air infiltration during sampling. During soil vapor sampling collection, an out door ambient air sample will be collected. The soil vapor samples will be sent to an off-site laboratory for VOC analysis via EPA Method TO-15. All samples will be analyzed by an Environmental Laboratory Approval Program (ELAP) certified laboratory. The analysis for air samples will achieve detection limits of 1 $\mu g/m^3$. A

hand held helium detector will be utilized by the laboratory after the sample has been extracted from the summa canister to confirm that appreciable quantities (greater than 20 percent) of helium is not detected. A NYSDEC Analytical Services Protocol (ASP) Category B data deliverable will be provided for these analyses. Table 2-1 presents a summary of the analytical program for the site.

Upon completion of the sampling, the sample tubing will be removed and the soil vapor boring (1.5 inches in diameter) will be backfilled with indigenous soil and/or clean sand and marked with a stake/flag, which will be labeled with the proper sample identification and illustrated on the site map so that it can be located at a later date. Borings performed in paved or concrete areas will be backfilled and refinished at the ground surface with concrete or cold patch.

2.2.2 Groundwater Sample Collection

Groundwater samples will be collected from approximately five locations at each site from existing wells, or as grab samples from temporary direct-push locations within the vicinity of the soil vapor samples. If existing wells are not available, boreholes will be drilled using direct-push technology to install temporary wells to the desired depth. The detailed groundwater sampling procedure is provided in the QAPP (Appendix B).

The groundwater samples will be sent to an off-site laboratory for VOC analysis via EPA Method OLC03.2. All samples will be analyzed by an ELAP certified laboratory. A NYSDEC ASP Category B data deliverable will be provided for these analyses. Table 2-1 presents a summary of the analytical program for the site.

Upon completion of the sampling, the boreholes will be backfilled with indigenous soil and/or clean sand and marked with paint/stake/flag which will be labeled with the proper sample identification and will be illustrated on the site map so that it can be located at a later date. Borings performed in paved or concrete areas will be backfilled and refinished at the ground surface with concrete or cold patch.

2.2.3 Investigative Derived Waste

Purge water will be placed and dispersed on the ground unless visible contamination or elevated PID readings are observed. If contamination is present, investigative derived waste (IDW) will be flowed through carbon to filtrate any pollutants and then discharged to ground.

2.2.4 Decontamination Procedures

All non-dedicated equipment and tools used to collect samples for chemical analysis will be decontaminated prior to and between each sample interval using an Alconox rinse and potable water rinse prior to reuse. Additional cleaning of the equipment with steam may be needed under some circumstances. Decontamination fluids will be discharged to the ground surface unless a visible sheen or odor is detected either on the equipment or the fluids, at which point the decontamination water will be staged

in an appropriate container and staged on-site for later disposal (at an additional cost).

2.2.5 Sample Location

CDM will utilize a GPS unit to identify the direct push sample locations. If interference is encountered due to poor GPS signal strength, field measurements will be collected from fixed locations (e.g. corner of the building, fence, etc.). Subsequently, these data will be used to update the sample locations on the site map.

2.2.6 Sample Identification, Laboratory Analysis and Validation

Each sample collected will be designated by an alphanumeric code that will identify the sample location, matrix, and the specific sample designation (identifier). Site specific procedures are described in the QAPP (Appendix B).

All samples will be analyzed by a NYSDOH approved ELAP certified laboratory. Air samples will be analyzed for VOC using EPA Method TO-15. The analysis for air samples will achieve detection limits of 1 $\mu g/m^3$ for each compound. Groundwater samples will be analyzed for VOC by EPA Method OLC03.2. The analysis for groundwater samples will achieve a detection limit of 1 $\mu g/L$. A NYSDEC ASP Category B data deliverable will be provided for these analyses (Table 2-1).

All samples collected will be validated in accordance with NYSDEC Data Usability Summary Report (DUSR) guidance by a party that is independent of the laboratory which performed the analyses and CDM. A usability analysis will be conducted by a qualified data validator and a DUSR will be submitted to the NYSDEC.

2.3 Task 3 - Field Documentation and Reporting

2.3.1 Field Documentation Procedures

Field notebooks will be used during all on-site work. A dedicated field notebook will be maintained by the field technician overseeing the site activities. In addition to the notebook, any and all original sampling forms, and purge forms used during the field activities, will be submitted to the NYSDEC as part of the final report. Field and sampling procedures, including installation of the sample boreholes, existing monitoring wells, etc., will be photo-documented.

2.3.2 Reporting

A total of four copies of a draft letter report will be submitted that documents the work conducted and presents the results of the sample analysis for review and comment by NYSDEC and NYSDOH. Upon receipt of the comments, CDM will revise the draft letter report and print the four final copies and submit to NYSDEC. One copy of the final letter report; text, tables, maps, photos, etc., will be submitted as a single pdf file. All electronic files will be submitted to NYSDEC on a compact disc. The site investigation data will be submitted in the most recent version of the

NYSDEC Electronic Data Deliverable (EDD) with the final report submission. Currently this is the USEPA Region 2 EDD.

Section 3
Project Schedule

The following table provides the proposed project schedule and key milestones for this work assignment. As currently planned, field work will be initiated within two weeks of written receipt of final work plan approval. Field activity duration is estimated to be four work days assuming no delays are experienced due to inclement weather, site access problems, or for other unforeseen reason.

The scheduled submittal dates for deliverables are based on standard laboratory turnaround times of four weeks, and turnaround for data validation of three weeks.

Project Milestone	Date
Issue Work Assignment (WA)	October 6, 2006
Acknowledge Receipt of WA	5 Days after Issuance
Work plan development session	October 25, 2006-November 29, 2006
Submit Task 1 (Draft Work Plan) Deliverable	January 8, 2007
DEC/DOH Comment on Draft Work Plan	May 9, 2007
Submit Task 1 (Final Work Plan) Deliverable	June 13, 2007
Notice to Proceed (NTP)	June 29, 2007
Commence Task 2 Field Work	July 23, 2007
Task 2 Field Work Completed	August 17, 2007
Task 3 Submit Draft Report	November 2, 2007
Approve Draft Report	30 Days after Draft Report Submitted
Task 3 Submit Final Report	30 Days after Approval of Draft Report

Section 4
Budget Estimates

Estimated Budget and Level of Effort (LOE) Summary
New Cassel Industrial Area Sites
North Hempstead, New York
Sites 1-30-043 A, B, C, F, K, N, and V

Task Items	Description/Cost	Dollars
1	Work Plan Development	$15,016
2	Soil Vapor Investigation	$227,442
3	Field Documentation and Reporting	$30,834
	Total Estimate Budget (Tasks 1 - 3)	**$273,294**

Appendix D presents the detailed costs by task and subtask on the NYSDEC schedule 2.11.

General Assumptions:

- Work will be performed from October 2006 to November 2007.
- All costs are based upon the scope and schedule provided in this Work Plan. Costs associated with project delays or expedited schedules beyond CDM's control are not assumed.
- CDM will provide four hard copies by mail and one electronic file (pdf) by e-mail for each report submitted to the NYSDEC.

Task 1 - Work Plan Development:

- Only one site walk is assumed to be required for this task.
- Only one round of comments received concurrently is anticipated on draft deliverables. The review comments will be consolidated by NYSDEC. It is assumed that comments are minimal in nature and no re-evaluation is required. It is assumed that all comments can be addressed in 2 hours.
- Project management, subcontractor procurement, scheduling, budgeting, administrative activities are included in this task.
- Minimal CDM support will be necessary for the development of a Citizen Participation Plan.
- Continuous Community Air Monitoring will not be required. Monitoring at the borehole utilizing a PID will be sufficient.

Task 2 - Soil Vapor Investigation:

- Surveying will not be necessary for this work assignment.
- No schedule delays are assumed due to inclement weather or equipment failure.
- Only one mobilization/demobilization is assumed to be required.
- This estimate has divided fixed price items (e.g. mobilization/demobilization) by the seven proposed sites. Therefore, if the scope of work is reduced to less than seven sites, the budget for each site must be re-estimated.
- Drilling, analytical and validation will be subcontracted
- CDM will provide oversight during field activities.
- It is assumed that the site-markout will be able to determine all utility lines in the area of the proposed borings. Costs are not included for site-specific markout. It is assumed that the general utility markout will be sufficient to avoid all utility lines in the proposed sampling locations.
- CDM assumes that all material and equipment staged in access areas will be removed to allow easy access to all sampling locations by direct push equipment.
- Decontamination wastes and other investigative derived waste will not be required to be containerized and simple on-site disposal is assumed. No analytical, transportation or disposal of IDW is assumed.
- Delays due to the site owner or public are not assumed.
- No continuous air monitoring has been included in this cost estimate. One PID unit will be utilized air monitoring.
- NYSDEC will provide access to all sampling locations.
- CDM assumes that a Fish and Wildlife Assessment will not be necessary.

Task 3 - Field Documentation and Reporting:

- Only conference calls are anticipated to be necessary for this phase. Meetings are not assumed to be required for this task.
- Only one round of comments received concurrently is anticipated on draft deliverables. The review comments will be consolidated by NYSDEC. It is

assumed that comments are minimal in nature and no re-evaluation is required.

- During site work, digital photographs and field notes will be kept.

- A letter report will be developed including a description of work conducted with field notes, photos, validated analytical data, figures, field measurements, and summary tables/purge forms

- It is assumed that only two data tables (one groundwater and one vapor) and one figure having results for both groundwater and vapor will be necessary for the letter report

Section 5
Staffing Plan

5.1 Program Manager - Michael A. Memoli, P.E., DEE

The primary responsibilities for program management activities rest with the Program Manager (PRM). The Program Manager, Mr. Memoli, will have ultimate contract responsibility for the project, including responsibility for the technical content of all engineering work. Mr. Memoli will direct, review and approve all project deliverables, schedule staff and resources, resolve scheduling conflicts and identify and solve potential program problems. He will be directly accountable to NYSDEC's Division of Hazardous Waste Remediation for program execution. He has authority to assign staff, negotiate and execute contracts and amendments, as well as execute subcontracts. The PRM will communicate directly with CDM's Project Manager.

5.2 Project Manager - Maria D. Watt, P.E.

The Project Manager, Ms. Maria Watt, will have the overall responsibility for the technical and financial aspects of this project. She will assign technical staff, maintain control of the project budget and schedule, prepare monthly progress reports, review and approve project invoices, evaluate the technical quality of the project deliverables as well as the adherence to QA/QC procedures and manage subcontractors. She will serve as CDM's point of contact for this project.

5.3 Program Quality Assurance Manager - Jeniffer M. Oxford

The Program Quality Assurance Officer, Ms. Jeniffer Oxford, will monitor QC activities of program management and technical staff, as well as identify and report needs of corrective action to the Program Manager. He will also conduct an internal review of all project deliverables prepared by CDM staff and sign off on the final investigation reports.

5.4 Health and Safety Officer - Christopher S. Marlowe, C.I.H., Q.E.P

The Program Health and Safety Officer, Mr. Chris Marlow, will review and make recommendations to the Subcontractors on health and safety plans for compliance with OSHA requirements. He will develop a Health and Safety plan for CDM and NYSDEC employees, handle over-sight activities, evaluate the performance of health and safety officers and maintain required health and safety records. He will report to the Program Manager

5.5 Project Scientist - George Molnar

The Project Scientist, Mr. George Molnar will assist the Project Manager with the work plan draft and final, as well as general technical tasks related to field work,

subcontractor coordination, reporting, etc. He is directly accountable to the Project Manager.

5.6 Field Manager - Melissa Koberle

The Field Manager, Ms. Melissa Koberle, will be responsible for overseeing and coordinating field activities. This will include, but is not limited to: overseeing the installation of monitoring wells, coordinating drill work, coordinating work with other subcontractors and monitoring health and safety conditions in accordance with the approved Health and Safety Plan. She is directly accountable to the Project Manager.

Section 6
Subcontracting

Appendix E presents a comparison of quotes from various subcontractors. CDM proposes to engage subcontractors to provide the following services for this work assignment:

6.1 Direct Push Probe – Zebra Environmental Corp.

At this time, CDM is proposing to use Zebra Environmental Corp (Zebra) as the direct push subcontractor. They are located at 30 N. Prospect Avenue, Lynbrook, New York 11563.

6.2 Analytical Laboratory - Chemtech

At this time, CDM is proposing to use Chemtech (MBE) as the analytical laboratory subcontractor. They are located at 284 Sheffield Street, Mountainside, NJ 07092.

6.3 Data Validation - Data Validation Services

At this time, CDM is proposing to use Data Validation Services (WBE) as the data validation subcontractor. They are located at 120 Cobble Creek Road, P.O. Box 208, North Creek, NY 12853.

6.4 M/WBE Reporting – Kenneth Shider

At this time, CDM is proposing to utilize Ken Shider (M/WBE consultant) to prepare the quarterly M/WBE reports that are required by NYSDEC.

Section 7
MBE/WBE Utilization Plan

To meet the requirements of the MBE/WBE program, CDM has prepared the following utilization plan:

Total Dollar Value of the work assignment	$273,294
MBE Percentage Goal	15%
MBE Dollar Value Goal	$40,994
WBE Percentage Goal	5%
WBE Dollar Value Goal	$13,665
Combined MBE/WBE Percentage Goal	20%
Combined MBE/WBE Dollar Value Goal	$54,659

Minority and woman-owned firms are expected to participate as follows:

Services to be Provided	Description of Services	Subcontractor Name and Contact Information	Proposed Subcontract Price
Laboratory Analysis -	Vapor, Water and Soil Sample Analysis	Chemtech (MBE) Joe Dockery (908) 789 8900	$61,712
Kenneth Shider	M/WBE Quarterly Reports	Kenneth Shider (MBE) (518) 269-2207	$2,100
Data Validation	DUSR	Data Validation Services (WBE) Judy Harry (518) 251 4429	$6,020

Section 8
References

Lawler, Matusky and Skelly Engineers, LLP. 1996. New York State Superfund Contract Multisite PSA Report, New Cassel Industrial Area Site, North Hempstead, Nassau County. Appendices A-C. Prepared for New York State Department of Environmental Conservation.

New York Public Interest Research Group Website:
www.cmap.nypirg.org/Superfund

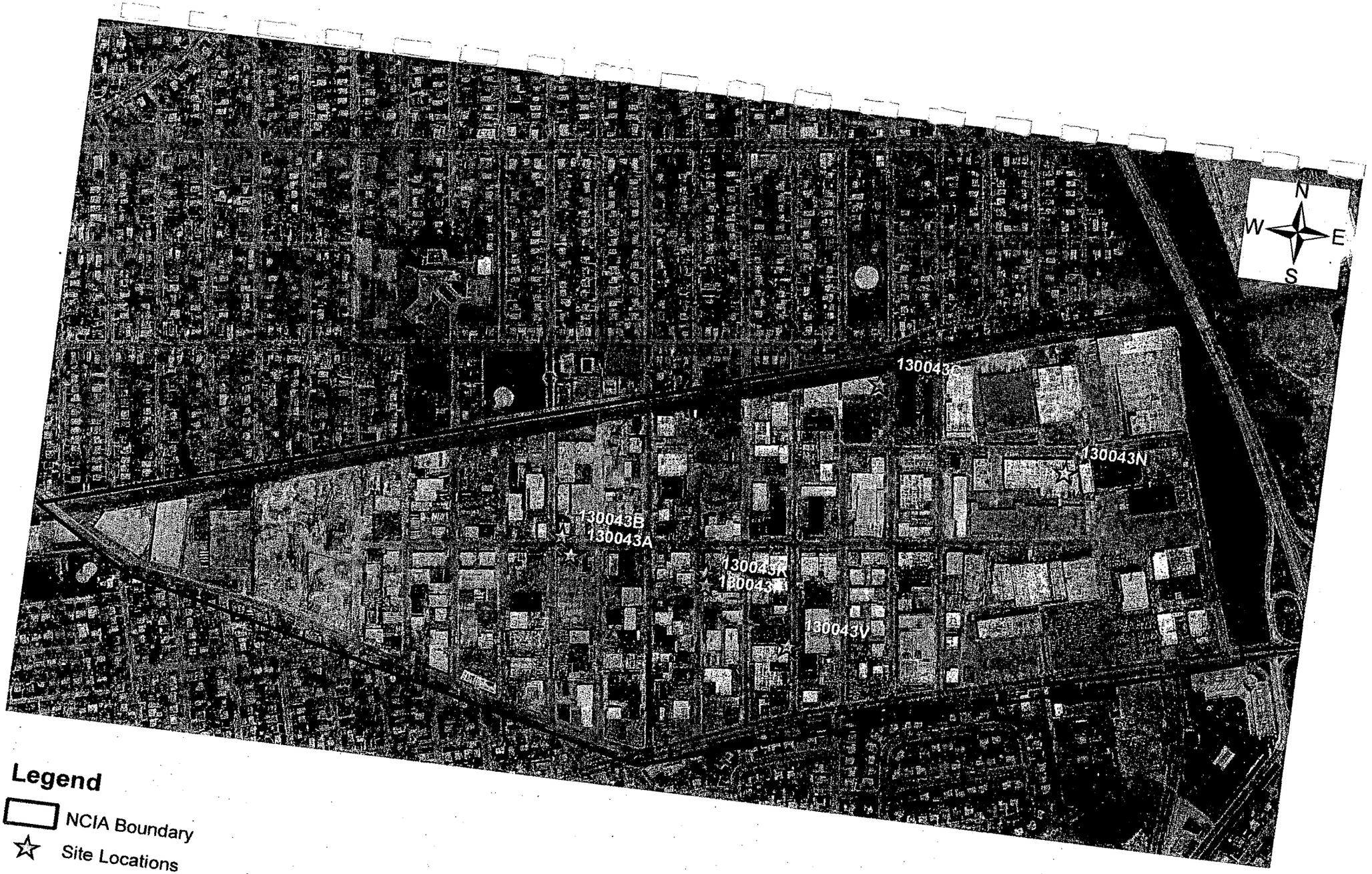
New York State Department of Environmental Conservation, March 2003. Record of Decision, New Cassel Industrial Area Sites, Town of North Hempstead, Nassau County, New York, Off-site Groundwater South of the New Cassel Industrial Area, Operable Unit No. 3.

Tables

Table 2-1
Analytical Program Summary
New Cassel Industrial Area Sites
North Hempstead, New York

Analytical Parameter	Sample Matrix	Number of Samples	Analytical Method	Field Duplicates (a)	MS/MSDs	Ambient Air Sample (b)	Field Blank (b)	Trip Blanks (e)	Container	Sample Preservation	Holding Time
SOIL VAPOR SAMPLES											
VOCs	Vapor	105	EPA TO-15	7	(c)	20	–	–	6-liter SUMMA canister	None	30 days
GROUNDWATER SAMPLES											
VOCs	Groundwater	35	EPA OLCO3.2	7	7	–	20	20	3 - 40ml clear glass vial with Teflon septum	HCl to pH <2; Cool to 4°C	14 days

Notes:
(a) A minimum of 5% of all samples will be collected in duplicate
(b) Ambient air samples and groundwater field blanks are collected at a frequency of 1 per day.
(c) SUMMA canisters containing samples are not spiked in the field.
(d) Cannister should be used within 15 days of being shipped to the field for sample collection.
(e) Trip blanks are collected at a frequency of 1 per sample cooler or 1 per every five days.



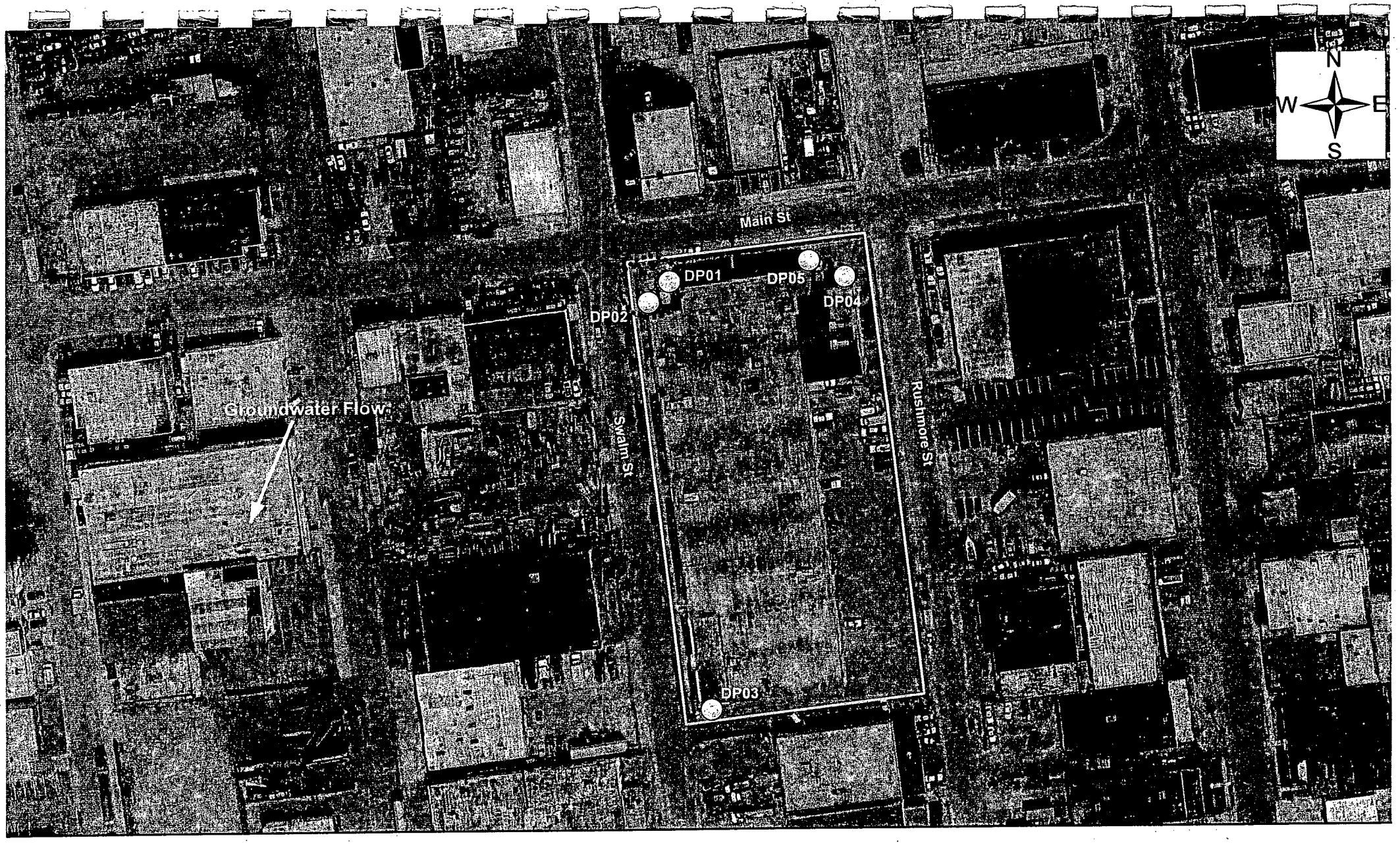
Legend

NCIA Boundary

Site Locations

CDM

Figure 1-1
Site Location Map
New Cassel Industrial Area
North Hempstead, New York



Legend

- Sample Locations
- Site Boundary
- Potential Source Area

CDM

Figure 2-1
Proposed Sample Locations (130043A)
570 Main Street
New Cassel Industrial Area
North Hempstead, New York

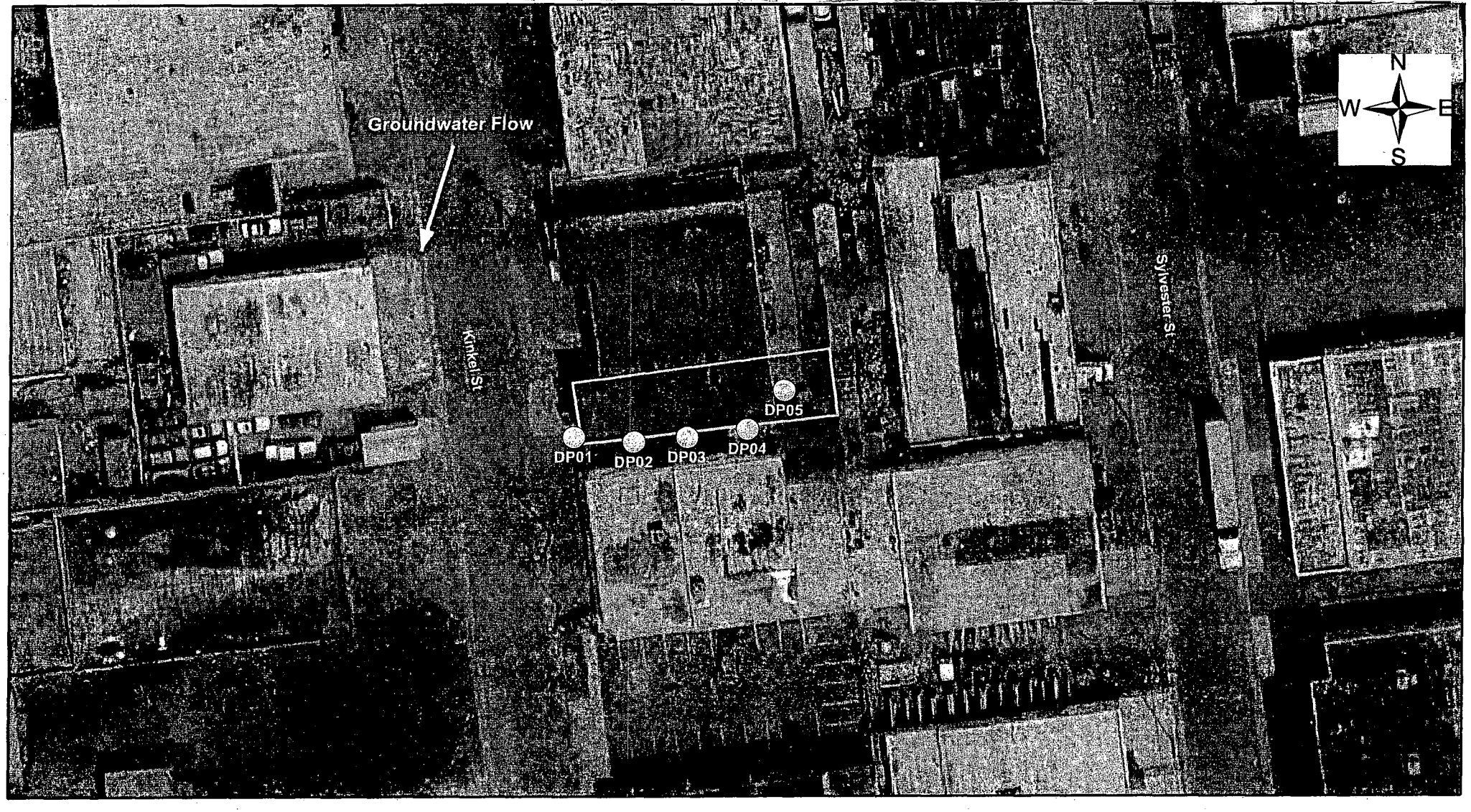
Legend

- ◯ Sample Locations
- Site Boundary

* Note - Previous investigations failed to locate source areas (e.g. cesspools, drainage structures)

Figure 2-4
Proposed Sample Location (130043F)
68 Kinkel Street
New Cassel Industrial Area
North Hempstead, New York

GEM



Legend

- ◯ Sample Locations
- Site Boundary

* Note - Previous investigations failed to locate source areas (e.g. cesspools, drainage structures)

Figure 2-5
Proposed Sample Locations (130043K)
62 Kinkel Street
New Castle Industrial Area
North Hempstead, New York

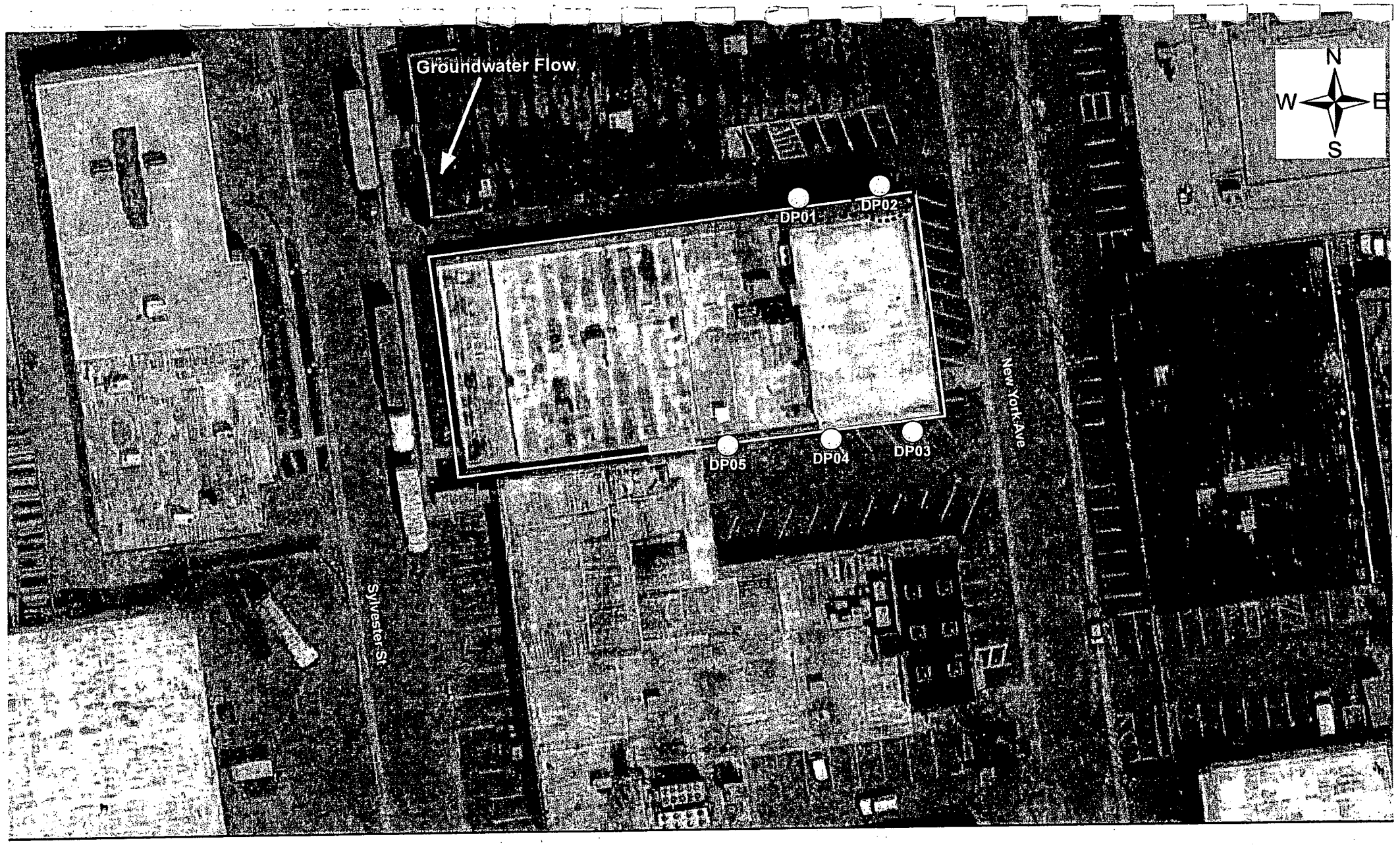
CDM

Legend

- Sample Locations
- NCIA Boundary
- Site Boundary
- Potential Source Area

Figure 2-6
Proposed Sample Locations (130043N)
750 Summa Avenue
New Cassel Industrial Area
North Hempstead, New York

CDM



Legend

- Sample Locations
- Site Boundary
- Potential Source Area

CDM

Figure 2-7
Proposed Sample Locations (130043V)
29 New York Avenue
New Cassel Industrial Area
North Hempstead, New York

Appendix A

Critical Historical Figures

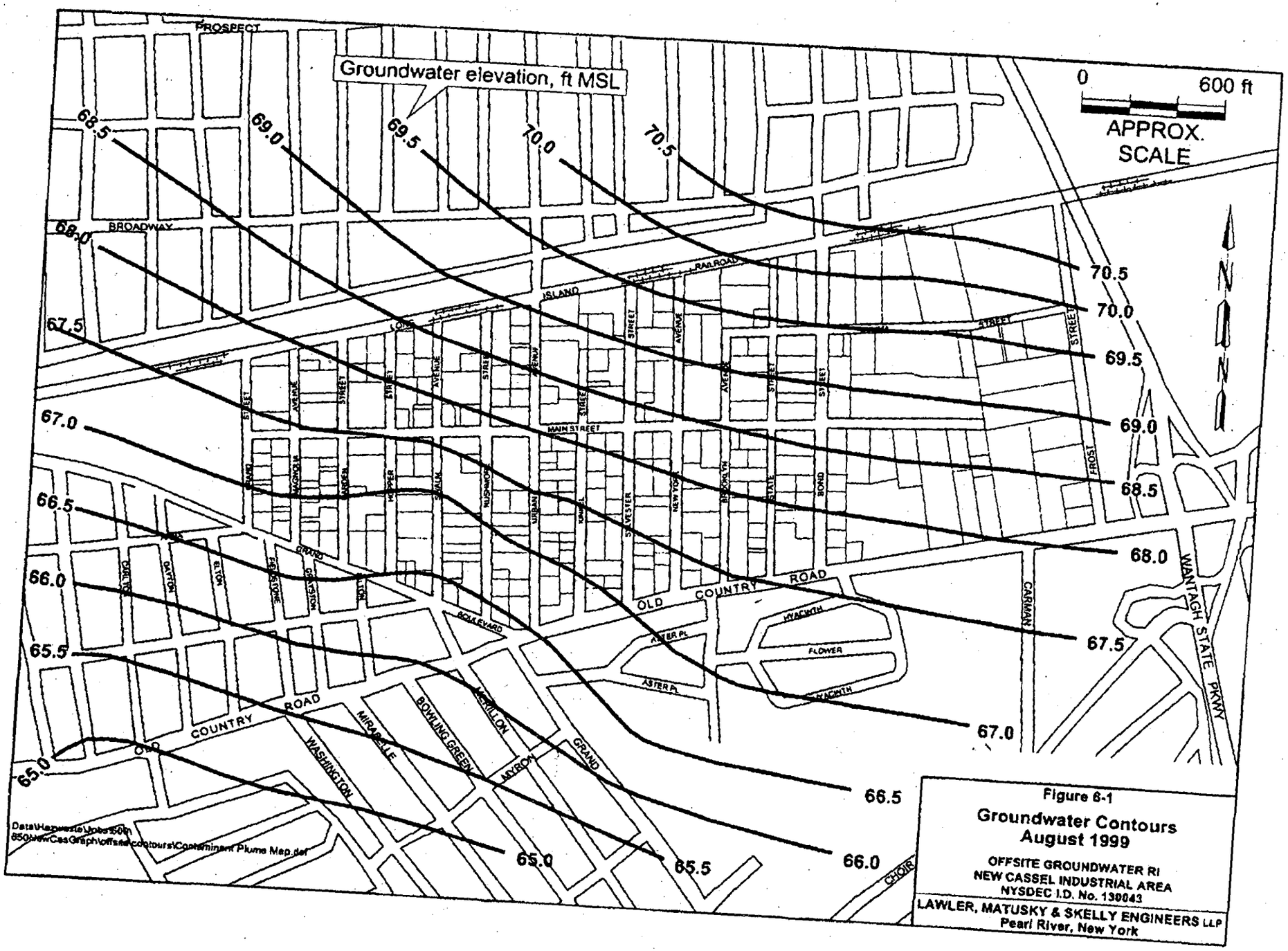


Figure 6-1

Groundwater Contours August 1999

OFFSITE GROUNDWATER RI
NEW CASSEL INDUSTRIAL AREA
NYSDEC I.D. No. 130043

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York

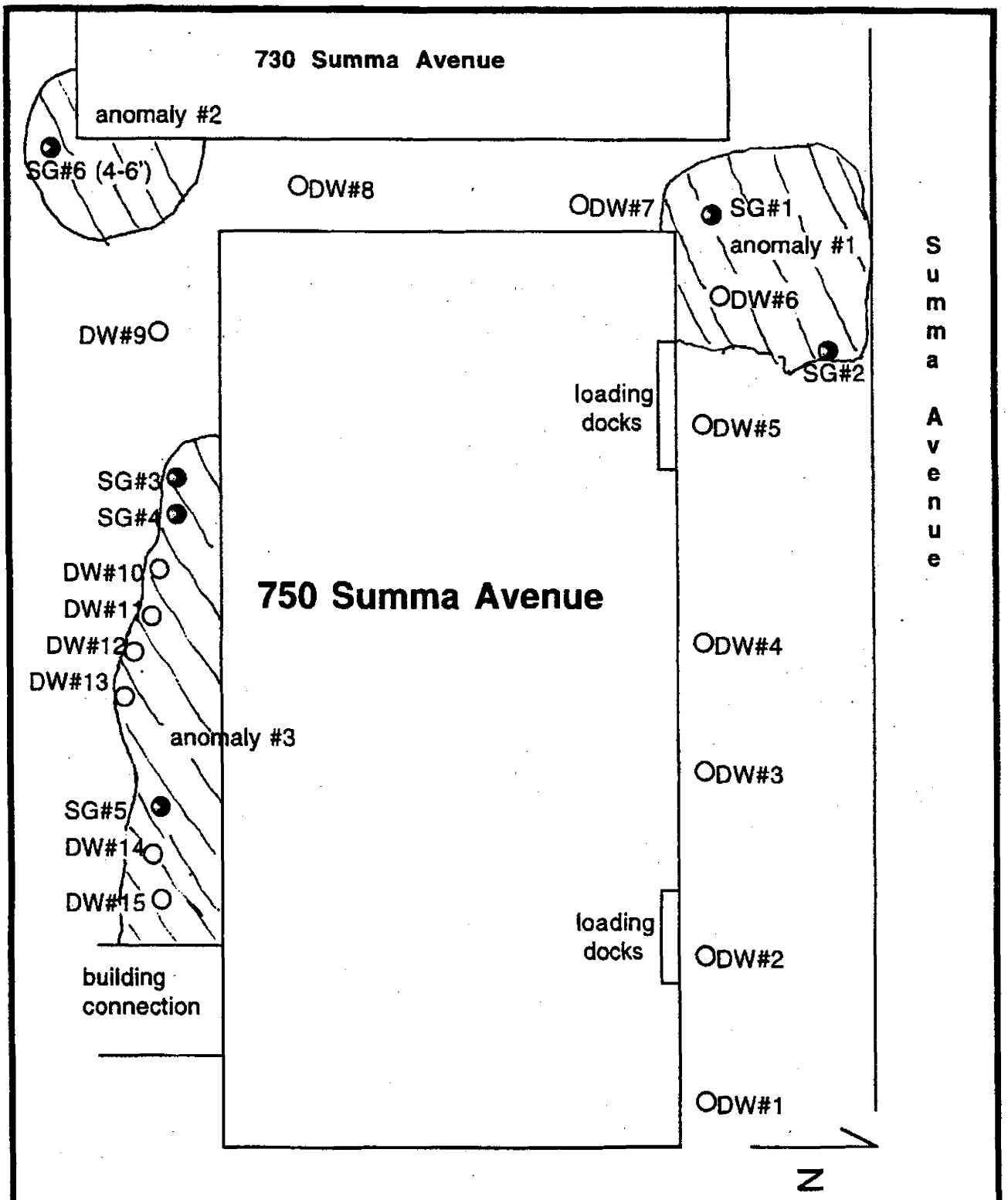
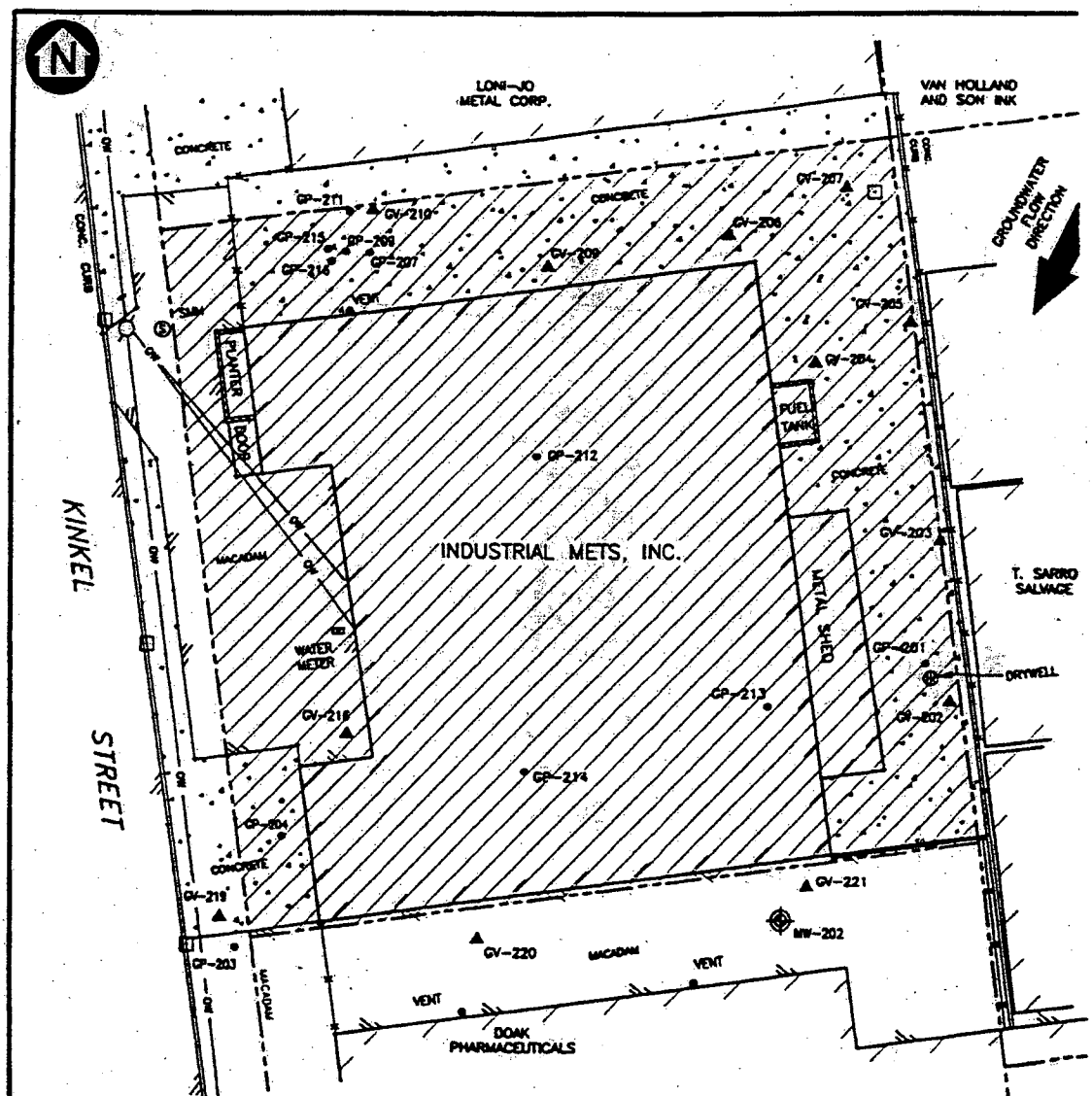


Figure 1 Site Diagram
750 Summa Avenue
Westbury, NY

Anson Environmental Ltd.
not to scale



SOURCE:

1. HORIZONTAL DATUM: NEW YORK STATE PLANE COORDINATE SYSTEM, NAD0 1927 FROM NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS MONUMENTS 12E14N AND 12E14NAZ.
2. VERTICAL DATUM: NGVD 1929 FROM MONUMENTS 12E14N AND 12E14NAZ.
3. FIELD SURVEY COMPLETED APRIL 11, 1996.
4. BOUNDARY INFORMATION SHOWN AS SCALED FROM FROM TAX MAPS. LOCATIONS ARE APPROXIMATE ONLY AND NOT CERTIFIED TO.
5. EXPLORATION LOCATIONS BASED ON MAP BY YEC, INC. TITLED "68 KINKEL STREET SURVEY" DATED MAY, 1996.

LEGEND

- GEOPROBE SOIL SAMPLE LOCATION
- GEOPROBE SOIL GAS SAMPLING LOCATION
- FOCUSED REMEDIAL INVESTIGATION MONITORING WELL
- EXISTING MONITORING WELL
- FORMER TISHCON SITE
- CHAIN LINK FENCE
- PROPERTY LINE

0 10 20 60 FEET

SCALE: 1" = 20'

Figure 4

FOCUSED REMEDIAL INVESTIGATION
EXPLORATION LOCATIONS
68 KINKEL STREET - FORMER TISHCON SITE
FOCUSED REMEDIAL INVESTIGATION
NYSDEC

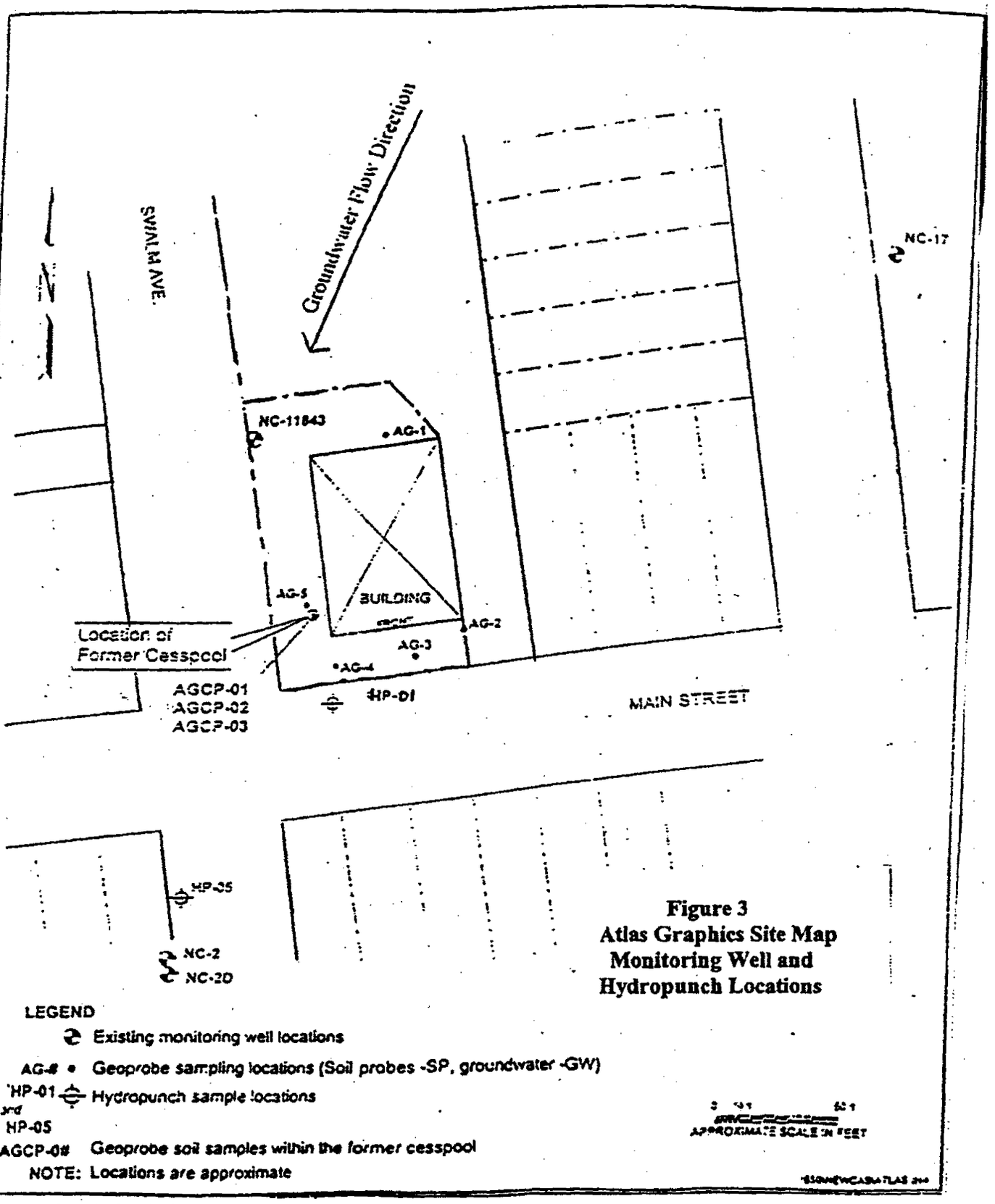
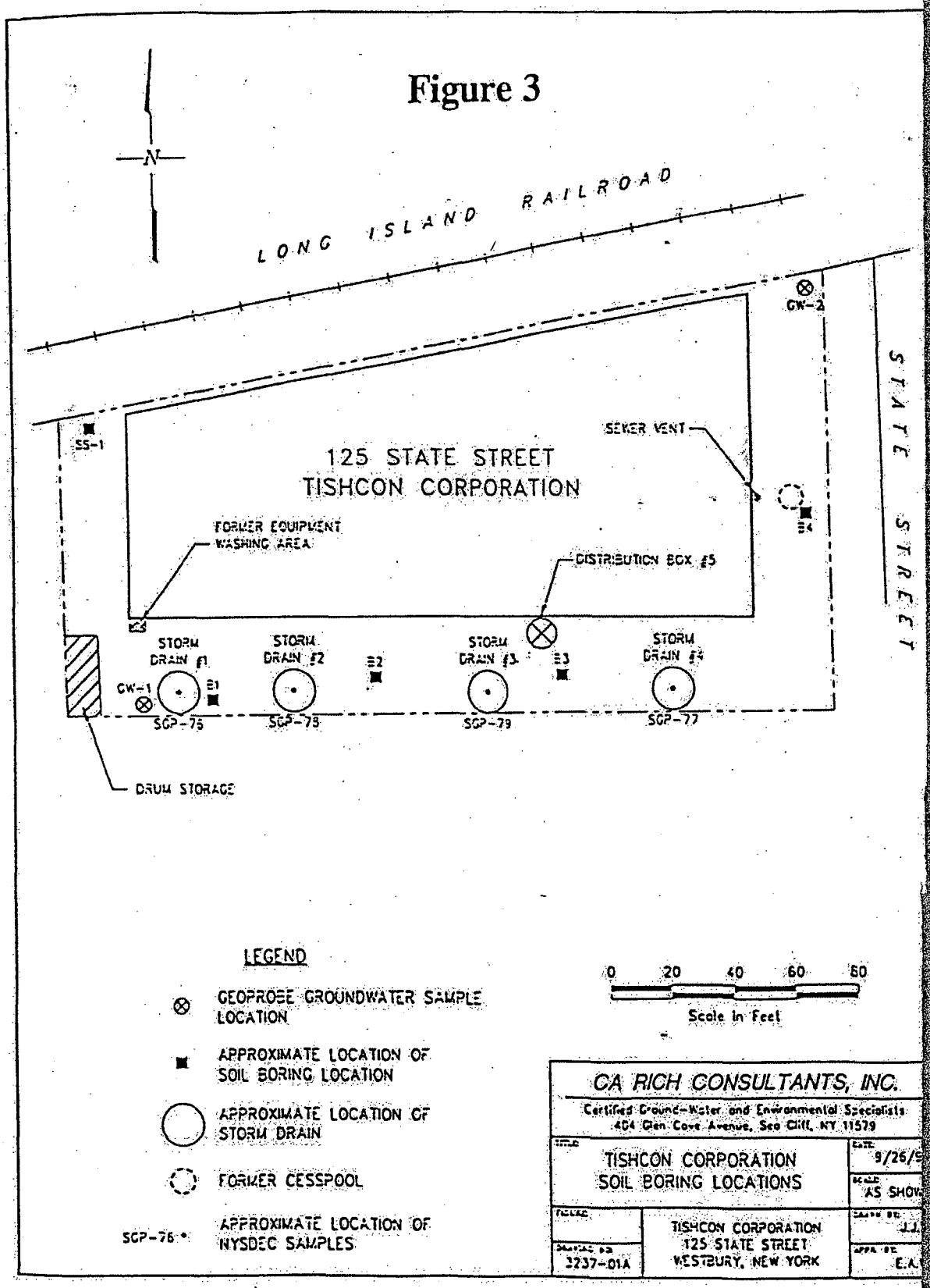
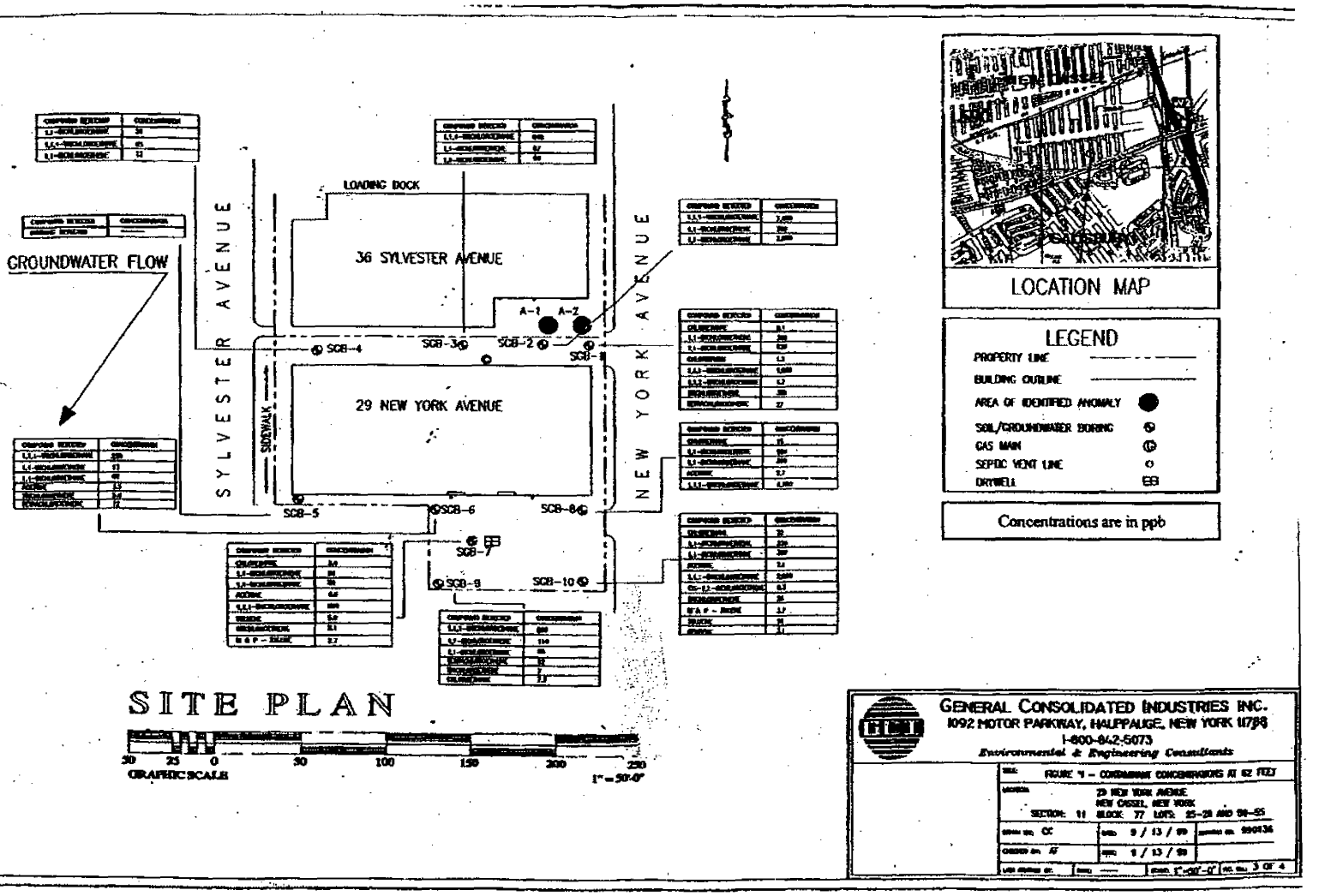


Figure 3
Atlas Graphics Site Map
Monitoring Well and
Hydropunch Locations

Figure 3


N
LONG ISLAND RAILROAD
STATE STREET
125 STATE STREET
TISHCON CORPORATION
SEWER VENT
FORMER EQUIPMENT WASHING AREA
DISTRIBUTION BOX #5
SS-1
GW-2
GW-1
E1
E2
E3
E4
STORM DRAIN #1
STORM DRAIN #2
STORM DRAIN #3
STORM DRAIN #4
SGP-75
SGP-76
SGP-78
SGP-77
DRUM STORAGE
LEGEND
GEOPROBE GROUNDWATER SAMPLE LOCATION
APPROXIMATE LOCATION OF SOIL BORING LOCATION
APPROXIMATE LOCATION OF STORM DRAIN
FORMER CESSPOOL
SGP-76 • APPROXIMATE LOCATION OF NYSDEC SAMPLES
0 20 40 60 80
Scale in Feet
CA RICH CONSULTANTS, INC.
Certified Ground-Water and Environmental Specialists
404 Glen Cove Avenue, Sea Cliff, NY 11579
TISHCON CORPORATION
SOIL BORING LOCATIONS
9/26/9
AS SHOW
TISHCON CORPORATION
125 STATE STREET
WESTBURY, NEW YORK
3237-01A
E.A.



LOCATION MAP

LEGEND

PROPERTY LINE

BUILDING OUTLINE

AREA OF IDENTIFIED ANOMALY

SOIL/GROUNDWATER BORING

GAS MAIN

SEPTIC VENT LINE

DRYWELL

Concentrations are in ppb

GENERAL CONSOLIDATED INDUSTRIES INC.
1092 MOTOR PARKWAY, HAUPPAUGE, NEW YORK 11788
1-800-842-5073
Environmental & Engineering Consultants

FIGURE 1 – CONTAMINANT CONCENTRATIONS AT 62 FEET

29 NEW YORK AVENUE
NEW CASSEL, NEW YORK
SECTION: 11 BLOCK 77 LOTS: 25-28 AND 54-55

DRAWN BY: CC DATE: 9 / 13 / 99 JOB NO. 990136

CHECKED BY: AF DATE: 9 / 13 / 99

SCALE: 1"=50'-0" SHT. NO. 3 OF 4

Appendix B

Quality Assurance Procedures Plan (QAPP)

FINAL
QUALITY ASSURANCE PROJECT PLAN
SOIL VAPOR INTRUSION AND GROUND WATER EVALUTION
NEW CASSEL INDUSTRIAL AREA SITES
(Site No.:130043-A, B, C, F, K, N and V)
North Hempstead, Nassau County, New York

Prepared for

New York State Department of Environmental Conservation
Investigation and Design Engineering Services
Standby Contract No. D004437
Work Assignment No. D004437-8

Prepared by

Camp Dresser & McKee
Raritan Plaza I, Raritan Center
Edison, NJ 08818

June 2007

Contents

List of Tables

Section 1
Introduction

1.1 Introduction

Camp Dresser & McKee (CDM) was retained to develop and implement a New York State Department of Environmental Conservation (NYSDEC) approved Work Plan for soil vapor intrusion and ground water evaluation. This Quality Assurance Project Plan (QAPP) is the documentation of the activities, objectives and quality assurance/quality control (QA/QC) procedures required to conduct a soil vapor intrusion investigation at the New Cassel Industrial Area sites 130043A, B, C, E, F, K N and V. The focus of this Work Assignment is to determine if volatile organic compounds (VOCs) are present in the soil vapor. In addition to collection of soil vapor samples, groundwater samples will be collected to determine if residual groundwater contamination is present at the water table and how groundwater quality relates to potential VOCs in soil vapor. Based on the results, the soil vapor pathway shall be assessed to determine if soil vapors are a concern to the structures located in the vicinity of each site.

1.2 Site Background and History

1.2.1 Site Background

The New Cassel Industrial Area was first developed during the early 1950s and is home to approximately 200 industrial and commercial businesses. Business practices associated with past light industrial activities within the area have resulted in extensive VOC contamination of groundwater in the vicinity of the site. Previous investigations conducted within the area indicated that multiple parties were responsible for the contamination resulting in individual "sites". To address this, the NYDEC classified the entire industrial area as a hazardous waste site in 1998 and is collectively referred to as the New Cassel Industrial Area (LM&S 1996; NYDEC 2003). The focuses of this QAPP and subsequent field investigation addresses several of these sites. A brief description of operational and remedial activities conducted at each is presented below:

1.2.2 Operational and Remedial History

The New Cassel Industrial Area was first developed during the early 1950s and is home to approximately 200 industrial and commercial businesses. Business practices associated with past light industrial activities within the area have resulted in extensive VOC contamination of groundwater in the vicinity of the site. Previous investigations conducted within the area indicated that multiple parties were responsible for the contamination resulting in individual "sites". To address this, the NYDEC classified the entire industrial area as a hazardous waste site in 1998 and is collectively referred to as the New Cassel Industrial Area (LM&S 1996; NYDEC 2003). The focuses of this Work Plan and subsequent field investigation address several of these sites. A brief description of operational and remedial activities conducted within each are presented below.

1.2.2.1 Site A - 570 Main Street

Site A is located at 570 Main Street and is approximately over two acres in size. From the early 1950s until 1992, the site was occupied by IMC Magnetics Inc., a manufacturer of induction motors, fans, blowers, stepper motors and other rotating machinery. In 1995 the site was given a Class 2 Registry status by the NYDEC due to the presence of onsite contaminated soils and groundwater. Primary contaminants consisted of chlorinated hydrocarbons, petroleum hydrocarbons and metals; however, further investigations revealed the presence of chlorinated VOCs. Subsequently, to remediate site soil contamination identified during a 1996 Remedial Investigation (RI), IMC installed and operated a soil vapor extraction (SVE) system. In addition, an RI/FS conducted at the site confirmed the presence of a chlorinated VOC groundwater plume. To address the groundwater contamination, in-situ oxidation using hydrogen peroxide injection was selected as the remedy. Treatment began in December 2001 and was still ongoing upon completion of the October 2003, Record of Decision (ROD) for Operable Unit (OU) 3 (NYDEC 2003).

1.2.2.2 Site B - 567 Main Street

Site B is located at 567 Main Street and is approximately one acre in size. In 1950 a warehouse was constructed onsite for use as a construction vehicle storage facility. Warehouse operations ceased in 1977, and the property was sold to Atlas Graphics Inc., a photo engraving manufacturing operation. The operation used a reported 312 gallons per year of tetrachloroethene (TCE). At the time of purchase, the building was connected to a cesspool for its sanitary waste disposal. In 1977, a discharge of approximately 50 gallons of TCE to the cesspool was documented. Investigations conducted on site showed elevated levels of TCE in both soil and groundwater, and in 1995 the site was assigned a Class 2 status by NYSDEC. In February 2000, a ROD was issued for the site selecting air sparging/soil vapor extraction (AS/SVE) as the remedy to address the contaminated soils and groundwater. The system was constructed in October 2000 followed by initial treatment activities in November 2000 (NYDEC 2003).

1.2.2.3 Site C - 125 State Street

Site C is located at 125 State Street and is approximately one acre in size. From 1984 to 1996 the site was occupied by the Tishcon Corporation (Tishcon). Manufacturing operations at Tishcon consisted primarily of the production of dietary supplements and vitamin products via a dry blending process. From 1985 to 1993, methylene chloride, 1,1,1 -trichloroethane (1,1,1 - TCA) and methanol were used in tablet coating processes conducted at the facility. As part of operating procedures, equipment was rinsed in a driveway fitted with several storm drains. An investigation conducted by the Nassau County Department of Health (NCDH) indicated the presence of chlorinated VOCs and metals in four storm drains at the site, and requested that contaminated material be removed from storm drains and a distribution box on the property in August 1993. The site was placed on the Registry in 1995 and issued a Class 2 status. The excavation and restoration of contaminated areas was completed as part of an Interim Remedial Measure (IRM) in October 1997. A ROD for the site

was issued in January 1998, and required the excavation and restoration of remaining contaminated source areas. Excavation and disposal of the material was conducted in early 1999, and the site was reclassified by NYDEC to a Class 4 ranking in March of 2000 (NYDEC 2003).

1.2.2.4 Site F - 68 Kinkel Street

Site F is located at 68 Kinkel Street and is approximately one-quarter of an acre in size. From 1982 to 1983, Tishcon conducted operations at the site which involved the encapsulation of materials. It was reported that during these processes, 1,650 gallons of TCE as well as 8,000 gallons of methylene chloride and 3,000 gallons of shellac were used. The site was added to the NYDEC Registry under Class 2 status in 1995. A State Superfund investigation was completed in July 1996, and in January 1997, a ROD requiring no action was issued. The site was delisted from the Registry in December of 1997 (NYDEC 2003).

1.2.2.5 Site K - 62 Kinkel Street

Site K is located at 62 Kinkel Street, west of the intersection of Old Country Road and the Wantagh State Parkway. The LAKA Tool and Stamping Company (Co), Incorporated (Inc.), occupied and conducted metals stamping at the site from 1971 to 1978. LAKA Industries, Inc., the parent company, operated the site from 1979 to 1984 as a machine shop specializing in tools, dies and precision stamping; both companies used TCE and lubricating oils as part of their operating procedures. In 1996, the site was issued a Class 2 status. Subsequently, a RI/FS was conducted to define the nature and extent of contamination at the site. Results of the RI/FS confirmed the presence of soil contamination in the vicinity of an onsite cesspool and an area located in a catch basin found downgradient of the site. To address the soil contamination, the NYSDEC issued a ROD in February 2000, followed by the excavation of contaminated soils in May 2001; however, remedial activities did not address groundwater contamination (NYDEC 2003).

1.2.2.6 Site N - 750 Summa Avenue

Site N is located at 750 Summa Avenue and is currently occupied by EZ-EM, a company that specializes in imaging and diagnostic for treating gastrointestinal diseases. EZ-EM along with other parties owned the property since 1982. Prior to EZ-EM ownership, Micro Industries, a machine shop occupied the site from 1971 to 1982. From 1968 to 1971 Advance Food Service Equipment Manufacturing occupied the site as a stainless steel kitchen equipment supplier. Advance Food Service stored and used 1,1,1-TCA and other solvents during their occupancy. In 1978, the NCDH required a floor drain near a vat used for degreasing operations be sealed as sludges sampled from a dry-well contained levels 1,1,1-TCA. In 1985, the vat was removed from the site. Degreaser sludges containing a mixture of 1,1,1-TCA and waste oil were stored in drums in the rear of the facility according to records from 1978. The site was classified on the Registry as a Class 4 ranking (LM&S 1996; NYPIRG website).

1.2.2.7 Site V – 29 New York Avenue

Site V is located at 29 New York Avenue and is approximately one acre in size. The site was developed in 1952, and was used to manufacture electronic equipment until the late 1970s. From 1979 to 1991 Tishcon occupied the site until it was sold to Equity 1 Associates in 1991. In 1995 the site was issued a Class 2 status on the Registry as part of the Tishcon Brooklyn Ave site. A 1996 study investigating soils/sediments collected from onsite catch basins showed levels of 1,1,1 -TCA-related compounds above cleanup criteria. Based on these results, the NYSDEC listed the Tishcon 29 New York Ave site as a separate Class 2 site on the Registry in March 1998. In December 1999, a RI was completed and results were presented to the NYSDEC followed by the removal of contaminated materials from an onsite cesspool in August 2000. Based on the results of that investigation a no further action ROD was signed in March 2002, and the site was delisted from the Registry later that year (NYDEC 2003).

1.3 Environmental Setting

1.3.1 Geology and Hydrogeology

The site is located above the Upper Glacial Aquifer (UGA) which consists of Upper Pleistocene deposits of poorly sorted sand and gravel to approximately 80 feet below ground surface (bgs). Beneath the UGA lies the Magothy aquifer which is comprised of finer sands, silt and small amounts of clay. Previous investigations have indicated that the Magothy formation may sometimes be found at considerable shallower depths (60-80 ft bgs) within the area when compared to other portions of Long Island. Within the New Cassel Industrial Area, the UGA and Magothy formations are in direct hydraulic connection as no other hydro-geologic units are found between them; however, clay lenses are often found within the upper portions of the Magothy. Previous investigations conducted onsite indicated that the water table is between 55-65 bgs and that groundwater flow is in a southwesterly direction.

Section 2
Project Objectives and Organization

2.1 Objectives

The objective of the soil vapor intrusion and groundwater investigation is to identify the sources of contamination within each site and determine if VOC contamination in groundwater has resulted in the presence of soil vapors that may constitute a concern to human health or the environment. In order to achieve this objective, the following activities will be conducted:

- Task 1 - Work Plan Development
  The development of a site specific work plan which includes a site specific Health and Safety Plan (HASP) and QAPP

- Task 2 - Site Characterization
  The investigation will include:

  - Conduct a soil vapor investigation that will include the collection of soil vapor samples at five direct push locations within each site. Samples will be collected from three depth intervals, approximately 8 feet bgs, 25 feet bgs and immediately above the water table which is expected to be about 55-65 feet bgs.

  - Conduct a ground water investigation that will include the collection of approximately five groundwater samples within each site from existing wells, or as grab samples from temporary direct push locations within the vicinity of the soil vapor samples.

  - Proper disposal of investigative derived waste (IDW) generated during the investigation

  - Proper decontamination of investigative equipment

  - Identify the sample locations utilizing a Global Positioning System (GPS)

- Task 3 - Field Documentation and Reporting

2.2 Organization

2.2.1 Project Team

2.2.1.1 Program Manager - Michael A. Memoli, P.E., DEE

The primary responsibilities for program management activities rest with the Program Manager (PRM). The Program Manager, Mr. Memoli, will have ultimate contract responsibility for the project, including responsibility for the technical content of all engineering work. Mr. Memoli will direct, review and approve all project deliverables, schedule staff and resources, resolve scheduling conflicts and identify and solve potential program problems. He will be directly accountable to

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2.2.1.6 Field Manager – Melissa Koberle

The Field Manager, Ms. Melissa Koberle, will be responsible for overseeing and coordinating field activities. This will include, but is not limited to: overseeing the installation of monitoring wells, coordinating drill work, coordinating work with other subcontractors and monitoring health and safety conditions in accordance with the approved Health and Safety Plan. She is directly accountable to the Project Manager.

2.2.2 Subcontractors

The following subcontractor services may be required as part of the site investigations and performed by subcontractors under CDM's supervision, including the following:

Services to be Provided	Firm
Drilling	Zebra
Chemical Analytical Laboratory	ChemTech
Verification Laboratory	Data Validation Services
M/WBE Quarterly Reports	Kenneth Shider

Section 3
Project Schedule

The following table provides the proposed project schedule and key milestones for this work assignment. As currently planned, field work will be initiated within two weeks of written receipt of final work plan approval and notice to proceed. Field activity duration is estimated to be twenty work days assuming no delays are experienced due to inclement weather, site access problems, or for other unforeseen reason.

The scheduled submittal dates for deliverables are based on standard laboratory turnaround times of four weeks, and turnaround for data validation of three weeks.

Table 3-1
Project Schedule

Project Milestone	Date
Issue Work Assignment (WA)	October 6, 2006
Acknowledge Receipt of WA	5 Days after Issuance
Work plan development session	October 25, 2006-November 29, 2006
Submit Task 1 (Draft Work Plan) Deliverable	January 8, 2007
DEC/DOH Comment on Draft Work Plan	May 9, 2007
Submit Task 1 (Final Work Plan) Deliverable	June 13, 2007
Notice to Proceed (NTP)	June 29, 2007
Commence Task 2 Field Work	July 23, 2007
Task 2 Field Work Completed	August 17, 2007
Task 3 Submit Draft Report	November 2, 2007
Approve Draft Report	30 Days after Draft Report Submitted
Task 3 Submit Final Report	30 Days after Approval of Draft Report

Section 4
Field Procedures

4.1 Field Log Book

Information recorded in field log books include observations, data, calculations, time, weather, description of the data collection activity, methods, instruments, and results. Additionally, the logbook may contain descriptions of wastes, biota, geologic material, and site features including sketches maps, or drawings as appropriate.

4.1.1 Preparation

In addition to this QAPP, site personnel responsible for maintaining logbooks must be familiar with other site specific standard operating procedure (SOPs). These should be consulted as necessary to obtain specific information about equipment and supplies, health and safety, sample collection, packaging, decontamination, and documentation.

Prior to use in the field, each logbook should be marked with a specific control number. The field notebook will then be assigned to an individual responsible for its care and maintenance.

Field logbooks will be bound with lined, consecutively numbered pages. All pages must be numbered prior to initial use of the logbook. The following information will be recorded inside the front cover of the logbook:

- Field logbook document number
- Activity (if the log book is to be activity-specific)
- Person and organization to whom the book is assigned, and phone number(s)
- Start date

4.1.2 Operation

The following is a list of requirements that must be followed when using a logbook:

- Record work, observations, quantities of materials, calculations, drawings, and related information directly in the log book. If data collection forms are specified by an activity-specific plan, this information need not be duplicated in the logbook. However, any forms used to record site information must be referenced in the logbook.
- Do not start a new page until the previous one is full or has been marked with a single diagonal line so that additional entries cannot be made. Use both sides of each page.

- Do not erase or blot out any entry at any time. Before an entry has been signed and dated, any changes may be made but care must be taken not to obliterate what was written originally. Indicate any deletion by a single line through the material to be deleted.

- Do not remove any pages from the book.

- Record as much information as possible.

Specific requirements for field logbook entries include:

- Initial and date each page.

- Initial and date all changes.

- Multiple authors must sign out the logbook by inserting the following:

Above notes authored by:

- (Sign name)

- (Print name)

- (Date)

- A new author must sign and print his/her name before additional entries are made.

- Draw a diagonal line through the remainder of the final page at the end of the day.

- Record the following information on a daily basis:

- Date and time

- Description of activity being conducted including station (i.e., well, boring, sampling location number) if appropriate

- Weather conditions (i.e., temperature, cloud cover, precipitation, wind direction, and speed) and other pertinent data

- Level of personnel protection to be used

Entries into the field logbook will be preceded with the time (written in military units) of the observation. The time should be recorded at the point of events or measurements that are critical to the activity being logged. All measurements made and samples collected must be recorded unless they are documented by automatic

methods (e.g., data logger) or on a separate form. In these cases, the logbook must reference the automatic data record or form.

Other events and observations that should be recorded include:

- Changes in weather that impact field activities.
- Deviations from procedures outlined in any governing documents. Also record the reason for any noted deviation.
- Problems, downtime, or delays.
- Upgrade or downgrade of personnel protection equipment.

4.1.3 Post-Operation

To guard against loss of data due to damage or disappearance of logbooks, copies of completed pages will be made periodically (weekly, at a minimum) and submitted to the project manager. Documents that are separate from the logbook will be copied and submitted regularly and as promptly as possible to the project manager. This includes all automatic data recording media (printouts, logs, disks or tapes) and activity-specific data collection forms required by other SOPs.

At the conclusion of each activity or phase of site work, the individual responsible for the log book will ensure all entries have been appropriately signed and dated, and that corrections were made properly (single lines drawn through incorrect information, then initialed and dated). The completed logbook will be submitted to the records file.

4.2 Sample Documentation and Identification

The following procedures describe proper documentation to be included in field notebooks. Documentation includes describing data collection activities, logging sample locations, sample IDs, container labeling and chain-of-custody forms. Procedures for sample classification to insure proper labeling of samples are also included.

4.2.1 Responsibilities

The field manager and/or field technician is required to oversee drilling of the boreholes, collection of vapor and groundwater, fill out field book logs, submit samples for analysis, COC forms and labeling of any waste-containing drums, if required. Also, the field manager and/or field engineer is required to adhere to the Site-Specific Health & Safety Plan. Field book entries should state starting time of monitoring, equipment used and results.

4.2.2 Field Notebooks

Complete thorough notes of all field events are essential to a timely and accurate completion of this project. The field manager and/or field engineer is responsible for

accounting for particular actions and times for these actions of the subcontractor while in the field. Also, identification (numbers and description) of field samples, duplicates samples, and blank samples should also be noted in the field book. For a particular workday, the field book should contain the following:

- Field personnel name, contractors name, number of persons in crew, equipment used, weather, date, time, and location at start of day (boring number).
- Sample identification number, depth, amount of sample recovery, PID reading and soil descriptions.
- Description of any unusual surface or subsurface soil conditions
- Record of Health and Safety monitoring; time, equipment and results
- Record of site accidents or incidents
- Record of any visitors
- Potential of delays
- Materials and equipment used during borehole installation
- Final daily summary of work completed including list of samples obtained
- Completion of daily QA/QC log sheet
- Contractor downtime, decontamination time, equipment breakdowns, movement tracking throughout the day, etc.
- Any other data that may be construed as relevant information at a later date.

The field logs should confirm the subcontractor's data. Field notes should be photocopied weekly and returned to the project manager.

4.2.3 Sample Identification

Each sample collected will be designated by an alphanumeric code that will identify the type of sampling location, matrix sampled, and the specific sample designation (identifier). Site specific procedures are described below:

Sample identification will contain a sequential code consisting of three segments.

1. The first segment will designate the site identification:

- Site A - 570 Main Street Site ID: 130043A
- Site B - 567 Main Street Site ID: 130043B

- Site C - 125 State Street Site ID: 130043C
- Site F - 68 Kinkel Street Site ID: 130043F
- Site K - 62 Kinkel Street Site ID: 130043K
- Site N - 750 Summa Avenue Site ID: 130043N
- Site V - 29 New York Avenue Site ID: 130043V

2. The next segment will designate the location type and specific location.

- Location types will be identified by a two-letter code, for example:
  DP - Direct Push boring
  AA - Ambient Air
  FB - Field Blank
  TB - Trip Blank
  MW - Monitoring Well

- The specific sampling location will be identified using a two-digit number.

3. The third segment will identify the matrix type and a sample depth designation.
- The matrix type will be designated by a two-letter code, for example:
  SV (soil vapor)
  AA (ambient air)
  GW (ground water).

- The sample identifier will be represented by a two-letter code identifying the depth below ground surface of the sample, for example 25 for twenty-five feet below ground surface. The following is a general guideline for sample designation:

First Segment	Second Segment		Third Segment	
Site ID	Location Type	Specific Location	Matrix Type	Bottom Depth
130043K	DP	05	SV	25

Sample ID:
The above sample identification 130043K-DP05-SV25 is a soil vapor sample collected at a depth of 25 feet from the DP-05 location at the 62 Kinkel Street site (Site K).
Field duplicates will be designated by replacing the "V" in SV and the "W" in GW with a "D" in the Matrix Type of the third segment.

4.3 Chain-of-Custody Procedures

This section describes the procedures used to ensure that sample integrity and chain-of-custody are maintained throughout the sampling and analysis program. Chain-of-custody (COC) procedures provide documentation of sample handling from the time of collection until its disposal by a licensed waste hauler. This documentation is essential in assuring that each sample collected is of known and ascertainable quality.

The COC begins at the time of sample collection. Sample collection is documented in the field notebooks in accordance with the specified SOP. At the same time, the sampler fills out the label on the sample container with the following information:

- Sample ID code
- Required analyses
- Sampler initials
- Date and time of sample collection

4.3.1 Chain-of-Custody Forms

The COC forms are a paper trail system that follows the samples collected and indicates which laboratory analyses are to be performed on which samples. Each sample should be clearly labeled and listed on the COC. The laboratory will only perform analyses on samples indicated and all other samples should be indicated with a "HOLD" designation. By labeling a sample "HOLD", the laboratory will store the sample until further instruction is given. Do not check the request for analysis blocks on the COC for samples designated with "HOLD" Status. Never indicate duplicate or blank samples on a COC.

It is the responsibility of the field manager to coordinate COC forms and supply copies of all COC to the project manager for data management use.

A COC form is filled out for each sample type at each sampling location. Each time the samples are transferred to another custodian or to the laboratory, the signatures of the people relinquishing the sample and receiving the sample, as well as the time and date, are documented. Labels will be filled out with an indelible, waterproof, marking pen.

4.3.2 Chain-of-Custody Records

The COC record is a three-part form. The laboratory retains the original form and the person relinquishing the samples keeps a copy of the form at the time of sample submittal. This form is then returned to the project manager or person in charge of data coordination.

The COC Record will be placed in a Ziplock bag and placed inside of all shipping and transport containers. All samples will be hand delivered or shipped by Federal Express to the laboratory specified by the field manager. Samples should be packed so that no breakage will occur. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment.

4.4 Field Quality Control Samples

In order to maintain QA/QC in both the field and the laboratory, additional samples such as trip blanks, duplicates, field blanks, performance evaluation samples and

background samples will be collected. Each type of QA/QC sample is described below and summarized in Table 4-1.

4.4.1 Quality Control for Soil Vapor Sampling

Approximately five percent of all soil vapor samples analyzed should be QA/QC samples. These samples act as a verification of appropriate field and laboratory procedures. These samples should be recorded in the field book. All QA/QC samples should be numbered sequentially with other field samples on the soil vapor log form. Approximately five percent of all soil vapor samples analyzed should be duplicate samples. Soil vapor duplicates will be collected at the same soil vapor location. To ensure laboratory "blind" analyses, duplicate samples will be recorded as MD samples on sample containers and the COC forms. The actual identification of the duplicate samples will be recorded in the field book. Duplicate samples are collected from the same vapor sampler and analyzed for the same compounds. All summa canisters must be certified to be free of contaminants in accordance with QA/QC protocol.

4.4.2 Quality Control for Groundwater Sampling

Approximately five percent of all groundwater samples analyzed should be QA/QC samples. These samples act as a verification of appropriate field and laboratory procedures. These samples should be recorded in the field book. All QA/QC samples should be numbered sequentially with other field samples. The following is a breakdown of types of QA/QC samples that are to be taken:

4.4.2.1 Duplicate Samples

Approximately five percent of all groundwater samples analyzed should be duplicate samples. To ensure laboratory "blind" analysis, duplicate samples will be recorded with the location identification and the next sequential sample number on sample containers and the COC forms. Duplicate samples are collected from the same location and analyzed for the same compounds.

4.4.2.2 Trip Blanks

Each cooler packed and shipped for aqueous VOC analysis should also contain a trip blank. Trip blanks are VOA vials filled with distilled water. These vials are to be carried with the sample bottles and samples and should remain sealed the entire time. It should be documented in the field book which aqueous samples were collected and transported with the trip blank.

4.4.2.3 Field Blanks

One field blank sample will be collected per day of sampling. Field blanks are collected after a sample is taken and the equipment used (i.e., bailer) has been decontaminated. Distilled water is then poured over the decontaminated sampling equipment and collected in sample jars for analysis. It should be documented in the field book which groundwater sample preceded the field blank and which sample followed the field blank for the equipment used.

4.5 Soil Vapor Sampling

The soil vapor sampling will be conducted at five locations within each site. Soil gas samples will be collected at three depths (8 feet, 25 feet and at least 2 feet above the water table) at 5 locations. Three separate soil vapor bore holes will be co-located at each of the five locations to independently sample the shallow (8 feet bgs), intermediate (25 feet bgs) and deep (at least 2 feet above the water table) soil vapor. The first boring of this investigation will be a deep groundwater sample boring to allow for the accurate determination of the groundwater table. It is critical to ensure that moisture does not enter the summa canister which can compromise the analytical results. Subsequent sampling can proceed with the shallow vapor sample being collected prior to the deep sample at each location.

Fifteen soil vapor samples will be collected at each site for a total of 105 samples (Table 4-1). Ambient air samples and QA/QC samples are not included in this total. Screening samples will be collected by the driller at each location. Vapors will be collected toward the end of the purging via a Tedlar bag and screened using a PID meter obtaining a total VOC reading. The PID meter will be provided, maintained, and calibrated, by CDM. A CDM representative will record the total VOC reading. Samples will be collected by the drilling subcontractor at each location, into pre-cleaned, pre-evacuated, 6-liter mini-Summa canisters. The canisters will be provided by CDM's laboratory. The soil vapor samples will be analyzed for EPA method TO-15 (Table 4-1).

4.5.1 Soil Vapor Probe Installation

A. Soil vapor probe installation at all locations will be performed according to the following procedures:

1. At any location where utilities may be present a vactron will be utilized to advance the boring to 5 feet bgs. Locations where a vactron is utilized, the borehole will be backfilled with indigenous soil until sampling can be completed at this location. A Geoprobe and hollow rods will then be used to push or drive a soil gas probe and disposable tip to the first sample depth (approximately 8 feet bgs). Once the probe is in place, retract the rods slightly to expose the sampling port. Insert laboratory or food grade quality new, dedicated inert tubing (polyethylene, stainless, or Teflon) through the rods and attach it to the soil gas probe just above the tip. Seal the surface of the borehole with fine grained bentonite slurry to a depth of approximately 1 foot below grade.

2. Conduct a tracer test at the location, as described in the following section (Section 4.5.2). Approximately 5% of the locations will require tracer tests before and after sampling.

3. Collect soil vapor sample for off site analysis, as described in Sections 4.5.4. Since the soil gas sample will require at least 1 hour to fill the summa canister, extra

equipment will be necessary to install the next co-located intermediate vapor sample.

4. Advance the soil gas probe and tip at a second co-located borehole to the second depth (approximately 25 feet). Once the probe is in place, retract the rods slightly to expose the sampling port. Insert new, dedicated inert tubing through the rods and attached it to the soil gas probe just above the tip. Seal the surface of the borehole with fine grained bentonite slurry to a depth of approximately 1 foot below grade.

5. Repeat steps 2 and 3 above.

6. Advance the soil gas probe and tip at a third co-located borehole to the third depth (approximately 2feet above the water table). Once the probe is in place, retract the rods slightly to expose the sampling port. Insert new, dedicated inert tubing through the rods and attached it to the soil gas probe just above the tip. Seal the surface of the borehole with fine grained bentonite slurry to a depth of approximately 1 foot below grade.

7. Repeat steps 2 and 3 above.

8. After the deep vapor sampling is complete continue advancement of the borehole to approximately one foot below the water table (approximately 56 feet bgs) to collect a groundwater sample. Collect a groundwater sample to be sent off-site for CLP VOA analysis. Backfill the borehole with indigenous soil or clean sand.

All downhole equipments will be steam cleaned prior to each soil gas location.

4.5.2 Tracer Test Procedures

A. The Subcontractor will conduct tracer tests to verify the integrity of the soil vapor probe seal at approximately 5% of the locations, as directed by the CDM onsite representative.

B. The driller will be responsible for all equipment required to conduct the tracer test, including helium gas, helium detector, tubing and fittings, and container.

C. Tracer tests will be conducted according to the following procedures:

1. Set up the tracer test apparatus by first sealing the open area around the Geoprobe rod and tubing with wax or bentonite. A bucket is then placed upside down over the borehole with the tubing coming out through a hole at the top.

2. Helium will then be injected through a hole near the bottom of the bucket to enrich the atmosphere to at least 80% helium. The concentration of helium inside the bucket will be monitored by a helium detector located at a second hole near the bottom of the bucket.

3. Once the atmosphere is enriched to the appropriate concentration, the helium detector will then be used to check the concentration coming out of the tubing from the borehole located at the top of the bucket. If the reading is below 20 percent tracer gas, the probe seal is sufficient; proceed with sampling, as described in the following sections. If the reading is above 20 percent tracer gas, the probe seal is not sufficient; reseal the probe surface with bentonite and repeat the tracer test until the reading is below 20 percent tracer gas.

4.5.3 Soil Vapor Sampling Procedures for Offsite Analysis

Soil gas samples for off site analysis will be collected at three depths per soil gas location (three co-located boreholes). Once the soil gas probe is installed and a tracer test is conducted, soil gas samples for off site analysis will be collected according to the following procedures:

1. The soil vapor samples will be collected using a laboratory-certified clean summa canister with a one-hour regulator ensuring that the sample flow rate less than 100 milliliters per minute (ml/min) to minimize outdoor air infiltration during sampling. The summa canisters will have a vacuum of 28 inches mercury (in Hg) ± 2 inches prior to the collection of the soil vapor sample. The ambient air QA/QC sample will be collected during the soil vapor sampling event.

2. Calculate the dead air volume of the tubing including the screen interval as part of the dead air volume. Attach the vacuum pump and purge at least 3 dead air volumes from the tubing. The tubing will be connected to a vacuum/volume system which is a combined diaphragm pump and calibrated gauge system specifically designed for soil gas sampling. The tubing is fitted with a needle valve regulator which can easily be throttled to a flowrate of less then 100 milliliters (ml) per minute. Syringes will be utilized to purge the tubing if obtaining a flowrate of 100 ml/min is difficult with vacuum/volume system. Approximately three probe volumes (i.e. volume of sample probe and tubing) will be purged at a flow rate less than 100 ml per minute. The poly tubing has an inside diameter of ¼ inch and a volume of 9.65 ml/foot. Purging for the eight foot vapor locations assuming 3 feet of extra tubing at the surface to work with yields a purging volume of 318.45 ml over a 3.18minute time frame. Purging for the 25 foot vapor locations assuming 3 feet extra tubing at the surface yields a purging volume of 810.6 ml over an 8.10 minute time frame. Purging for the 60 foot vapor locations assuming 3 feet extra tubing at the surface yields a purging volume of 1,823.85 ml over a 18.23 minute time frame. A tedlar bag will be filled toward the end of the purge volume to be screened using the PID meter. The PID readings will be observed and recorded on the appropriate field form. The vacuum/volume system will be disconnected and the end of the tubing will be connected directly to the summa canister intake valve. The samples will be collected using laboratory-certified clean summa canisters with flow regulators and a vacuum of 28 inches Hg ± 2 inches. A vacuum of 5 inches Hg ± 1 inch must be present when sample collection is terminated.

3. After purging is complete, record the initial pressure in the stainless steel Summa® canister to be used for the sample prior to connecting the tubing. Vacuum readings in the canister should be approximately 28-30 in Hg. If no vacuum reading is obtained, use a different canister as this indicates the canister was not properly evacuated.

4. Collect the sample into the Summa® canister, which will be provided by CDM's laboratory. An additional canister and regulator will be ordered as backup. Sample flowrate will not exceed 100 ml/min.

5. When the vacuum gauge reads 5 in Hg, close the valve. Sampling is complete. A vacuum of 5 in Hg ± 1 inch must be present when sample collection is terminated to prevent contamination during transit. Record the final pressure reading in the Summa® canister.

6. CDM personnel will label, pack and ship the samples to an ELAP-approved laboratory. The serial numbers for the summa canisters and the regulators will be recorded on the chain of custody. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment.

4.5.4 Ambient Air Sampling Procedures for Offsite Analysis

Ambient air samples will be collected at a frequency of one per day of sampling and be collected simultaneously with soil vapor sampling. Ambient air samples will be collected in the same manner as soil vapor samples. Sample durations will be the same as soil vapor samples. Personnel will avoid lingering in the immediate area of the sampling device while samples are being collected. Ambient air samples will be collected as close to each building as possible away from any boring or dust generating activities.

The following actions will be taken to document conditions during ambient air sampling:

1. Outdoor plot sketches will be drawn that include the building site, area streets, ambient air sample locations, the location of potential interferences, compass orientation, and paved areas.

2. Weather conditions (e.g. precipitation, temperature, wind direction and barometric pressure)

3. Any pertinent observations, such as odors, reading from field instruments, and significant activities in the vicinity (e.g. operation of heavy equipment) will be recorded.

The field sampling team will maintain a sample log sheet summarizing the following:

1. sample identification.

2. date and time of sample collection

3. sampling height

4. serial numbers for summa canisters and regulators

5. sampling methods and devices

6. vacuum of summa canisters before and after sample collection

7. chain of custody protocols and records used to track samples from sampling point to analysis.

4.6 Groundwater Sampling

The samples will be analyzed for VOCs at CDM's contracted laboratory by EPA method OLC03.2.

4.6.1 Purge and Sampling

Standard purge techniques will be utilized to purge and sample groundwater. Standard purge and sampling techniques consist of using a check valve and tubing to purge the well at a low flow rate. The check valve intake is set approximately in the middle of the screen. The well is purged at the low rate until the field parameters (temperature, pH, specific conductivity, turbidity, dissolved oxygen, and Eh) have stabilized. The sample is then collected directly from tubing. (see Section 4.6.3).

4.6.2 Equipment

The following equipment is required:

- Polyethylene sheeting
- Monitoring instrument for measuring pH, turbidity, dissolved oxygen, conductivity, temperature and Eh (Horiba U-10 and LaMotte 2020)
- Large, wide-mouth breakers for measuring field parameters
- Photoionization detector or equivalent (PID)
- Helium Detector-MGD 2002
- Logbook(s)
- Decontamination supplies – Section 4.7
- Sample bottles (40ml, clear, specially cleaned vials with Teflon septum) and preservatives (HCl)

- Labels and shipping products specified in the QAPP
- Personal protective equipment specified in Site Health and Safety Plan

4.6.3 Procedure

Personal protective equipment will be donned in accordance with the requirements of the Site Health and Safety Plan (HASP).

1. Assemble the screen point groundwater sampler.

2. Attach the Mill-slotted screen point groundwater sampler, onto the leading probe rod.

3. Thread the drive cap onto the top of the probe rod and advance the sampler using either the hydraulic hammer or hydraulic probe mechanism. Replace the 30-centimeter (cm) rod with the 90-cm rod as soon as the top of the sampler is driven to within 15 cm of the ground surface.

4. Advance the sampler to the interval to be sampled using the hydraulic hammer. Add additional probe rods as necessary to reach the specified sampling depth.

5. Move the probe unit back from the top of the probe rods and remove the drive cap.

6. Attach the pull cap to the top probe rod, retract the probe rods, push the screen into the formation, remove extension rods from the probe rods, and measure and record the water level, allowing time for the water level to reach equilibrium.

7. Purge at least three volumes of groundwater. During purging, monitor the field parameters (temperature, pH, turbidity, specific conductance and dissolved oxygen) approximately every 3 to 5 minutes until the parameters have stabilized to within 10 percent (plus or minus 5 percent) over a minimum of three readings. Turbidity and dissolved oxygen are typically the last parameters to stabilize. Note: once turbidity readings get below 10 NTUs, then the stabilization range can be amended to 20 percent (plus or minus 10 percent) over a minimum of three readings.

   Readings should be taken in a clean container (preferably a glass beaker) and the monitoring instrument allowed to stabilize before collection of the next sample. The Horiba instrument takes the readings consecutively and therefore the process to record all the measurements may take longer than five minutes. If so, measurements should be taken as often as practicable.

8. Once field parameters have stabilized collect the samples using a check valve and flexible tubing system. Volatile compounds that degrade by aeration must be collected first. All sample bottles should be filled by allowing the water to flow

gently down the inside of the bottle with minimal turbulence. Cap each bottle as it is filled.

9. Samples will be preserved, labeled, and placed immediately into a cooler and maintained at 4°C throughout the sampling and transportation period. Samples should be labeled, recorded on the chain-of-custody and shipped according to the proper procedures. Custody seals will be placed on all coolers/packages containing laboratory samples during shipment

4.7 Decontamination

The water quality instrumentation (Horiba U-10 and LaMotte 2020) will be thoroughly rinsed with Reagent Grade water between each sample location. Cleaning of the drilling equipment with steam may be needed under some circumstances if elevated levels of contamination appear to be present using field monitoring equipment or visible stained soils. Decontamination fluids will be discharge to the ground surface unless visible sheen or odor is detected either on the equipment or the fluids, at which point the decontamination water will be contained in a 55-gal drum, staged and properly disposed.

4.8 Investigative Derived Waste

Purge water will be poured through carbon and dispersed on the ground unless visible contamination or elevated PID readings are observed. If contamination is present, investigative derived waste (IDW) will be contained and analyzed to determine the appropriate disposal methods. This investigation is not anticipated to generate IDW.

Table 4-1
Analytical Program Summary
New Cassel Industrial Area Sites
North Hempstead, New York

Analytical Parameter	Sample Matrix	Number of Samples	Analytical Method	Field Duplicates (a)	MS/MSDs	Ambient Air Sample (b)	Field Blank (b)	Trip Blanks (e)	Container	Sample Preservation	Holding Time
SOIL VAPOR SAMPLES											
VOCs	Vapor	105	EPA TO-15	7	(c)	20	–	–	6-liter SUMMA canister	None	30 days
GROUNDWATER SAMPLES											
VOCs	Groundwater	35	EPA OLCO3.2	7	7	–	20	20	3 - 40ml clear glass vial with Teflon septum	HCl to pH <2; Cool to 4°C	14 days

Notes:
(a) A minimum of 5% of all samples will be collected in duplicate
(b) Ambient air samples and groundwater field blanks are collected at a frequency of 1 per day.
(c) SUMMA canisters containing samples are not spiked in the field.
(d) Cannister should be used within 15 days of being shipped to the field for sample collection.
(e) Trip blanks are collected at a frequency of 1 per sample cooler or 1 per every five days.

Section 5
Instrument Procedures
5.1 Photoionization Detector
This procedure is specific to the HNu PI 101 and the Thermal Environmental Organic Vapor Monitor (OVM) PID. These portable instruments are designed to measure the concentration of trace gases in ambient atmospheres at industrial and hazardous waste sites and are intrinsically safe. The analyzers employ PIDs.

The PID sensor consist of a sealed ultraviolet light source that emits photons which are energetic enough to ionize many trace species (particularly organics) but do not ionize the major compounds of air such as oxygen (O_2), nitrogen (N_2), carbon monoxide (CO), carbon dioxide (CO_2), or water (H_2O). An ionization chamber adjacent to the ultraviolet lamp source contains a pair of electrodes. When a positive potential is applied to one electrode, the field created drives any ions, formed by absorption of ultra violet (UV) light, to the collector electrode where the currents (proportional to concentration) are measured. One major difference between a flame ionization detector (FID) and a PID is that the latter responds to inorganic compounds as well as non methane type organic compounds.

To assess whether the instrument will respond to a particular species, the ionization potential (IP) should be checked. If the IP is less than the lamp energy, or, in some cases, up to 0.2-0.3 electron volts (eV) higher than the lamp energy, instrument response should occur. For example, hydrogen sulfide (IP = 10.5 eV) may be detected with a 10.2 eV lamp, but butane (IP 10.6 eV) will not be detected.

5.1.1 Calibration
Qualified personnel trained in calibration techniques for all field items perform calibration of all CDM field equipment. When a field instrument that requires calibration is obtained from the equipment room, the unit will display a calibration tag denoting the date when the instrument was last calibrated and/or maintained. All field instruments are calibrated each time they leave the equipment facility for a site. A maintenance file is kept for each calibrated field item.

PID and FID detector type instruments come with field calibration kits. A field calibration kit would be used if the instrument is to be kept out at the site for extended periods of time, or if the instrument endures prolonged environmental extremes. In either case, a calibration check standard could be introduced in the instrument to verify its accuracy. If an instrument will not calibrate or shows improper field operation, it should be marked "Do Not Use" and sent back to the office, and another instrument reissued.

Field personnel should not try to maintain the instruments in the field. If long sampling program is required, the team leader should prepare to take more

equipment for backup in case of instrument failure. Records and procedures of all calibration techniques are on file at the CDM equipment management warehouse in Edison, New Jersey.

With the instrument fully calibrated, it is now ready for use. Any results obtained should be reported as parts per millions (ppm) as isobutylene. If you need to convert these numbers based on a benzene standard, HNu offers a conversion table which is available from CDM. Important instrument specifications for each PID detector are listed as follows.

HNu PI 101 Performance	OVM Model 580A
Range - 0.1 to 2000	0 - 2000
Detection limit 0.1 ppm	0.1 ppm

HNu PI 101 Power Requirements	OVM Model 580A
Continuous use, battery >10 hours	8 hours
Recharge time, max >14 hours, 3 hours +	8 hours
NiCd Battery	Gel Cell Battery

Unit can be operated on battery charger.
Both units provide protection circuitry for the battery. This prevents deep discharging of the battery and considerably extends the battery life.

5.1.2 HNu PI 101

5.1.2.1 Procedure

1. Before attaching the probe, check the function switch on the control panel to make sure it is in the off position. The 12-pin interface connector for the probe is located just below the span adjustment on the face of the instrument. Carefully match the slotted groove on the probe to the raise slot on the 12-pin connector on the control panel. Once in line, twist the outer ring on the 12-pin connector until it locks into position (a distinct snap noise will be felt when in place).

2. Turn the function switch to the battery check position. The needle on the meter should read within or above the green battery arc on the scaleplate. The battery, if needle falls below the green arc, should be recharged before any measurements are taken. If the read LED on the instrument panel should come on, the battery needs charging and the unit cannot be operated without a charger.

3. If the battery is functioning properly, turn the function switch to the STANDBY position. If the needle on the instrument does not read 0, then turn the knob on the instrument panel until the needle deflects to the zero point on the meter.

4. Once the zero is confirmed, turn the function switch to the 0-20 position. At this point, the needle will read approximately 0.5 ppm. This reading is normal background for ambient air. For CDM health and safety reasons, the HNU PI 101 should be operated on this range to insure maximum sensitivity in the work

area. The unit, however, has 2 other ranges (0-200), (0-2000) should monitoring be required for other purposes such as headspace analysis etc. where readings could exceed the 0-20 ppm range.

5.1.2.2 Limitations

1. AC power lines (high-tension lines), or power transformers can interfere with the instruments performance. This situation can be confirmed by noting a deflection of the meter while in the STANDBY position.

2. Environmental factors such as humidity, rain and extreme cold can limit the instrument performance. To verify the "water sensitivity" condition, gently blow in the hole at the end of the probe. If the needle deflects positively (on the 0-20 position) by 2 ppm or more, water sensitivity problem exists and the unit should be brought into the warehouse for service. HNU PI 101 should be kept out of the rain as much as possible or covered. This will insure longer operating times with less false positive readings.

3. Quenching the detector can limit the instrument performance. This occurs when a compound such as methane at a very high concentration is introduced to the detector. The concentration is so high that the unit does not respond at all or gives a negative reading.

5.1.3 OVM 580A

5.1.3.1 Procedures

1. With the unit being fully calibrated before receiving it, you are ready for operation. Located on the right hand side of the unit is a panel. Slide this panel off of the unit. Inside there is a switch that supplies power to the LCD portion of the instrument. Turn this switch on and replace the panel. On the top of the OVM, there is an instrument panel. Locate the on/off switch and turn the unit on. This switch activates the lamp as well as the pump. Turn this switch off when the instrument is not in use, but leave the internal switch on.

2. The unit is now in the operation mode with all readings shown on the LCD display. Options for the OVM 580A include automatic recording and alarm settings. Should any options be required, they can be set up before the instrument leaves the CDM equipment warehouse.

   Warning signals associated with the OVM include a Low Battery signal. A flashing B will appear in the left-hand corner of the bottom line of the display when the 580A is in the RUN mode. If a gas concentration >2,000 ppm is detected by the OVM, the top line of the display will show OVERRANGE. Once this occurs, the instrument will "lock out" until the unit is brought to a clean area. A clean area is described as an area where the concentration of organic vapors is below 20 PPM.

5.2 pH Meter

pH is the negative logarithm of the effective hydrogen ion concentration (or activity) in gram equivalents per liter used. This expresses both acidity, and alkalinity on a scale whose valves run from 0 to 14. Number 7 represents neutrality, and numbers greater than 7 indicate increasing alkalinity while numbers less than 7 indicate increasing acidity. pH is one of the most commonly analyzed parameters. Water supply treatments such as neutralization, softening, disinfection and corrosion control are all pH dependent. CDM has a variety of pH monitoring instruments in the equipment warehouse.

5.2.1 Orion SA 250 pH Procedures

With the instrument fully calibrated, it is now ready for use. Follow the check out procedures:

1. Slide power switch to on position. Attach BNC shorting plug to BNC connector on top of meter.

2. If LO BAT indicator on LCD remains on, the battery must be replaced.

3. Slide mode switch to mV. Display should read 0 $\pm$ .3.

4. Slide mode switch to TEMP. Display should read 25.0. If 25.0 is not displayed, scroll using an X10 key until 25.0 is displayed and press enter.

5. Slide mode switch to pH .01. Press iso. Display should read the letters ISO, then a value of 7.000. If 7.000 is not displayed, scroll until 7.00 is displayed and press enter.

6. Press slope. Display should read the letters SLP, then a value of 100.0. If 100.0 is not displayed, scroll until 100.0 is displayed and press enter.

7. Press sample. Observe the letters pH, then a steady reading of 7.00, ± 0.02 should be obtained. If not, press CAL and scroll until 200 is displayed and press enter. Press sample and observe a reading of 7.00.

8. Remove the shorting plug. After completing these steps, the meter is ready to use with an electrode.

9. Attach electrodes with BNC connectors to sensor input by sliding the connector onto the input, pushing down and turning clockwise to lock into position. Connect reference electrodes with pin tip connectors by pushing connector straight into reference input.

10. Put the temperature probe in the sample and let it stabilize.

11. Once temperature is stable, set the unit to read pH (by 0.1 or 0.01) and take a reading in the aqueous sample. (Remembering first to remove the cap on the end of the pH probe.)

5.2.2 Model Tripar Analyzer Procedures

With the instrument fully calibrated, it is now ready for use:

1. Connect the pH probe's BNC input connector to the front of the Tripar.
2. Put the pH/mV switch on the pH position.
3. Turn the parameter display selection switch to TEMP.
4. Plug in the gray temperature plug jack in the input temperature sensor connector.
5. Put end of temperature probe in the sample.
6. Allow the temperature to stabilize.
7. Turn the temperature compensation knob to the temperature shown.
8. Turn the parameter display selection switch to pH.
9. Put pH probe in the aqueous sample (remembering first to remove the cap on the end of the probe). Let it stabilize and record the reading.

5.3 Conductivity Meter

Conductivity is a numerical expression of the ability of an aqueous solution to carry an electrical current. This ability depends on the presence of ions in the solution, and their total concentration. Factors such as mobility valence, relative concentration, and temperature also combine to create this occurrence. Solutions of most inorganic acids, bases and salts are relatively good conductors. Organic compounds in aqueous solutions are not good conductors. For example, freshly distilled water has conductivity reading of 0.5 to 2 mhos/cm and increases with time. This increase is caused by absorption of atmospheric carbon dioxide, and to a lesser extent ammonia. While industrial type wastes have conductivity readings of 10,000 ± mhos/cm.

5.3.1 Model SCT Procedures

The model 33 SCT has 3 conductivity scales of 0-500, 0-5000, and 0-50,000 mhos/cm. Salinity is scaled 0-40 parts per thousand in a temperature range of -2 to +45°C. Temperature is scaled -2° to +5°C.

With the instrument calibration verified, the unit is now ready for use. The model 33 S-C-T meter face is scaled and calibrated to give an accurate reading of the conductivity of a water sample by measuring the amount of current flow between two

fixed electrodes in the probe. The unit also measures salinity in a special range conductivity circuit, which includes a user-adjusted temperature compensator. A precision thermistor in the probe measures temperature by changing its resistance in relation to the temperature of the water.

The start-up procedure is as follows:

1. Plug the probe plug receptacle in the side of the meter.

2. With the mode select in the OFF position, check to see that the meter needle is centered at the zero mark on the conductivity scale and adjust if necessary.

3. Turn the mode control switch to Red Line position.

4. Adjust the Red Line control knob so the meter needle lines up with the red line on the meter face. If this cannot be accomplished, replace the batteries. If battery replacement is necessary, use only alkaline "D" cells, as regular carbon zinc batteries will cause errors.

5. Place the probe into the solution to be measured.

6. Set the mode control to TEMPERATURE. Read the temperature on the bottom scale of the meter in Degrees C. Allow time for the probe temperature to come to equilibrium before taking a reading.

7. With the probe in the solution to be tested, adjust the conductivity scale until the meter reading is on scale. (Multiply the reading by the correction on the calibration sticker on the instrument).

8. When using the X10 and X100 scales, depress the CELL TEST button. If the reading on the dial moves ± 2%, the electrode is fouled and needs to be cleaned. Repeat the measurement on another instrument.

9. Store the probe in distilled water when not in use.

Section 6
Laboratory Procedures

The term "data quality" refers to the level of uncertainty associated with a particular data set. The data quality associated with environmental measurement data is a function of sampling plan rationale and procedures used to collect the samples as well as the analytical methods and instrumentation used in making the measurements. Each component has its own potential sources of error and biases that can effect the overall measurement process.

Sources of error that can be traced to the sampling component of environmental data collection are: poor sampling plan design, inconsistent use of standard operating procedures, sample handling and transportation. The most common sources of error that can be traced to the analytical component of the total measurement system are calibration and contamination problems. It is recognized that by far the largest component of the total uncertainty associated with environmental data collection originates from the sampling process. All sampling programs initiated in support of this project will stress forward planning and be well conceived and reviewed prior to the collection of any samples as a way to minimize this major source of potential error.

Uncertainty cannot be eliminated from environmental measurement data. The amount of uncertainty that can be tolerated depends on the objective of the sampling program and the intended use of the data collected. The purpose of the project's quality assurance program is to assure that the data quality of all data collected be of known and ascertainable value.

6.1 Data Quality Criteria

Data quality can be assessed in terms of its precision, accuracy, representativeness, completeness, and comparability. Although not a data quality parameter per se, analytical method detection limits will also be discussed in this section.

6.1.1 Precision

Precision is a measure of the reproducibility of analyses under a given set of conditions. The overall precision of a sampling event is a mixture of sampling and analytical factors. The precision of data collected in support of this project will be assessed on two different levels:

- By calculating the relative percent difference (RPD) of laboratory matrix spike duplicates and/or laboratory replicate samples (a measure of analytical precision).
- By calculating the RPD of field duplicates samples submitted to laboratory "blind" (a measure of the precision of the entire measurement system, including sampling).

Relative percent difference will be calculated according to the following equation:

$$RPD = \frac{|A - B|}{(A + B)/2} \times 100\%$$

where: A = Sample Result
B = Replicate Sample Result

6.1.2 Accuracy

Accuracy is a measurement of the amount of bias that exists in a measurement system. This can be thought of as the degree that the reported value agrees with the supposed "true value". The accuracy of data collected in support of this project will be assessed in the following ways:

- By calculating the percent recovery (%R) of laboratory matrix spikes and/or laboratory control standards
- By documenting the level of contamination that exists (if any) in laboratory method blanks
- By documenting the level of contamination that exists (if any) in field and/or trip blanks submitted to the laboratory "blind" for analysis
- Percent recovery will be calculated according to the following equation:

$$\%R = \frac{SSR - SR}{SC} \times 100$$

where: SSR = Spiked Sample Result
SR = Sample Result
SA = Spike Concentration

6.1.3 Representativeness

Unlike the previous two criteria which can be expressed in quantitative terms, representativeness is a qualitative parameter. However, in terms of overall data quality, representativeness may be the most important parameter of all.
The representativeness criterion is concerned with the degree to which a sample reflects (represents) a characteristic of a population, parameter variations at a specific location or an environmental condition. Sample representativeness will be addressed in support of this project through a detailed sampling plan design and rationale and through the proper use of the appropriate sampling standard operating procedures, depending on sample matrix and the parameters to be analyzed.

Composite samples will be collected in situations conducive to compositing techniques (particularly samples collected along the vertical extent of a borehole). The use of composite samples tends to maximize the representativeness of a sampling

round because more information is provided about a much broader area than a single grab sample. This is especially true in situations where the objective of sampling is to determine where gross contamination exits on site and the location of any "hot spots". In these cases, broad coverage of the area to be sampled is more important than obtaining the lowest possible detection limits.

6.1.4 Completeness

Completeness is a measure of the amount of usable data obtained from a measurement system compared to the amount that was expected to be obtained under correct normal conditions. Usability will be determined by evaluation of the precision, accuracy, representativeness, and comparability parameters. Those data that are validated as correct, or are qualified as estimated or non-detect are considered usable. Rejected data are not considered usable. A completeness goal of 90% is projected. If this goal is not met, the effect of not meeting this goal will be discussed by the CDM project manager and the NYSDEC site manager. Completeness is calculated using the following equation:

$$Percent\ Completeness = \frac{DO}{DP} \times 100$$

Where:

DO = Data obtained and usable

DP = Data planned to be obtained

6.1.5 Comparability

The comparability criterion is a quality characteristic which is an expression of the confidence with which one data set can be compared with another. Comparability issues are of importance at two different levels of a sampling program. The primary comparability issues are concerned with whether the field sampling techniques, analytical procedures, and concentration units of one data set can be compared with another.

The comparability criterion also applies to the environmental conditions/ considerations present at the time of the sampling. Temporal and/or seasonal variations may make data collected from the same location at different times of the year incomparable, or comparable in a relative sense only, for example. Comparability is judged by comparing results to other similar data sets. Consistency in the acquisition, handling, and analysis of samples is necessary for comparing results. Data developed under this investigation will be collected and analyzed using Soil Vapor Intrusion Guidance for soil vapor collection and NYSDEC Department of Remediation Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002 to ensure comparability of results with other analyses performed in a similar manner.

For non-priority pollutant parameters, the following quality control data is required per sample batch:

- Method Blanks
- Laboratory Duplicates – One duplicate analysis should be performed at a frequency of one per twenty samples.

No specific acceptance criteria for blanks and spike recoveries will be set forth here, however, all labs are expected to conform to standard quality control specifications. CDM expects laboratories to reanalyze samples if quality control samples fail to meet these specifications.

The quality control data may be presented as a quality control section within the report or it may be integrated among the results.

6.2.4 Minimum Detection Limits

Detection limits were derived based on the amount of water or soil vapor required for each analysis. These MDLs are target limits and should be adhered to as closely as possible.

6.3 Data Quality Requirements

Taking into consideration a project's overall objective and intended use of the data, it should be considered that analyses be conducted in accordance with SW-846, Test Methods for Evaluating Solid Waste, Third Edition procedures. In cases where additional procedures are required, other EPA approved laboratory methods will be used. The specific method reference for a given sampling round is provided in Table 4-1.

6.4 Data Deliverable

Analytical data deliverable will be provided in accordance with NYSDEC requirements (EPA Region 2 EDD, dated December 2003).

Appendix C

Health and Safety Plan (HASP)

HEALTH AND SAFETY PLAN FORM CDM Health and Safety Program	*This document is for the exclusive use of CDM and its subcontractors*	CAMP DRESSER & McKEE INC. PROJECT DOCUMENT #:	
TASK DESCRIPTION/SPECIFIC TECHNIQUE/SITE LOCATION *(attach additional sheets as necessary)*	**Type**	**Primary**	**Contingency**	**HAZARD & SCHEDULE**
1. Collect soil vapor samples via Direct-Push technology	**Intrusive** Non-intrusive	A B C (D) Modified	A B C D (Exit Area)	Hi Med (Low) July, 2007
2. Collect groundwater samples via Direct-Push technology	**Intrusive** Non-intrusive	A B C (D) Modified	A B C D (Exit Area)	Hi Med (Low) July, 2007
3. Log sample locations using GPS	Intrusive **Non-intrusive**	A B C D Modified	A B C D (Exit Area)	Hi Med Low July, 2007
	Intrusive Non-intrusive	A B C D Modified	A B C D Exit Area	Hi Med Low

PERSONNEL AND RESPONSIBILITIES

NAME	FIRM/DIVISION	CDM HEALTH CLEARANCE	RESPONSIBILITIES	On Site?
Melissa Koberle*	CDM/EMP	C-S	H & S Coordinator/Field Manager	(1-2-3-4-5)
George Molnar	CDM/EMP		Alt. H & S Coordinator/PM (off-site)	(No)
Chris Marlowe	CDM/EMP	BS	H&S Manager	1-2-3-4-5
				1-2-3-4-5

* CDM representative will neither enter nor remain on-site and let's accompanied by another qualified person

HEALTH AND SAFETY PLAN FORM	*This document is for the exclusive*	CAMP DRESSER & McKEE INC.
CDM Health and Safety Program	*use of CDM and its subcontractors*	**PROJECT DOCUMENT #:**

PROTECTIVE EQUIPMENT: *Specify by task. Indicate type and/or material, as necessary. Group tasks if possible. Use copies of this sheet if needed.*

BLOCK A - Sampling

TASKS: (1) 2 - 3 - 4 - 5 - 6 - 7 - 8
LEVEL: A - (B) C - D - Modified
(x) Primary ( ) Contingency

Respiratory: (X) Not needed
( ) SCBA, Airline
( ) APR
( ) Cartridge
( ) Escape Mask
( ) Other:

Head and Eye: ( ) Not needed
(X) Safety Glasses:
( ) Face Shield:
( ) Goggles:
(X) Hard Hat:
( ) Other:

Boots: ( ) Not needed
(X) Steel-Toe
( ) Rubber
( ) Overboots: Latex (optional)

Prot. Clothing: (x) Not needed
( ) Encapsulated Suit
( ) Splash Suit
( ) Apron
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall
(X) Other: insulated coverall

Gloves: ( ) Not needed
(X) Undergloves: latex
( ) Gloves: Cotton
( ) Overgloves: Nitrile

Other: specify below
( ) Tick Spray
( ) Flotation Device
( ) Heating Protection
( ) Sun Screen

BLOCK B

TASKS: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
LEVEL: A - B - C - D - Modified
( ) Primary (x) Contingency

Respiratory: ( ) Not needed
( ) SCBA, Airline
( ) APR
( ) Cartridge, Combination
( ) Escape
( ) Other

Head and
( ) Safety Glasses
( ) Face Shield
( ) Goggles
( ) Hard Hat
( ) Other

Boots: Not needed
( ) Steel-Toe
( ) Overboots: Latex

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit
( ) Splash Suit
( ) Apron:
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall
( ) Other:

Gloves: ( ) Not needed
( ) Undergloves: PVC
( ) Gloves: Cotton
( ) Overgloves: Nitrile

( ) Heating Protection
( ) Sun Screen

BLOCK C

TASKS: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
LEVEL: A - B - C - D - Modified
(x) Primary ( ) Contingency

Respiratory: ( ) Not needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not needed
( ) Safety Glasses:
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: ( ) Not needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots:

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit:
( ) Splash Suit
( ) Apron:
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not needed
( ) Undergloves:
( ) Gloves:
( ) Overgloves:

Other: specify below
( ) Tick Spray
( ) Flotation Device
( ) Heating Protection
( ) Sun Screen

BLOCK D

TASKS: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
LEVEL: A - B - C - D - Modified
( ) Primary (x) Contingency

Respiratory: ( ) Not needed
( ) SCBA, Airline
( ) APR
( ) Cartridge
( ) Escape Mask
( ) Other:

Head and Eye: ( ) Not needed
( ) Safety Glasses
( ) Face Shield
( ) Goggles
( ) Hard Hat
( ) Other:

Boots: ( ) Not needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit
( ) Splash Suit
( ) Apron
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall
( ) Other:

Gloves: ( ) Not needed
( ) Undergloves
( ) Gloves
( ) Overgloves

Other: specify below
( ) Tick Spray
( ) Flotation Device
( ) Heating Protection
( ) Sun Screen

HEALTH AND SAFETY PLAN FORM CDM Health and Safety Program		*This document is for the exclusive use of CDM and its subcontractors*		CAMP DRESSER & McKEE INC. PROJECT DOCUMENT #:
MONITORING EQUIPMENT:		*Specify by task. Indicate type as necessary. Attach additional sheets if needed.*		
INSTRUMENT	**TASK**	**ACTION GUIDELINES**		**COMMENTS**
Combustible Gas Indicator		0-10% LEL 10-25% LEL >25% LEL 21.0% O2 <21.0% O2 <19.5% O2	*No explosion hazard* *Potential explosion hazard; notify SHSC* *Explosion hazard; interrupt task/evacuate* *Oxygen normal* *Oxygen deficient; notify SHSC* *Interrupt task/evacuate*	(XX) Not Needed Team will take explosimeter readings in work zone and borehole head vicinity to determine whether flammable vapors or low oxygen conditions are present. Periodic readings, and more frequent readings when PID readings are elevated.
Radiation Survey Meter	1-2-3-4-5-6-7-8	3 x Background: >2mR/hr:	*Notify HSM* *Establish REZ*	(X) Not Needed
Photoionization Detector 11.4eV Lamp Type MiniRAE 2000 PID	1 - 3	*Specify:* 0 to 2 ppm: Level D 2 to 25 ppm: Level D - Use Vinyl Chloride detector tubes > 25 ppm: Leave area. Contact HSM.		( ) Not Needed Monitor breathing zone continuously. Compare action levels to time-averaged breathing zone measurements.
Flame Ionization Detector Type_____		*Specify:*		(X) Not Needed
Single Gas Type_Vinyl Chloride tubes Type_____	1 - 3	*Specify:* 0 to 0.5 ppm: Level D > 0.5 ppm: Leave Area. Contact HSM.		( ) Not Needed
Respirable Dust Monitor Type_____ Type_____	1 - 3	*Specify:* If team observes visible concentrations of airborne dust or dry, windy conditions that dust, team will leave area.		(X) Not Needed
Other *Specify:* Type_____ Type_____	1 - 3	*Specify:* If team notices unusual odors or irritation of the eye or throat, they will leave the area.		(X) Not Needed

HEALTH AND SAFETY PLAN FORM CDM Health and Safety Program	*This document is for the exclusive use of CDM and its subcontractors*	CAMP DRESSER & McKEE INC. PROJECT DOCUMENT #:

DECONTAMINATION PROCEDURES

ATTACH SITE MAP INDICATING EXCLUSION, DECONTAMINATION, AND SUPPORT ZONES AS PAGE TWO

Personnel Decontamination *Summarize below or attach diagram;*	**Sampling Equipment Decontamination** *Summarize below or attach diagram;*	**Heavy Equipment Decontamination** *Summarize below or attach diagram;*
CDM will wear protective gloves during sampling and purge water management. Team members will remove their protective clothing in the following order: 1. Equipment drop. 2. Glove removal 3. Hand and face wash.	Sampling equipment will be decontaminated by: 1. Gross mechanical removal of dirt. 2. Detergent in water wash. 3. Potable water rinse. 4. Distilled water rinse.	Decontaminate Drill Rig auger at each well /borehole location. CDM will require heavy equipment contractors to decontaminate their equipment before it leaves the site.
Containment and Disposal Method Disposable protective equipment will be containerized and disposed of off site.	**Containment and Disposal Method** Sampling equipment cleaning water solutions be will flowed through carbon and discharged to ground	**Containment and Disposal Method** Decon water will be flowed through carbon and discharged to ground

HEALTH AND SAFETY PLAN FORM | *This document is for the exclusive* | **CAMP DRESSER & McKEE INC.**

CDM Health and Safety Program | *use of CDM and its subcontractors* | **PROJECT DOCUMENT #:**

EMERGENCY CONTACTS	NAME	PHONE
Fire Department		911
Police Department		911
Ambulance		911
NYSDEC Spill Number	NYSDEC	800-457-7362
USEPA Release Report #:		800-424-8802
CDM 24-Hour Emergency #:		732 / 539 - 8128
Poison Control Center		800-562-8736
Underground Utility	UFPO	800-962-7962

CONTINGENCY PLANS: *Summarize below*

If CDM work team observes hazards for which they have not prepared, they will withdraw from the area and call the CDM Project Manager.

SHSC will designate evacuation routes. Teams will cease work if they see lightning or thunder storms in the area.

CDM may rely on instruments operated by contractor personnel only upon HSM approval. If contractor directs a higher level of protection than this plan does, CDM personnel will wear that level. CDM personnel may choose to wear more potection than directed by this plan.

Contractor will be expected to inspect its equipment and certify its suitability for the project to the CDM site health and safety coordinator.

HEALTH AND SAFETY PLAN APPROVALS

Prepared by Melissa Koberle Date 1/3/2007

HSM Signature Chris Marlowe Date 5/30/07

EMERGENCY CONTACTS	NAME	PHONE
CDM Health and Safety Manager	Chris Marlowe	732 / 590 - 4632
CDM Field Manager	Melissa Koberle	212-785-9160
CDM Site Safety Coordinator	Melissa Koberle	212-785-9160
Client Contact	Joseph Jones	(518) 402-9621
Other *(specify)*		
Environmental Agency		
State Spill Number	New York	(800) 457 - 7362
Fire Department		911
Police Department		911
State Police		911
Health Department		
Poison Control Center	Nationwide	800 / 222 - 1222
Occupational Physician	Kenneth Chase	800 / 777 - WOHA

HOSPITAL INFORMATION **PHONE**

Name: North Shore University Hospital
Phone: (516)-876-5200
Address: 972 Brush Hallow Rd #302, Westbury, NY
Route: Head EAST on MAIN ST and turn LEFT on URBAN AVE
LEFT on PROSPECT AVE and RIGHT on MAGNOLIA
RIGHT on BRUSH HALLOW Road

HEALTH AND SAFETY PLAN FORM
CDM Health and Safety Program
ROUTE TO HOSPITAL MAP:

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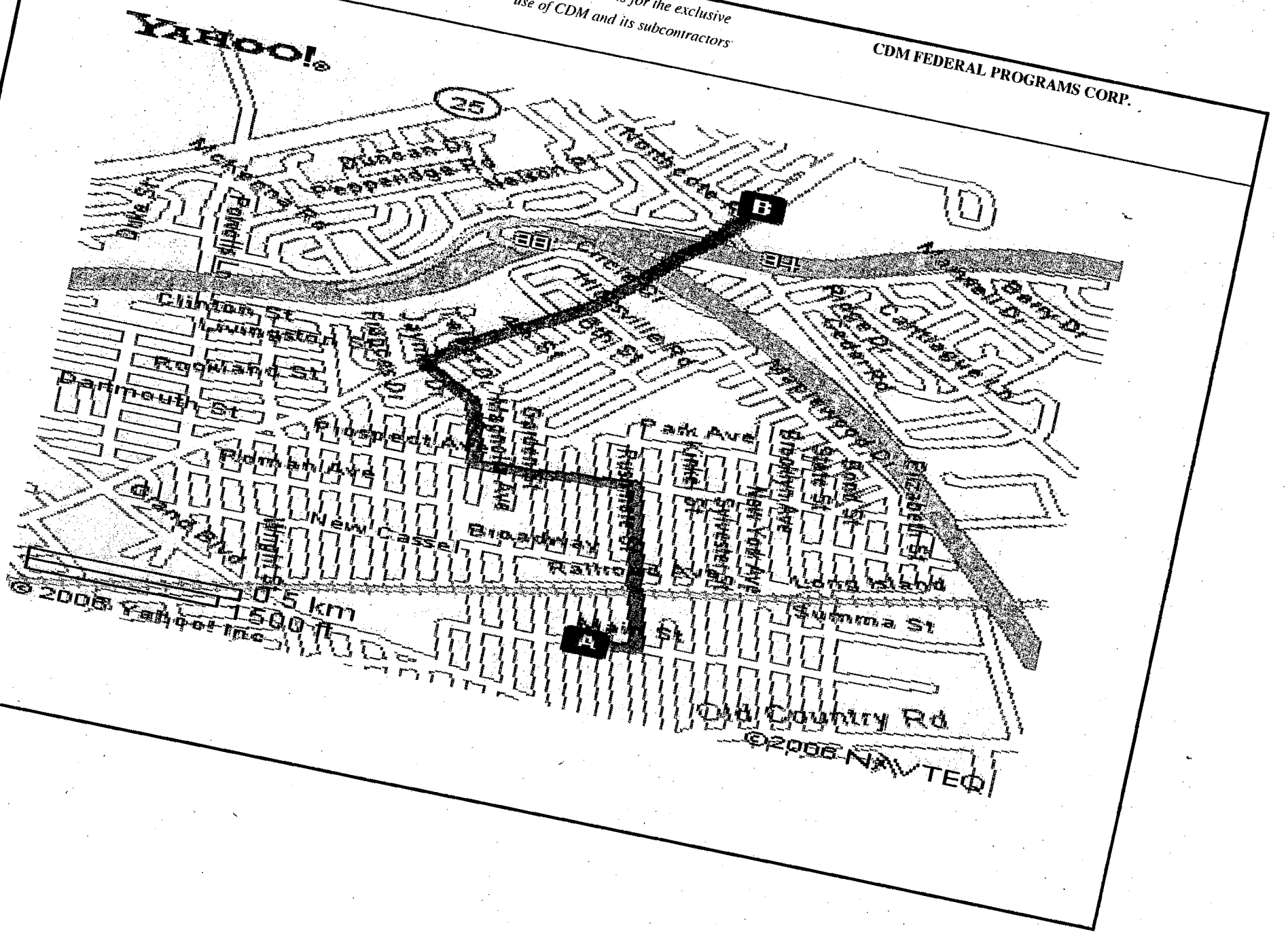
CDM FEDERAL PROGRAMS CORP.



HEALTH AND SAFETY PLAN SIGNATURE FORM

CDM Health and Safety Program

All site personnel must sign this form indicating receipt of the HASP. Keep this original on site or with the field manager. It becomes part of the permanent project files. Send a copy to the Health and Safety Manager (HSM).

SITE NAME/NUMBER: New Cassel Industrial Area

DIVISION/LOCATION: North Hempstead, New York

CERTIFICATION:

I understand, and agree to comply with, the provisions of the above referenced HASP for work activities on this project. I agree to report any injuries, illnesses or exposure incidents to the site Health and Safety Coordinator (SHSC). I agree to inform the SHSC about any drugs (legal and illegal) that I take within three days of site work.

PRINTED NAME	SIGNATURE	DATE

November 2005

Appendix D

Schedule 2.11

Schedule 2.11(a)

Summary of Work Assignment Price

Work Assignment Number D004437-8

1) Direct Salary Costs (Schedules 2.10(a) and 2.11(b))		$32,030
2) Indirect Costs (Schedule 2.10(g))		$53,778
3) Direct Non-Salary Costs (Schedules 2.10(b)(c)(d) and 2.11(c)(d))		$24,793
4) Subcontract Costs		
Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.10(e) and 2.11(e))		

	Name of Subcontractor	Services To Be Performed	Subcontract Price
i)	Ken Schider Consulting	W/MBE Reporting	$2,100
ii)			
iii)			
iv)			

A) Total Cost-Plus-Fixed-Fee Subcontracts	$2,100	
Unit Price Subcontracts (Schedule 2.10 (f) and 2.11 (f))		

	Name of Subcontractor	Services To Be Performed	Subcontract Price
i)	Zebra	Driller	$83,468
ii)	Chemtech Laboratories	MBE Laboratory	$61,712
iii)	Data Validation Services	WBE Data Validator	$6,020
iv)			

B) Total Unit Price Subcontracts	$151,200	
5) Subcontract Management Fee	$3,387	
6) Total Subcontract Costs (lines 4A + 4B + 5)		$156,686
7) Fixed Fee (Schedule 2.10(h))		$6,007
8) Total Work Assignment Price (Lines 1 + 2 + 3 + 6 + 7)		$273,294

Engineer/Contract # D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8

Date Prepared: _____

Schedule 2.11(b)
Direct Labor Hours Budgeted

Labor Classification	*IX*		*VIII*		*VII*		*VI*		*V*		*IV*		*III*		*II*		*I*		*Tech. Support*		*Admin Support*		*Total No. of Direct Labor Hours and Costs Budgeted*	
*Av. Salary Rate ($) _____ Year 2006	$61.60		$60.04		$53.83		$43.39		$36.59		$36.53		$30.02		$25.43		$23.75		$0.00		$19.94		0	
Description	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 1 Work Plan Development	3.5	$216	7	$420	14	$754	7	$304	35	$1,281	7	$256	21	$630	35	$890	0	$0	0	$0	7	$140	137	$4,890
Task 2 Soil Vapor Investigation	3.5	$216	0	$0	21	$1,130	7	$304	28	$1,025	0	$0	14	$420	504	$12,817	14	$333	0	$0	7	$140	599	$16,383
Task 3 Field Documentation and Reporting	7	$431	7	$420	28	$1,507	7	$304	112	$4,098	7	$256	14	$420	112	$2,848	14	$333	0	$0	7	$140	315	$10,757
Total Hours	14		14		63		21		175		14		49		651		28		0		21		1050	
Total Direct Labor Cost ($) Year 2006		$862		$841		$3,391		$911		$6,403		$511		$1,471		$16,555		$665		$0		$419		$32,030

* For multiple years use one average salary rate row for each year and each years subtotal Labor Cost.

Engineer/Contract # D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8

Date Prepared: _____

Schedule 2.11(b-1)
Direct Administrative Labor Hours Budgeted

Labor Classification		*IX*	*VIII*	*VII*	*VI*	*IV*	*III*	*II*	*I*	*Admin. Support*	*Total No. of Direct Labor Hrs.*
Task 1	Work Plan Development	3.5	0	0	0	0	0	0	0	7	10.5
Task 2	Soil Vapor Investigation	3.5	0	0	0	0	0	0	14	7	24.5
Task 3	Field Documentation and Reporting	7	0	0	0	0	0	0	14	7	28
TOTAL HOURS		14	0	0	0	0	0	0	28	21	63

Contract/Project administrative hours would include (subject to contract allowability) but not necessarily be limited to the following activities:

1) Work Plan Budget Development
   > Conflict of Interest Check
   > Budget schedules & supporting documentation
2) Review work assignment (WA) progress
   > Conduct progress reviews
   > Prepare monthly project report
   > Update WA progress schedule
   > Prepare M/WBE Utilization Report
3) Contractor Application for Payment (CAP)
   > Oversee and prepare monthly CAP
4) Program Management
   > Prepare monthly cost control report
   > Cost control reviews
<> Staffing Plans
   >Manage subcontracts
   > NSPE list update
   > Equipment inventory
5) Miscellaneous
   > Conduct Health and Safety Reviews
   > Word processing and graphic artists
   > Report editing

Contract/Project Administration hours would **not** include:
1) QA/QC reviews
2) Techincal oversight by management
3) Develop subcontracts
4) Work plan development
5) Review of deliverables

CDM

Schedule 2.11 (c)

Direct Non-Salary Costs
Work Assignment Number **D004437-8**

	Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
A)	Other			
1)	Shipping	$214	7	$1,498
2)	Outside Printing	$29	7	$203
B)	Miscellaneous			
1)	Meals (per day)	$64	42	$2,688
2)	Lodging (per day)	$162	42	$6,804
3)	Mileage (per mile)	$0.45	0	$0
4)	PPE (level D) (per day)	$15	42	$630
5)	Tolls	$15	21	$315
6)	LVE	$1	420	$420
7)	EDR	$500	0	$0
		Total Direct Non-Salary Costs		$12,558

Work Assignment No. D004437-8

Schedule 2.11(d) 3

Maximum Reimbursement Rate for Vendor Rented Equipment

Item	Max Reimbursement Rate ($)*	Est. Usage (unit of time)	Est. Rental Cost ($) (Col. 2 x 3)
GPS	$200	21	$4,200
Helium Meter (per day)	$100	0	$0
Multi-meter (per day)	$100	21	$2,100
PID (per day)	$100	21	$2,100
Truck (per day)	$135	21	$2,835
Helium Gas	$60	0	$0
		TOTAL:	**$11,235**

* Reimbursement will be made at the Maximum Reimbursement rate or the actual rental rate, whichever is less.

Schedule 2.11 (e)

Cost-Plus-Fixed-Fee Subcontracts
Work Assignment Number D004437-8

Name of Subcontractor	Services to be Performed	Subcontract Price
Ken Shider Consulting	M/WBE Reporting	$2,100

A) Direct Salary Costs

Professional Responsibility Level	Labor Classification	Ave. Reimbursement Rate ($/Hr.)	Max. Reimbursement Rate ($/Hr.)	Est. No. of Hours	Total Est Direct Salary Cost (Ave. Reimb. Rate x Est. # of Hrs.)
IV	Eng/Scientist 4	$32.60	$36.78	28	$913

Total Direct Salary Costs: $913

Footnotes:

1) The labor rate averages and maximums shall be adjusted by a rate equal to the increase in the CPI index CUURA101SAO-"All Urban Consumers-New York-Northern N.J.-Long Island" for the previous year. This index is published by the U.S. Department of Labor's Bureau of Labor Statistics. The adjustment will be calculated every January and will be effective for subsequent work assignment billing and budgeting purposes.
2) Schedule 2.11(e) may be re-negotiated after four (4) years at the request of either party. Any revision as a result of re-negotiation will be subject to the approval of the Office of the State Comptroller.
3) The maximum annual escalation is limited to 5%.
4) Reimbursement will be limited to the lesser of either the individual's actual hourly rate or the maximum rate for each labor
5) Reimbursement will be limited to the maximum reimbursement rate for the professional responsibility level of the actual work
6) Only those labor classifications indicated with an asterisk will be entitled to overtime.
7) Reimbursement for technical time of principals, owners, and officers will be limited to the maximum reimbursement rate of that category, the actual hourly labor rate paid, or the State M-6 rate, whichever is lower.
8) Maximum reimbursement rates may be exceeded for work assignment activities that are under the jurisdiction of the Schedule of Prevailing Wage Rates set by the New York State Department of Labor.

B) Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 115 % or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Indirect Costs: $1,050

C) Maximum Reimbursement Rates for Direct Non-Salary Costs

Item		Max Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Est. Cost
1)	Travel	See Schedule 2.10 (d) for rates		
2)	Supplies			

Total Direct Non-Salary Costs: $0

D) Fixed Fee

The fixed fee is: 7%

Fixed Fee: $137

See Schedule 2.10 (h) for how the fixed fee should be claimed.

Schedule 2.11 (f)

Unit Price Subcontracts
Work Assignment Number **DO04437-8**

Name of Subcontractor	Services to be Performed	Subcontract Price	Management Fee
Zebra	Driller	$83,468	$0

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Est. Cost
MOB/DEMOB			
Mob/Demob	$241 /ls	7	$1,687
Vactron	$1,265 /day	21	$26,565
Steam Cleaner	$225 /day	21	$4,725
		Subtotal	$32,977
DRILL RIG AND CREW			
Truck Drill Rig and Crew	$1,425 /day	21	$29,925
Prevailing Wage Surcharge 2-men	$290 /day	21	$6,090
Grout Pump	$150 /day	21	$3,150
Soil Vapor Samples	$85 /sample	105	$8,925
Groundwater and Soil Samples	$49 /sample	49	$2,401
		Subtotal	$50,491
Subtotal-Subcontract Price			**$83,468**
Subcontract Management Fee*			**$0**
TOTAL			**$83,468**

Mob/Demob estimate is equivalent to one seventh of the total cost

Schedule 2.11 (f)

Unit Price Subcontracts
Work Assignment Number D004437-8

Name of Subcontractor **Chemtech**
Services to be Performed **MBE Laboratory**
Subcontract Price **$64,798**
Management Fee **$3,086**

Item	Max. Reimbursement Rate	Specify Unit	Est. No. of Units	Total Est. Cost
SAMPLING EQUIPMENT				
Summa Cannisters/Regulators	$150	Sample	140	$21,000
				$21,000
LABORATORY ANALYSIS				
TCL VOCs 8260 Water	$92.00	Sample	91	$8,372
TO-15 Air	$231.00	Sample	140	$32,340
			Subtotal	**$40,712**
			Subtotal-Subcontract Price	**$61,712**
			Subcontract Management Fee*	**$3,086**
			TOTAL	**$64,798**

* A subcontract management fee of 5% has been included for W/MBE subcontracts.

Schedule 2.11 (f)

Unit Price Subcontracts
Work Assignment Number D004437-8

Name of Subcontractor	Services to be Performed	Subcontract Price	Management Fee
Data Validation Services	WBE Data Validator	$6,321	$301

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Est. Cost
DATA VALIDATION			
TCL VOCs 8260	$20.00 /Sample	91	$1,820
TO-15	$25.00 /Sample	140	$3,500
TO-15 Dilution	$5.00 /Sample	140	$700
		Subtotal	$6,020
Subtotal-Subcontract Price			**$6,020**
Subcontract Management Fee*			**$301**
TOTAL			**$6,321**

* A subcontract management fee of 5% has been included for M/WBE subcontracts.

Schedule 2.11 (g)

Monthly Cost Control Report
Summary of Fiscal Information

Engineer Camp Dresser & McKee
Contract No. D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8
Task #/Name Task 1 - Work Plan Development
Complete 0%

Date Prepared 1/5/07
Billing Period
Invoice No.

Expenditure Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approved Budget*	*H* *Estimated Under/Over (G-F)*
1. Direct Salary Costs	$0	$0	$0	$0	$4,890	$4,890	$4,890	$0
2. Indirect Costs - 167.9%	$0	$0	$0	$0	$8,210	$8,210	$8,210	$0
3. Subtotal Direct Salary Costs and Indirect Costs	$0	$0	$0	$0	$13,099	$13,099	$13,099	$0
4. Travel	$0	$0	$0	$0	$0	$0	$0	$0
5. Other Non-Salary Costs	$0	$0	$0	$0	$1,000	$1,000	$1,000	$0
6. Subtotal Direct Non-Salary Costs	$0	$0	$0	$0	$1,000	$1,000	$1,000	$0
7. Subcontractors	$0	$0	$0	$0	$0	$0	$0	$0
7a. Subcontract Mgt. Fee	$0	$0	$0	$0	$0	$0	$0	$0
8. Total Work Assignment Cost	$0	$0	$0	$0	$14,099	$14,099	$14,099	$0
9. Fixed Fee	$0	$0	$0	$0	$917	$917	$917	$0
10.Total Work Assignment Price	$0	$0	$0	$0	$15,016	$15,016	$15,016	$0

Project Manager (Engineer) Maria Watt

Date 1/5/07

Schedule 2.11 (g)

Monthly Cost Control Report
Summary of Fiscal Information

Engineer Camp Dresser & McKee
Contract No. D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8
Task #/Name Task 2 - Site Characterizatioin
Complete 0%

Date Prepared 1/5/07
Billing Period
Invoice No.

Expenditure Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approved Budget*	*H* *Estimated Under/Over (G-F)*
1. Direct Salary Costs	$0	$0	$0	$0	$16,383	$16,383	$16,383	$0
2. Indirect Costs 167.9%	$0	$0	$0	$0	$27,508	$27,508	$27,508	$0
3. Subtotal Direct Salary Costs and Indirect Costs	$0	$0	$0	$0	$43,891	$43,891	$43,891	$0
4. Travel	$0	$0	$0	$0	$7,539	$7,539	$7,539	$0
5. Other Non-Salary Costs	$0	$0	$0	$0	$16,254	$16,254	$16,254	$0
6. Subtotal Direct Non-Salary Costs	$0	$0	$0	$0	$23,793	$23,793	$23,793	$0
7. Subcontractors	$0	$0	$0	$0	$153,300	$153,300	$153,300	$0
7a. Subcontract Mgt. Fee	$0	$0	$0	$0	$3,387	$3,387	$3,387	$0
8. Total Work Assignment Cost	$0	$0	$0	$0	$224,371	$224,371	$224,371	$0
9. Fixed Fee	$0	$0	$0	$0	$3,072	$3,072	$3,072	$0
10. Total Work Assignment Price	$0	$0	$0	$0	$227,443	$227,443	$227,443	$0

Project Manager (Engineer) Maria Watt

Date 1/5/07

Schedule 2.11 (g)

Monthly Cost Control Report
Summary of Fiscal Information

Engineer Camp Dresser & McKee
Contract No. D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8
Task #/Name Task 3 - Field Documentation and Reporting
Complete 0%

Date Prepared 1/5/07
Billing Period
Invoice No.

Expenditure Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approved Budget*	*H* *Estimated Under/Over (G-F)*
1. Direct Salary Costs	$0	$0	$0	$0	$10,757	$10,757	$10,757	$0
2. Indirect Costs 167.9%	$0	$0	$0	$0	$18,061	$18,061	$18,061	$0
3. Subtotal Direct Salary Costs and Indirect Costs	$0	$0	$0	$0	$28,817	$28,817	$28,817	$0
4. Travel	$0	$0	$0	$0	$0	$0	$0	$0
5. Other Non-Salary Costs	$0	$0	$0	$0	$0	$0	$0	$0
6. Subtotal Direct Non-Salary Costs	$0	$0	$0	$0	$0	$0	$0	$0
7. Subcontractors	$0	$0	$0	$0	$0	$0	$0	$0
7a. Subcontract Mgt. Fee	$0	$0	$0	$0	$0	$0	$0	$0
8. Total Work Assignment Cost	$0	$0	$0	$0	$28,817	$28,817	$28,817	$0
9. Fixed Fee	$0	$0	$0	$0	$2,017	$2,017	$2,017	$0
10. Total Work Assignment Price	$0	$0	$0	$0	$30,835	$30,835	$30,835	$0

Project Manager (Engineer) Maria Watt

Date 1/5/07

Schedule 2.11 (g) - Supplemental

Cost Control Report for Subcontracts

Engineer Camp Dresser & McKee
Contract No. D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8

Date Prepared 1/5/07
Billing Period
Invoice No.

Subcontract Name	*A* *Subcontract Costs Claimed this Application Inc. Resubmittals*	*B* *Subcontract Costs Approved for Payment on Previous Applications*	*C* *Total Subcontract Costs to Date (A plus B)*	*D* *Subcontract Approved Budget*	*E* *Management Fee Budget*	*F* *Management Fee Paid*	*G* *Total Costs to Date (C plus F)*
1. Zebra	$0	$0	$0	$83,468	$0	$0	$0
2. Chemtech (MBE Lab)	$0	$0	$0	$61,712	$3,086	$0	$0
3. Data Validation Services (WBE)	$0	$0	$0	$6,020	$301	$0	$0
4 Ken Shider Consulting (MBE)	$0	$0	$0	$2,100	$0	$0	$0
TOTALS	$0	$0	$0	$153,300	$3,387	$0	$0

Project Manager (Engineer) Maria Watt **Date** 1/5/2007

NOTES:

1) Costs listed in Columns A, B, C & D do not include any management fee costs.
2) Management fee is applicable to only properly procured, satisfactorily completed, unit price subcontracts over $10,000.
3) Line 11, Column G should equal Line 7 (Subcontractors), Column D of Summary Cost Control Report.

Schedule 2.11(h)

Monthly Cost Control Report
Summary of Labor Hours
Number of Direct Labor Hours Expended to Date/Estimated Number of Direct Labor Hours to Completion

Engineer/Contract # D004437
Project Name New Cassel Industrial Area
Work Assignment No. D004437-8

Date Prepared _____
Billing Period _____
Invoice No. _____

NSPE Labor Classification	*IX Exp/Est*	*VIII Exp/Est*	*VII Exp/Est*	*VI Exp/Est*	*V Exp/Est*	*IV Exp/Est*	*III Exp/Est*	*II Exp/Est*	*I Exp/Est*	*Admin.*	*Total No. of Direct Labor Hrs. Exp/Est*
Task 1	0 / 3.5	0 / 7	0 / 14	0 / 7	0 / 35	0 / 7	0 / 21	0 / 35	0 / 0	0 / 7	0 / 137
Task 2	0 / 3.5	0 / 0	0 / 21	0 / 7	0 / 28	0 / 0	0 / 14	0 / 504	0 / 14	0 / 7	0 / 599
Task 3	0 / 7	0 / 7	0 / 28	0 / 7	0 / 112	0 / 7	0 / 14	0 / 112	0 / 14	0 / 7	0 / 315
Total Hours	0 / 14	0 / 14	0 / 63	0 / 21	0 / 175	0 / 14	0 / 49	0 / 651	0 / 28	0 / 21	0 / 1050

* Expended/Estimated

M/WBE-EEO WORKPLAN
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Grantee Consultant Contractor			Project Number
Camp Dresser & McKee			
Address: 100 Crosswick Park	City: Woodbury		Zip Code: 11797
Authorized Representative: Michael Memoli		Authorized Signature	
Address: 100 Crosswick Park	City: Woodbury	Zip Code: 11797	Phone No.: 516 496 8400
Minority Business Enterprise Officer: Kenneth Shider			Fax No.: 516 996 8864

Project Description (list separate contracts & estimates)

Contract No.	Description	Estimate
D004437	WA-8 New Cassel Industrial Area	$273,294

PROJECTED M/WBE AND EEO CONTRACT SUMMARY

		%	Amount			%	No./Employ
1.	Total Project Dollar Value	100	$273,294	5.	Total Employees	100	10
2.	MBE Project Goal	15	$40,994	6.	Total Minority Employees/Goal	10	1
3.	WBE Project Goal	5	$13,665	7.	Total Female Employees/Goal	10	1
4.	M/WBE Totals Combined	20	$54,659	8.	EEO Total Combined	20	2

OFFICE OF MINORITY & WOMEN'S BUSINESS PROGRAMS USE ONLY

Proposed Goals		Date Approved	Date Disapproved	Initials
MBE (%)	EEO-Minorities (%)			
WBE (%)	EEO-Women (%)			

Number Types of Contracts	Contract Breakdown	Amount
1. Laboratory	MBE Subcontractor Price Subcontract Management Fee Total	$61,712 $ 3,086 $64,798
2. M/WBE Reporting	MBE Subcontract Price Subcontract Management Fee Total	$2,100 $ 0 $2,100
3. Data Validation	WBE Subcontractor Price Subcontract Management Fee Total	$6,020 $ 301 $6,321

Attachment

CONSULTANT/CONTRACTOR DETAILED M/WBE-EEO UTILIZATION PLAN
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
(THE M/WBE-EEO GOALS MUST BE PLACED ON THE ENTIRE PROJECT COST)

Municipality/Consultant/Contractor Name: Camp Dresser & McKee			
Contract Type/Number: Standby Contract No. D004437 Investigation and Design Services		Contract Award Date: February 10, 2006	
Address: 100 Crosswick Park	City: Woodbury	State: New York	Zip Code: 11797
Project Owner Name:		Project/Grant No.:	
Address: 100 Crosswick Park	City: Woodbury	State: New York	Zip Code: 11797
Authorized Representative: Michael Memoli		Title: Partner	
Authorized Signature:			

EEO AND MBE/WBE CONTRACT SUMMARY(MUNICIPAL FORCE ACCOUNT N/A)

M/WBE CONTRACT SUMMARY	%	Amount	EEO CONTRACT SUMMARY	%	No./Emp.	Wk./Hrs.
1. Total Dollar Value of the Project	100	$273,294	6. Total for all Employees	100	10	1050
2. Total Dollar Value of the Prime Contract			7. Total Goal for Minority Employees	30	3	270
3. MBE Goal/Amount	24	$66,898	8. Total Goal for Female Employees	40	4	412
4. WBE Goal/Amount	2.2	$6,020	9. EEO Combined Totals	62	7	626
5. MBE/WBE Combined Totals	27	$72,918				

Office of Minority & Women's Business Programs Use Only

Proposed Goals		Date Approved	Date Disapproved	Initials
MBE (%)	EEO-Minorities (%)			
WBE (%)	EEO-Minorities (%)			

SECTION I - MBE INFORMATION: In order to achieve the MBE Goals, New York State Certified MINORITY-OWNED firms are expected to participate in the following manner

MBE Firm	Projected MBE Contract Amount and Award Date	Description of Work MBE	Contract Schedule/Start Date(s)	Contract Payment Schedule	Project Completion Date
Name: Chemtech Address: 284 Sheffield Street City: Mountainside State/Zip Code: NJ 07092. Telephone No.:	$ 61,712 DATE: 2/1/07	Analysis of soil vapor, groundwater and soil	2/1/07	1 payment at completion	3/30/07
Name: Kenneth Schider Address: City: State/Zip Code: Telephone No.:	$ 2,100 DATE: 7/17/06	M/WBE Quarterly Reports	7/13/06	2 payments: March 30 June 30	6/30/07
Name: Address: City: State/Zip Code: Telephone No.:	$ DATE:				

SECTION II - WBE INFORMATION: In order to achieve the WBE Goals, New York State Certified WOMEN-OWNED firms are expected to participate in the follow manner

WBE Firm	Projected WBE Contract Amount and Award Date	Description of Work WBE	Contract Schedule/Start Date(s)	Contract Payment Schedule	Project Completion Date
Name: Data Validation Address: 120 Cobble Creek City: North Creek State/Zip Code: NY 12853. Telephone No.:	$ 6,020 DATE: 2/1/07	Data Validation-DUSR Reports	12/19/06	1 payment at completion	4/30/07
Name: Address: City: State/Zip Code: Telephone No.:	$ DATE:				
Name: Address: City: State/Zip Code: Telephone No.:	$ DATE:				

SECTION III - EEO INFORMATION: In order to achieve the EEO Goals, Minorities and Females are expected to be employed in the following job categories for the specified amount of work hours.

		All Employees		Minority Employees			
Job Categories	Total Work Hours of Contract	Male	Female	African-American	Asian	Native American	Hispanic
Officials/ Managers	112	28	84	21			
Professionals	1050	567	455	21	357		
Technicians							
Sales Workers							
Office/Clerical							
Craftsman							
Laborers							
Services/ Workers							
Totals	1162	595	539	42	357		

Appendix E

Subcontractor Backup

New Cassel Industrial Area Project
Subcontractor Quote Comparison

Driller	Amount	Units	Zebra	Geologic(WBE)	LAWES (WBE)
MOB/DEMOB					
MOB/DEMOB	1	lump sum	$1,690	$3,000	$4,500
Vactron	21	days	$26,565	$47,250	$31,500
Steam Cleaner	21	days	$4,725	$3,150	$4,725
DRILL RIG AND CREW					
Truck Drill Rig and Crew	21	days	$29,925	$42,000	$50,400
Prevailing Wage Surcharge (2-men)	21	days	$6,090	$5,250	
Grout Pump	21	days	$3,150		$12,146
Vapor Samples	105	sample	$8,925	$2,625	$15,750
Groundwater Samples	49	sample	$2,401	$1,225	$358
		Totals	$83,471	$104,500	$119,379

Data Validator	Amount	Units	EDV (MBE/WBE)	ChemWorld	Data Validation Services (WBE)
TO-15	140	sample	$25	$25	$25
TO-15 Dilution	140	sample	$25	$25	$5
TCL VOCs 8260 Water	91	sample	$26	$23	$20
		Totals	$9,366	$9,093	$6,020

Lab	Amount	Units	Chemtech (MBE)	H2M	Upstate Labs
Summa Canister	140	ea	$150	$150	$150
TO-15 Air	140	ea	$231	$300	$245
TCL VOCs 8260 Water	91	ea	$92	$69	$110
		Totals	$61,712	$69,279	$65,310