SITE INVESTIGATION AND
REMEDIAL ALTERNATIVES REPORT
WORK PLAN

26-28 WHITESBORO STREET SITE
CITY OF UTICA, ONEIDA COUNTY, NEW YORK

(BROWNFIELDS SITE NO. B00063-6)

RECEIVED
2002

Prepared For

CITY OF UTICA

By

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
SYRACUSE, NEW YORK

JUNE 2002

SITE INVESTIGATION AND REMEDIAL ALTERNATIVES REPORT
WORK PLAN
WHITESBORO STREET SITE

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1.0 INTRODUCTION

Dvirka and Bartilucci Consulting Engineers (D&B) has been contracted by the City of Utica to conduct two Site Investigation/Remedial Alternatives Reports (SI/RARs) under the City's Brownfields Program and the New York State 1996 Clean Water/Clean Air Bond Act Environmental Restoration Projects Program. The SI/RARs involve conducting investigations and remedial alternative assessments for the 26-28 Whitesboro Street Site, Brownfields Site Number B00063-6 and the 1000 Columbia Street Site, Brownfields Site Number B00061-6.

The City of Utica Brownfields Initiative has been undertaken to assess abandoned properties currently owned by the city. In 1999, the city was awarded an $87,000 grant from the New York State Brownfields Program to conduct pre-remediation activities at the Whitesboro Street Site. The objective of Utica's Brownfield Initiative is to prepare sites for cleanup and redevelopment.

This Work Plan presents the components of the SI/RAR and a general description of the tasks to be performed for the Whitesboro Street Site. In addition, this Work Plan includes administrative details regarding project staffing, proposed subcontractors and schedule. Implementation of the Work Plan will result in site specific data and interpretations that will define the nature, extent and source of contamination, the risks associated with the contamination, and the development and evaluation of alternatives for remediation of the site.

2.0 BACKGROUND INFORMATION

2.1 Site Location, Ownership and Access

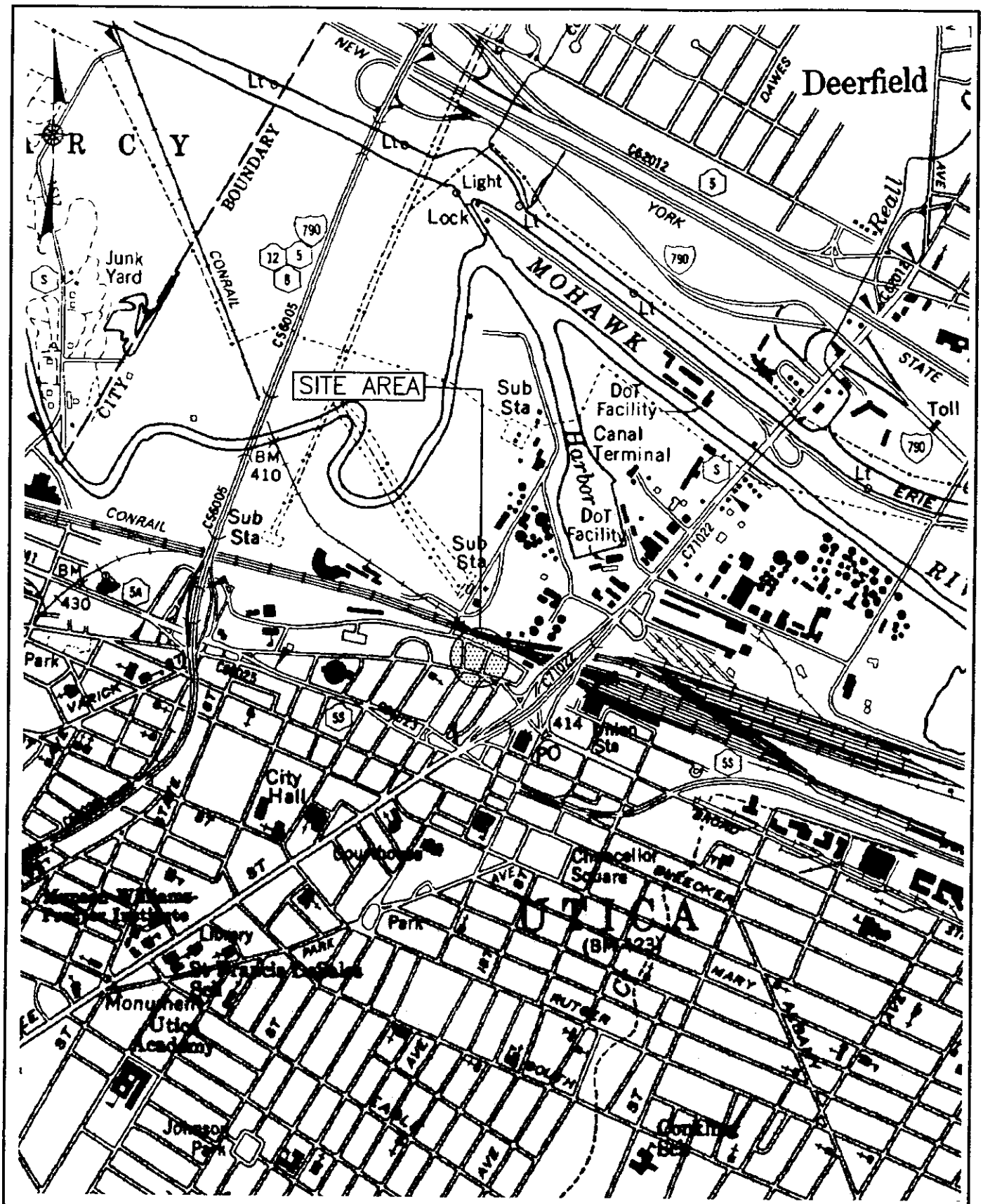
The Whitesboro Street Site is located on the north side of Whitesboro Street and is bounded on the east by Division Street, north by Water Street and west by vacant land. The site is located in the City of Utica, Oneida County, New York (see Figure 2-1). The site is owned by the City of Utica. The site consists of vacant land and access is unrestricted.

2.2 Site Description

The 26-28 Whitesboro Street property is approximately 1.6 acres in size (see Figure 2-1) and consists of eight individual tax parcels. The property is currently vacant with a ground surface that is flat and contains no buildings or structures. The site is surrounded by a highway, commercial buildings and businesses in downtown Utica. Several sets of railroad tracks are located north of the site. Beyond the railroad tracks, the Mohawk River flows in an easterly direction. South of the site, the ground surface elevation rises gradually into the City of Utica.

2.3 Site History

Historic records indicate that as of 1883, the property was listed as part of the Butterfield estate and had been partially developed with brick and stone buildings. By 1920, the western portion of the property (Area 1) was the occupied by Horrocks Ibbotson and Company, a manufacturer of fishing rods. This use reportedly continued until 1982. Between 1983 and 1993, the property was owned by various companies, including the Baggs Square Corporation from 1983 to 1991 and the Cajan Realty Corporation from



26-28 WHITESBORO STREET SITE
CITY OF UTICA, NEW YORK

SITE LOCATION MAP

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FIGURE 2-1

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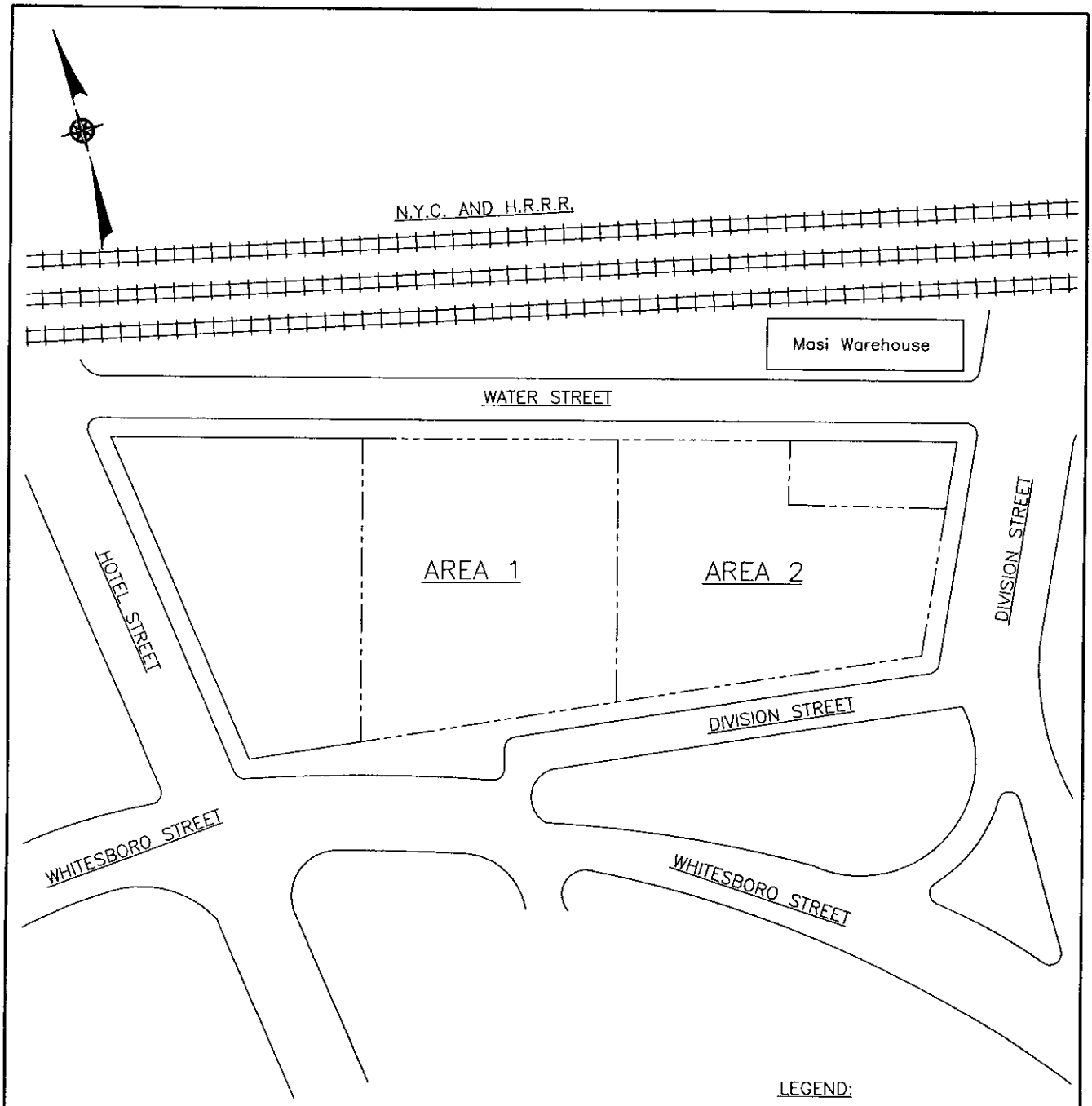

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26-28 WHITESBORO STREET SITE
CITY OF UTICA, NEW YORK

SITE PLAN

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FIGURE 2-2

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1991 to 1993. In 1993, the City of Utica acquired the property in lieu of back taxes. In 1994 or 1995, the existing building was destroyed by fire and subsequently demolished.

The eastern portion of the property (Area 2) was occupied by various hotels from at least 1925 until at least 1973. Property ownership information is unknown. In 1993, the City of Utica acquired the property in lieu of back taxes. The New York State Department of Environmental Conservation (NYSDEC) site designation for Areas 1 and 2 is B00063-6.

2.4 Previous Investigations

In 1997, a Phase I Environmental Site Assessment (ESA) was prepared by Dames and Moore, Inc. for the 26-28 Whitesboro property. Subsequently, a limited Phase II ESA was conducted in Area 1 of the property in 1997. The Phase II ESA included excavation of eight test pits and construction of twelve soil borings. Total volatile organic compounds (VOCs) measured in headspace from soil samples collected from the test pits and soil borings indicated the presence of contaminated soil in the north central portion of Area 1, although the specific compounds and extent of contamination were not quantified. Based on these results, Spill Number 97-09722 was issued by NYSDEC for the property. Analytical results from one groundwater sample collected from the middle of Area 1 showed that groundwater was reportedly not impacted at levels above New York State groundwater standards.

In 1999, a second Phase II ESA was conducted at the property. Thirteen additional soil borings and temporary wells were constructed in Area 1, and Area 2 was investigated through excavation of three test pits and construction of 15 soil borings. Samples collected from Area 1 confirmed the presence of soil contamination by petroleum related volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) and indicated limited groundwater contamination by petroleum

related VOCs and SVOCs near the northern property boundary. The report for this ESA concluded that the detected contamination was the result of a fuel oil release.

Analytical results for soil samples collected from the soil/groundwater interface in Area 2 contained compounds typically found in gasoline. Based on these results, the report concluded that the central portion of Area 2 had historically been impacted by a gasoline spill.

3.0 SCOPE OF WORK

The purpose of the Whitesboro Street Site Investigation is to determine the nature, extent and source of potential contamination, ascertain whether complete routes of exposure to site contaminants exist, and develop a remedial action that will be protective of human health and the environment. The scope of work will be sufficient for the City of Utica to plan redevelopment of the site.

The approach to the investigation is to review existing data, fill data gaps, and interpret the old and new data on a site-wide basis. Using this information, a qualitative human health and environmental exposure assessment will be performed. Based on the findings of the investigation and exposure assessment, remedial measures will be evaluated in a remedial alternatives analysis and a remedy recommended.

The project will be divided into four components as follows:

Task 1 – Site Characterization
Task 2 – Human Health Exposure Assessment
Task 3 – Site Investigation Report
Task 4 – Remedial Alternatives Report

Each of the four components is described below.

3.1 Site Characterization

The field investigation elements for the Whitesboro Street Site will include the following:

- Base Map Development;
- Geophysical Survey;

- Radiation Screening Survey;
- Surface Soil Sampling;
- Subsurface Soil Sampling;
- Groundwater elevation measurements; and
- Groundwater Sampling.

A summary of the field investigation program is provided in Table 3-1. A summary of the sampling program is provided in Table 3-2. Further description of site activities, sampling procedures and decontamination procedures are provided in Sections 5 and 6 of this document. The site specific Health and Safety Plan is presented in Section 7 and the Citizen Participation Plan is contained in Section 8.

3.2 Human Health Exposure Assessment

A Human Health Exposure Assessment will be prepared for the site in conformance with the approved Work Plan. Potential contaminants of concern (COCs) and media of concern will be determined by comparison of the sample analytical results to NYSDEC groundwater standards/guidelines and recommended soil cleanup objectives. The exposure assessment will be based on the intended use of the site and consideration of surrounding land uses (e.g., residential, recreational, commercial or industrial). The evaluation of human health risks will be based on potential contact with on-site surface soil, subsurface soil, groundwater and groundwater vapors, if contaminated, and potential for off-site migration. The potential for unacceptable human health risks will be based on NYSDEC Technical Administrative Guidance Memorandum (TAGM) No. 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels."

Following screening, a determination of acceptable or unacceptable risk will be made based on the potential for exposure. Potential exposure will be addressed in consideration of inhalation, ingestion and dermal contact.

Table 3-1

WHITESBORO STREET SITE
FIELD INVESTIGATION SUMMARY

Program Element	Description	Rationale
1. Base Map Development	A base map for the site will be compiled from an existing tax map measurements made by onsite personnel. The map will include the locations of geophysical lines, sample locations and boring locations measured from objects, such as curbing, fire hydrants or other fixed objects on, or adjacent to, the site.	Documentation of test locations and results will provide the appropriate information required to conduct remedial measures, if required.
2. Radiation Survey	A hand-held radiation meter will be used to determine radiation levels on-site and a comparison will be made to off-site background levels. The radiation survey will include Areas 1 and 2 and will be conducted along a grid system that will be established in the field using a tape measure and wooden stakes. The grid area will also be utilized for the geophysical survey described below.	Since the source and composition of the fill material are unknown, a radiation screening survey will be conducted at the property.
3. Geophysical Survey	A geophysical survey will be conducted in Areas 1 and 2 to identify the locations of possible USTs, dry wells or other subsurface metallic objects. The geophysical survey will be using electromagnetic and ground penetrating radar (GPR) surveying techniques.	Subsurface soil and groundwater contamination have been identified in previous investigations, but no sources have been identified.
4. Surface Soil Sampling	Eight (8) surface soil samples (0-2 inches below ground surface) will be collected at various locations on the site. Four samples will be collected from Area 1 and four samples from Area 2. Samples will be collected from areas of stressed vegetation or stained soil as well as locations that appear representative of typical site conditions. Surface soil samples will be analyzed for semi volatile organic compounds (SVOCs), pesticides, PCBs, target analyte list (TAL) metals and cyanide.	To facilitate redevelopment of the property, characterization of surface soil quality will be required by the NYSDEC and the New York State Department of Health (NYSDOH).

Table 3-1

WHITESBORO STREET SITE
FIELD INVESTIGATION SUMMARY

Program Element	Description	Rationale
5. Subsurface Soil Sampling	Twelve (12) subsurface soil samples will be collected from direct push soil borings conducted in Area 1 and Area 2 to characterize subsurface soil conditions. Boring locations will be determined by the results of the geophysical survey. One sample will be collected from each boring based upon visual and PID screening. If screening provides no indication of contaminants, then the sample will be collected from a zone just above the water table Soil samples will be analyzed for volatile organic compounds (VOCs), SVOCs, TAL metals and cyanide.	Previous investigations identified fuel oil contamination in subsurface soils, however, the use of diesel fuel at the property appears to be inconsistent with its historic use as a fishing rod manufacturing facility. Further sampling and analysis is required to characterize contaminants.
6. Groundwater Sampling	Twelve (12) groundwater samples will be collected from direct push borings located in Area 1 and Area 2 to provide shallow groundwater quality information. The samples will be analyzed for VOCs + MTBE, SVOCs, and TAL metals.	Previous investigations identified fuel oil contamination in subsurface soils, however, the use of diesel fuel at the property appears to be inconsistent with its historic use as a fishing rod manufacturing facility. Further sampling and analysis is required to characterize contaminants.

Table 3-2
WHITESBORO STREET SITE
SAMPLING SUMMARY

Program Element	Medium	Sample Type/Depth	Number of Samples	Equipment	Laboratory Analyses
26-28 Whitesboro Street					
Surface Soil Sampling (Area 1)	Soil	Grab sample from ground surface	4	Disposable polyethylene scoop	SVOCs, pesticides, PCBs, TAL metals, CN
Surface Soil Sampling (Area 2)	Soil	Grab sample from ground surface	4	Disposable polyethylene scoop	SVOCs, pesticides, PCBs, TAL metals, CN
Subsurface Soil Sampling (Area 1)	Soil	Worst-case interval from above the water table	10	Soil probe with disposable liner and disposable polyethylene scoop	VOCs, SVOCs, pesticides, PCBs, TAL metals, CN
Subsurface Soil Sampling (Area 2)	Soil	Worst-case interval from above the water table	2	Soil probe with disposable liner and disposable polyethylene scoop	VOCs, SVOCs, pesticides, PCBs, TAL metals, CN
Groundwater Sampling (Area 1)	Groundwater	5 feet below water table from temporary well after purging 3-5 probe volumes	10	Disposable tubing equipped with check valve	VOCs + MTBE, SVOCs, TAL metals on 3 samples only
Groundwater Sampling (Area 2)	Groundwater	5 feet below water table from temporary well after purging 3-5 probe volumes	2	Disposable tubing equipped with check valve	VOCs + MTBE, SVOCs, TAL metals
Quality Assurance/ Quality Control Samples	Water	Trip blank	1	Distilled water provided by laboratory	VOCs

D&B has prepared a number of health risk and exposure assessments that follow the above approach, including the use of TAGM 4046 guidelines that have been approved by both NYSDEC and NYSDOH.

3.3 Site Investigation Report

The information and sample results obtained as part of the field program will be used to characterize the site, including determination of the nature, extent and source(s) of contamination. This information, together with the documentation of all field procedures performed, including sampling, testing, quality assurance/quality control, and health and safety, will be included in the Site Investigation Report. An example table of contents for the Site Investigation Report is provided in Table 3-3.

The report will present figures and maps illustrating the locations of all sampling points, including soil and groundwater probes, surface soil samples, geophysical survey locations and other relevant information as required, including possible underground storage tank (UST) locations and pertinent analytical results. If appropriate, cross sections will be prepared to describe the geologic and hydrogeologic characteristics of the site, as well as pertinent analytical information.

Analytical results will be presented in a spreadsheet format for each matrix by sample number and compared to the standards, criteria and guidelines (SCGs) and site-specific cleanup levels selected for the site. Samples exceeding the SCG cleanup levels, either as a function of individual contaminant or as a group of contaminants, will be highlighted and identified as contaminants of concern pending the results of the human health exposure assessment, which will be included in the Site Investigation Report.

As part of the Site Investigation Report, the contaminants of concern will be discussed and used to delineate the "source" and residual areas of contamination at the

Table 3-3
EXAMPLE TABLE OF CONTENTS
SITE INVESTIGATION REPORT

site, and to identify the routes of exposure, contaminant migration pathways and potential receptors and the media and areas of the site that require remediation. In addition, the volume of contaminated media associated with source areas, if present, will be calculated and mapped.

3.4 Remedial Alternatives Report

An evaluation of remedial alternatives will be performed based on the results of the site investigation and human health exposure assessment and identification of the media and areas of the site that require remediation. The methodology to the development of alternatives for evaluation will be in accordance with NYSDEC TAGM 4058 – Procedures Handbook for Environmental Restoration Projects. The approach will be to select those remedial actions that will consider future land use and integrate remediation with planned site development to the greatest extent possible.

The goal of site remediation is to restore the site to pre-release conditions to the extent practical and required by law. The goal of the remediation plan is to develop practical and cost-effective measures to eliminate or mitigate "sources" of contamination and threats to human health through site development. Integration of remediation with site development and improvement will minimize and may eliminate the cost of "remediation". An example table of contents for the Remedial Alternatives Reports is provided in Table 3-4. The report will be signed by a Professional Engineer licensed in New York State.

3.5 Public Meeting

Useful information about site history and site operations can often times be obtained from interested parties. Such information can be useful to the characterization of the site. Section 8 describes the plan for citizen participation for the project including

Table 3-4

EXAMPLE TABLE OF CONTENTS
REMEDIAL ALTERNATIVES REPORT

public announcements and meetings at various project milestones.

Included in the Citizen Participation Plan is one public informational meeting scheduled by the City of Utica after the completion of field activities and prior to finalization of the Remedial Alternatives Report. The purpose of the meeting will be to explain the findings of the site investigation and to introduce the proposed remedial measures to interested parties. A brief presentation will be followed by a question and answer, and comment period open to meeting attendees. Visual aids will be provided and may include enlarged site maps on poster boards, data summary sheets, photographs and/or slides of site activities.

4.0 PROJECT MANAGEMENT

4.1 Project Organization and Staffing Plan

D&B Consulting Engineers will be responsible for managing and performing the Site Investigation/Remedial Alternatives Report. D&B will be responsible for conducting the background information search, data review and site reconnaissance, preparation of the Work Plan, implementation of the Work Plan, preparation of the Site Investigation Report and Remedial Alternatives Report, and making presentations to the public.

Subcontractors that will provide services as part of the field investigation include Emilcott Associates, Inc. for health and safety, NAEVA Geophysics, Inc. for the geophysical surveys, Parratt-Wolff, Inc. for direct push soil and groundwater sampling, and Mitkem Corporation for sample analysis. Mitkem is a New York State Department of Health (NYSDOH) Environmental Laboratory Approved Program (ELAP) certified laboratory and approved by NYSDEC under the 2000 Analytical Services Protocol (ASP) Program. Mitkem is a New York State certified Minority Business Enterprise (MBE). Each of these subcontractors has extensive experience in hazardous waste projects and has worked together successfully with D&B as a team on similar projects.

The organization chart for this project is provided in Figure 4-1.

Provided below are project responsibilities and the key staff members who will undertake these responsibilities. All of these personnel have experience in the performance of site investigations and development of remedial plans at New York State Superfund and brownfield sites. As a result of this experience, these project personnel are familiar with NYSDEC and USEPA investigative procedures and protocols, including preparation of work plans and reports.

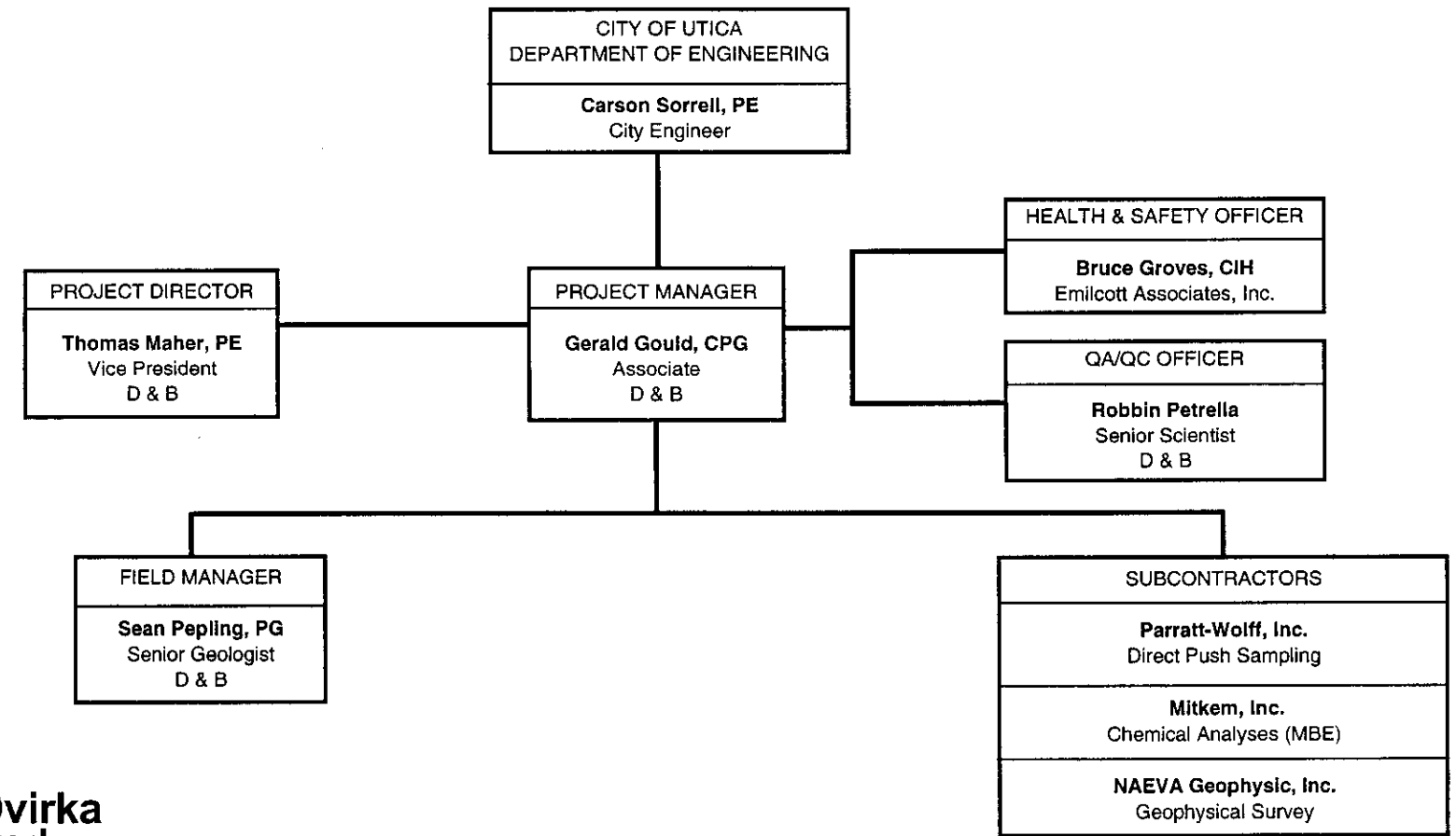
FIGURE 4-1

PROJECT TEAM ORGANIZATION CHART

26-28 WHITESBORO STREET

SITE INVESTIGATION AND REMEDIAL ALTERNATIVES REPORT

CITY OF UTICA, NEW YORK



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The Project Director will be Thomas Maher, who is a licensed professional engineer in New York State and Principal-in-Charge of the Division of Environmental Remediation, which is responsible for the firm's hazardous waste and Brownfield projects. Mr. Maher has over 27 years of technical and management experience in the field of environmental engineering, the last 18 of which have specialized in contaminated site investigation and remediation. He has been the Project Director or Manager for over 70 hazardous waste projects conducted under CERCLA, SARA, RCRA and the New York State Superfund Program. Mr. Maher has extensive experience working with NYSDEC, as well as with USEPA, and has directed/managed many projects at New York State Superfund and brownfield sites. He is the Project Director for the City of New York and the City of Glen Cove, New York; City of Stanford, Connecticut; and Suffolk County, New York brownfield projects, and is working with New York City and the City of Yonkers in the development and implementation of their brownfield programs.

The Project Manager will be Gerald Gould of the firm's Syracuse office. He is a Senior Geologist and Certified Professional Geologist, and has ten years experience in project management. Mr. Gould has been the Project Manager for a number of Environmental Site Assessments and Remedial Investigation/Feasibility Studies that have been successfully conducted at New York State Superfund sites. He has extensive experience working with NYSDEC. As a result of this experience, he is familiar with the planning and implementation of field investigations at contaminated sites, preparation of ESAs and RI/FS reports, and development of remediation plans that have been approved by NYSDEC. Mr. Gould has managed or conducted several related projects in New York, including soil and groundwater characterization at the Utica Alloys site, an RI/FS at the Town of Annesville Landfill and UST removal oversight for the City of Rome Department of Public Works.

The Field Manager will be Sean Pepling, who is a Geologist and be responsible for managing on-site field activities. Mr. Pepling has been responsible for field

management of a number of contaminated site investigations, including ESA and RI/FS projects conducted at New York State Superfund sites. He has also been responsible for assistance in preparation of ESA and RI/FS reports, in particular description of field activities and presentation of background information and data.

The Quality Assurance Officer will be Robbin Petrella, who is the corporate Quality Assurance Officer for D&B, and is responsible for the preparation and management of the firm's QA/QC program and procedures. She is also responsible for the preparation of site-specific Quality Assurance Project Plans and performance of field audits to ensure proper implementation of Sampling and Analysis Plans and QA/QC Plans, as well as preparation of data validation/usability reports, many of which have been prepared for New York State Superfund sites and approved by NYSDEC. Ms. Petrella has prepared a number of Quality Assurance Project Plans for brownfield sites, including those funded by USEPA and NYSDEC.

The Health and Safety Officer will be Bruce Groves, who is a Certified Industrial Hygienist. Mr. Groves has more than 25 years of comprehensive industrial hygiene, safety, environmental, loss control consulting and training experience. Mr. Groves' project experience involves health and safety program development and implementation for manufacturing, utility, engineering and public sector clients. He has directed health and safety oversight projects for engineering firms, construction firms and government agencies.

4.2 Minority/Woman-Owned Business Utilization

D&B has undertaken many site investigation and remediation projects, as well as other projects, which have had goals for the use of Minority and Women Business Enterprise (M/WBE) firms. Most of these projects, which have been under direct contract to New York State or through New York State Grant Programs under contract to

municipal clients, have had MBE and WBE goals of 15 percent and 5 percent, respectively, similar to the goals for this project under the Clean Water/Clean Air Title 5 Environmental Restoration Projects/Brownfield Program. In many of these projects, we have attained or exceeded the combined M/WBE goal of 20 percent.

For this project, we propose to use Mitkem Corporation for laboratory services. Mitkem is certified by New York State as a MBE. Based on the scope of work described in Section 3.0, we anticipate that M/WBE participation for the Whitesboro Street Site to be approximately 23% and the entire project (both properties) will be approximately 17%.

4.3 Project Management Reporting

The level of effort and budget for the scope of work described in Section 3.0 is presented by task in our cost proposal and will be tracked according to the project schedule presented in Figure 4-2.

4.4 Office Location and Logistics

The SI/RAR program will be managed from our Syracuse Office. Syracuse Office personnel will staff the site investigations and Emilcott Associates will provide site-specific health and safety plans. Support services, such as quality assurance/quality control, remedial engineering, drafting and word processing, will be provided, as needed, from our Woodbury, New York Corporate Office.

4.5 Project Meetings

As shown on the project schedule, one public meeting is planned and will be conducted in the City of Utica. The meeting will occur after the Site Investigation Reports has been finalized and the draft Remedial Alternatives Report has been prepared

to present the findings and proposed remediation plan to the affected and interested communities. One meeting will be held to present the results for both properties.

4.6 Project Schedule

The proposed schedule for this project is presented in Figure 4-2. The project has been scheduled in such a way as to meet the aggressive schedule requested by the City of Utica. As illustrated in the project schedule, key milestones and document deliverables are identified that will focus and monitor work progress. Specific time frames and dates have been established throughout the project schedule, including review periods by the City of Utica Department of Engineering and NYSDEC, to ensure timely completion of the project.

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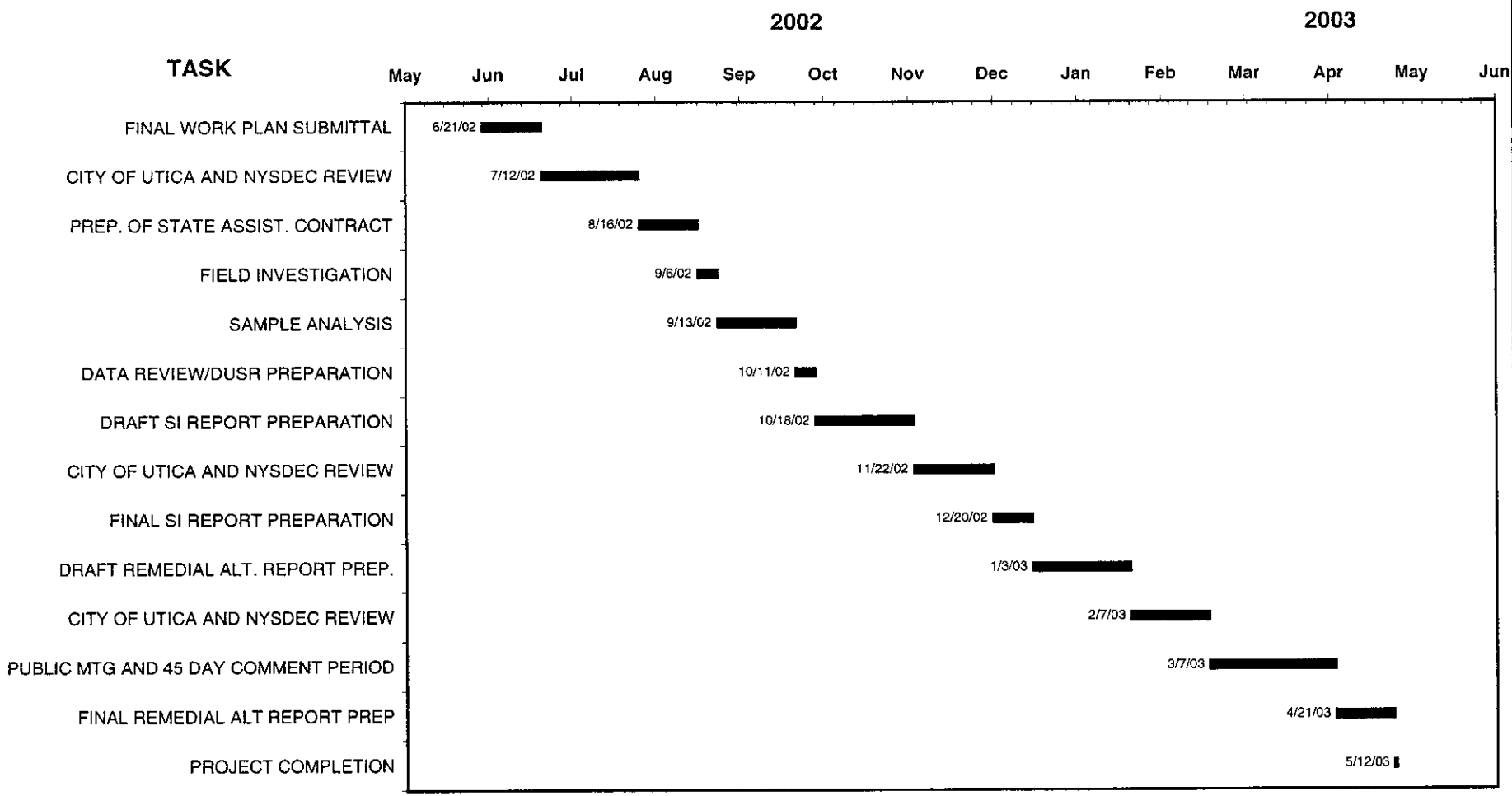
SITE INVESTIGATION AND REMEDIAL ALTERNATIVES REPORT
CITY OF UTICA, NEW YORK



PROJECT SCHEDULE

FIGURE 4-2

Revised 6/19/02

5.0 FIELD OPERATION AND INVESTIGATION PLAN

5.1 Site Management Plan

5.1.1 Site Access and Security

The 26-28 Whitesboro Street Site is located in the City of Utica. The site is approximately 1.6 acres in size and consists of eight property parcels. The site is roughly rectangular and is bounded to the south by Whitesboro Street, the east by Division Street and the north by Water Street. The west boundary of the property is a vacant parcel of land approximately 230 feet by 75 feet in area and located between Hotel Street and the site (see Figure 2-2). The site is vacant and covered with grass and weeds.

The site can be accessed by vehicle or by foot from any of the surrounding streets. Most equipment, materials and supplies to be used in the field investigation will be brought to the site and removed each day during the investigation. At night, if necessary, equipment left on site will be secured in or near support vehicles, and boreholes will be covered or surrounded with barriers.

A temporary decontamination pad will be installed on site during the field investigation. The decontamination pad will consist of a 10 foot by 10 foot wood frame constructed using 2 inch by 6 inch framing lumber. The frame will be covered with a double layer of 6 mil plastic sheeting to prevent decontamination water from flowing out of the decontamination area, as well as to allow the collection of standing water. At the conclusion of each day of drilling activities, wash water from decontamination will be allowed to drain onto the site unless materials encountered at the site are determined by PID screening to be contaminated to an extent requiring collection and off-site disposal. If decontamination water is collected, it will be pumped from the decontamination pad into reconditioned 55-gallon drums and staged on-site. At the completion of the drilling portion of the field program, the decontamination pad will be dismantled and removed from the site.

5.1.2 Field Office

Due to the relatively short duration (approximately 1 week) of field activities, there will be no field office on site. Project meetings will be held on site when necessary, and deliveries, telephone and fax communications will occur through the City Engineer's office or other means as may be necessary to maintain day to day project communications.

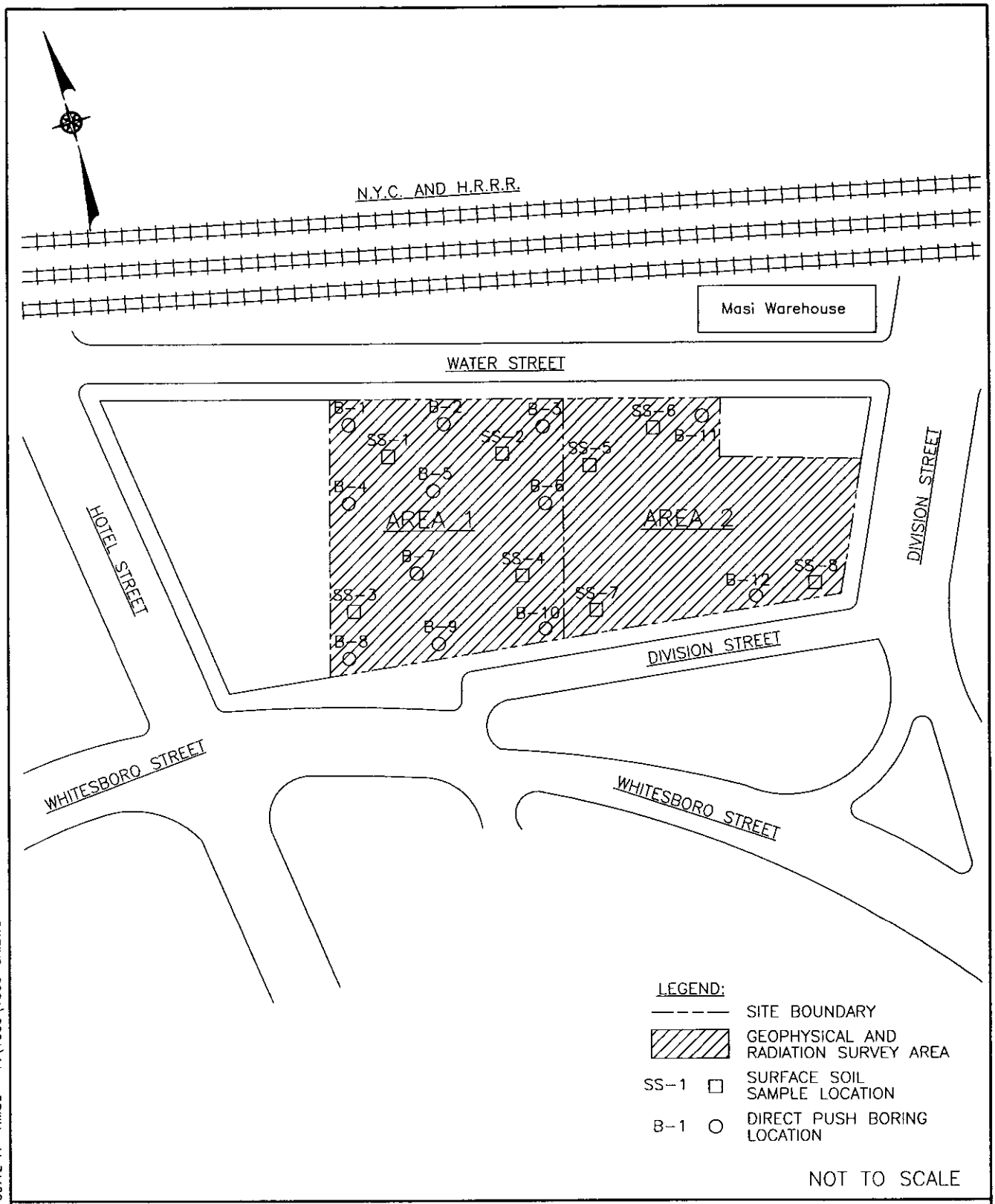
5.1.3 Organization and Responsibilities

Dvirka and Bartilucci Consulting Engineers will have prime responsibility for managing the site investigation field program. Subcontractors to D&B that will be involved in the field investigation are identified in Section 4.1. Duties of the subcontractors are also identified in Section 4.1.

5.2 Field Activities Plan

Based on results of previous investigations, the Whitesboro Street Site has been divided into two areas (see Figure 5-1). The division is based on the previous use of the site and the results of previous sampling. The division falls along property parcel lines. Area 1 occupies the western portion of the site and contains property parcel numbers 4.2, 4.3 and 4.4. Area 2 occupies the eastern portion of the site and contains property parcel numbers 4.6, 4.7, 4.8, 4.9 and 4.10.

The field investigation of the Whitesboro Street Site has been designed to target the specific characteristics of each area separately. Area 1 is the former location of a fishing rod manufacturing facility and samples from this area have indicated the presence of subsurface soil and groundwater contaminants above standards, criteria and guidance (SCGs). Further investigation is required at this location.



26-28 WHITESBORO STREET SITE
CITY OF UTICA, NEW YORK

SAMPLE LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
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FIGURE 5-1

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Results from subsurface soil samples collected in Area 2 indicate that the property has historically been impacted by gasoline. However, since the subsurface soil samples were collected from the soil/groundwater interface, PID readings measured in soil samples in this area are only 2.5 parts per million above background or less, and Area 2 has reportedly been occupied only by hotels since at least 1925, the detected soil contamination is likely residual contamination resulting from seasonal fluctuations of contaminated groundwater from an upgradient off-site source. Since the impacted soils are immediately above groundwater, it is unlikely that future development of the property will encroach on the contamination since the impacted soil is approximately 10 feet below ground surface. In addition, the low PID readings measured in the soil borings and test pits in Area 2 indicate that volatilization of VOCs from impacted soils is unlikely and remediation of subsurface soil and groundwater in this area is not warranted (pending results of the radiation and geophysical surveys). Therefore, limited investigation of subsurface soil or groundwater is proposed for Area 2.

The following is a description of the field activities to be conducted at the Whitesboro Street Site. These sections provide the scope of work to be performed under each task. Detailed procedures for sample collection, where applicable, are described in the Quality Assurance/Quality Control Plan in Section 6.0.

5.2.1 Base Map Development

The base map for the site will be compiled from previous investigation maps, existing tax maps and topographic maps. The map will include site features, such as estimated property lines, roads, existing structures, and include Areas 1 and 2 (see Figure 5-1). The base map will be field checked and modified during the site investigation. A revised base map will be constructed based on measurements made with a tape measure from fixed locations on or near the site. The map will include existing sample locations, if marked, property corners if they can be located, curbing, utility poles, buried utilities (marked by Dig Safe, NY prior to field work) and buildings. Sample locations, geophysical lines, boring locations and other pertinent features that are part of

this investigation will also be added to the base map. On-site underground utilities, if identified during the background search or field investigation, will also be presented on the base map.

5.2.2. Radiation Screening Survey

Results of the Phase II investigation indicate that extensive portions of the site are underlain by fill at depths up to 11 feet below ground surface. Since the source and composition of the fill material are unknown, a radiation screening survey will be conducted at the property. A hand-held radiation meter will be used to determine radiation levels on-site and a comparison will be made to off-site background levels. The radiation survey will include Areas 1 and 2 and will be conducted along a grid system that will be established in the field using a tape measure and wooden stakes. The grid area will also be utilized for the geophysical survey described below.

5.2.3 Surface Soil Sampling

Eight surface soil samples (0-2 inches below ground surface) will be collected from various portions of the site. Four samples will be collected from Area 1 and four samples will be collected from Area 2. A grid with 50 foot spacing will be established over Area 1 and Area 2 and will coincide with the grid used by Hygea, Inc. in the 1999 Phase II investigation. Samples at the grid nodes will be screened with a photoionization detector (PID). Samples for laboratory analysis will be collected from areas of elevated PID measurements, stressed vegetation or discolored soil, if present. At least one sample from Area 1 and one sample from Area 2 will be collected from a location that is assumed to be representative of background conditions on the site as determined by the visual observations of the field personnel. The remaining samples will be collected from locations that provide balanced coverage of the site surface. The proposed surface soil sample locations are presented in Figure 5-1. Actual sample locations will be determined in the field.

The surface soil samples will be analyzed for Target Compound List (TCL) semivolatile organic compounds (SVOCs), TCL Pesticides/PCBs, Target Analyte List (TAL) metals and cyanide. Although the detection of many of these parameters, especially pesticides and PCBs, is not expected, analysis for these parameters will provide complete characterization of surface soil quality. Surface soil samples will not be analyzed for volatile organic compounds (VOCs) since any VOCs once present in surface soil would likely have volatilized and no longer be present.

5.2.4 Geophysical Survey

A geophysical survey will be conducted to identify the locations of possible USTs, dry wells or other subsurface metallic objects (such as buried drums) that may be potential sources of contamination reported in previous investigations. The geophysical survey will be conducted by NAEVA Geophysics, Inc. using electromagnetic and ground penetrating radar (GPR) surveying techniques. Electromagnetic field readings will be measured using an EM-31 along a series of traverses spaced approximately 5 feet apart. An electromagnetic field intensity contour map will be generated on-site and significant anomalies will be marked on the ground surface. The anomalies will then be evaluated in a targeted GPR survey to more fully characterize the detected anomalies.

5.2.5 Subsurface Soil Sampling

It is expected that samples will be collected from 10 locations in Area 1 and two locations in Area 2. Subsurface soil samples will be collected at geophysical anomalies, within the previously identified area of impacted soil, in the eastern and western portions of Area 1 where samples were not previously collected, and at the downgradient property boundary.

Subsurface soil samples will be collected using a drill rig and direct push sampling techniques. Paratt-Wolff, Inc. will conduct the soil borings. Subsurface samples will be screened and logged by a D&B geologist. At each location, soil samples will be collected continuously to the water table. Each sample will be screened for volatile organic compounds

(VOCs) using an organic vapor analyzer equipped with a photoionization detector (PID) and geologically logged, including indications of contamination such as odors or staining. Due to the extensive fill present across the property and its proximity to the Mohawk River, subsurface soil samples will also be screened for methane using a methane meter. The worst-case interval based on PID readings, odors, staining, etc. will be submitted for laboratory analysis. The proposed subsurface soil sample locations are presented in Figure 5-1. Actual sample locations will be determined in the field based on geophysical results and site observations.

Subsurface soil samples will be analyzed for TCL SVOCs, TCL Pesticides/PCBs, TAL metals and cyanide. If PID readings indicate that the interval to be analyzed has been impacted by VOCs, then VOCs will also be analyzed. If no worst-case interval is evident, then the interval above the water table will be analyzed.

Cuttings generated from the construction of the boreholes are not expected to be highly contaminated and will be handled in accordance with NYSDEC TAGM No. 4032 "Disposal of Drill Cuttings," dated November 1989. The TAGM allows for on-site disposal of cuttings as long as certain criteria as to location and cover of cuttings is met.

5.2.6 Groundwater Sampling

Ten groundwater samples will be collected from Area 1 of the site and two groundwater samples will be collected from Area 2. Groundwater samples will be collected at each of the direct push boring locations described in section 5.2.5. At the completion of each subsurface soil boring, when saturated subsurface soils are encountered, the soil sampling tools will be removed from the borehole and replaced with a temporary, 1-inch diameter schedule 40 PVC well screen installed to a depth at least five feet below the water table. The borehole will be allowed to collapse around the PVC and a bentonite seal installed at ground surface. Flush mount curb boxes will be installed to protect the temporary wells. At the completion of the project, the curb boxes and temporary wells will be removed and the boreholes filled with bentonite.

Groundwater samples will be collected from the temporary wells using an inertia-lift pump with dedicated, disposable polyethylene tubing and stainless steel foot valve. The groundwater samples will be transferred from the tubing directly to sample containers. The temporary wells will then be removed and the borehole backfilled with drill cuttings and bentonite chips.

Groundwater samples will be analyzed for TCL VOCs and TCL SVOCs. Since pesticides and PCBs are not expected to be contaminants of concern at the site, and metals and cyanide are not readily leachable into groundwater, these parameters will not be analyzed in the groundwater samples. However, if elevated levels of pesticides, PCBs, metals or cyanide are detected in surface or subsurface soil samples, then collection of groundwater samples for analysis of the elevated parameters may be conducted at a later time.

Once the well has been sufficiently purged, sampling will begin. If groundwater recovery is very slow, it may be necessary to wait several hours, or overnight, for sufficient volume to become available for the necessary sample analyses. Specific monitoring well sampling procedures are described in Section 6.7.8.

5.2.7 Groundwater Level Measurement

Groundwater levels in the temporary monitoring wells will be measured after installation and again prior to groundwater sampling. Water level measurements will be made from measuring point on the top of the PVC well casing. On-site field personnel, using a Wild Heerbrugg Model NA24 "auto-level" and graduated stadia rod or similar instrumentation, will survey the temporary wells. Surveying will involve the establishment of a fixed, permanent on-site datum (e.g. manhole cover or fire hydrant) and measuring the elevation of the ground surface and top of PVC at each temporary well location relative to the datum. Elevation measurements will me made to the nearest 0.01 feet. Groundwater level data will be used to construct water table surface maps and to determine the local horizontal groundwater flow direction.

5.2.8 Ambient Air Monitoring

Air monitoring for organic vapors and methane will be conducted during field activities. Organic vapors will be screened using a PID or FID and methane will be monitored using a methane gas indicator.

6.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN

6.1 Project Identification

Project Name:	City of Utica Brownfields Investigation – Whitesboro Street Site
Project Requested By:	New York State Department of Environmental Conservation (NYSDEC)
Project Manager:	Carson Sorrell (City of Utica) Gerald Gould (D&B Consulting Engineers)
Quality Assurance Officer:	Robbin Petrella (D&B Consulting Engineers)
Field Operations Manager:	Sean Pepling (D&B Consulting Engineers)

6.2 Objective and Scope

The objective of the Whitesboro Street Site investigation is to determine the nature and extent of possible contamination, ascertain whether complete routes of exposure to site contaminants exist and develop a remedial action that will be protective of human health and the environment. The scope of work will be sufficient for the City of Utica to plan redevelopment of the site.

The purpose of this Quality Assurance/Quality Control (QA/QC) Plan is to develop and describe the detailed sample collection and analytical procedures that will ensure high quality, valid data for use in the SI/RAR.

6.3 Data Usage

The data generated from the field sampling program will be used to monitor for health and safety of workers at the site and the health and safety of persons off-site. As described above, it will also be utilized to evaluate on-site and off-site impacts due to surface soil, subsurface soil and

groundwater, prepare a qualitative exposure and environmental assessment and to select and prepare remedial alternatives for redevelopment of the site.

6.4 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the remedial investigation.

- Surface Soil: Eight (8) surface soil samples will be collected from areas of stressed vegetation if present, representative locations in Area 1 and Area 2 on the site and background locations. Samples will be collected at the discretion of the on-site geologist.

- Subsurface Soil: Ten (10) subsurface soil samples will be collected from soil borings installed at geophysical anomalies and other representative locations in Area 1. Samples will be collected at the discretion of the on-site geologist.

- Groundwater: Ten (10) groundwater samples will be collected from each of the 10 soil borings described above. The groundwater samples will be collected using direct push sampling techniques.

For a detailed discussion of the sampling program, and selection of sample matrices and locations, see the Field Operation and Investigation Plan (Section 5.0).

6.5 Analytical Parameters

Sample analysis for the surface soil, subsurface soil and groundwater samples collected will consist of all or part of the Target Compound List (TCL) +30 substances and Target Analyte List (TAL) parameters and cyanide identified in the 2000 NYSDEC Analytical Services Protocol (ASP).

Table 6-1 presents a summary of the parameters/sample fractions to be analyzed together with the sample location, type of sample, sample matrix, number of samples, frequency of sample collection, type of sample container, method of sample preservation, holding time and analytical method.

6.6 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 2000 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix. Note that quantification limits, estimated accuracy, accuracy protocol, estimate precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 2000 NYSDEC ASP and/or USEPA 5/99 SOW for organics and USEPA 1/00 SOW for inorganics, where applicable. Table 6-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the 2000 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the site investigation will be compared to specific standards, criteria and guidelines (SCGs). The SCGs to be utilized include:

Matrix	SCG
Surface and Subsurface Soil	NYSDEC Technical and Administrative Guideline Memorandum (TAGM) HWR-94-4046 for the Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 1994.
Sediment	NYSDEC Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediment dated January 1999.
Groundwater	Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) - Ambient Water Quality Standards and Guidance Values, dated June 1998.

Table 6-1

SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Probe Locations	Grab	Groundwater	Volatile Organics	Glass, clear/ 40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, VOC by Method OLM 04.2
	Grab	Groundwater	Base Neutral and Acid Extractable Organics	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for extraction, 40 days after extraction for analysis	NYSDEC ASP, SVOC Method OLM 04.2

VTSR - Verified Time of Sample Receipt at the laboratory
*Holding times based on the Generic Brownfields Quality Assurance Project Plan

Table 6-1 (continued)

SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Surface Soil (Area 1 and 2)	Grab	Surface Soil	Base Neutral and Acid Extractable Organics	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	7 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, SVOC Method OLM 04.2
	Grab	Surface Soil	Pesticides/PCBs	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	7 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Pest/PCB Method OLM 04.2
	Grab	Surface Soil	Metals	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	28 days after VTSR for Hg analysis, 6 months after VTSR for analysis of others	6/00 NYSDEC ASP, Superfund CLP Inorganics
	Grab	Surface Soil	Cyanide	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	14 days after VTSR for analysis	6/00 NYSDEC ASP, Method 335.2

VTSR - Verified Time of Sample Receipt at the laboratory

*Holding times based on the Generic Brownfields Quality Assurance Project Plan

**If Trace ICP is not used then SW-846 Methods for:

Metal	Method
Selenium	7740
Lead	7421
Thallium	7841
Mercury	7470
Arsenic	7060

Table 6-1 (continued)

SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Probe Locations	Grab	Subsurface Soil	Volatile Organics	Glass, clear/ 40 mL/2 ICHEM 200 series or equivalent	Cool to 4°C	10 days after VTSR for analysis	6/00 NYSDEC ASP, SVOC Method OLM 04.2
	Grab	Subsurface Soil	Base Neutral and Acid Extractable Organics	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	7 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, SVOC Method OLM 04.2
	Grab	Subsurface Soil	Pesticides/PCBs	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	7 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Pest/PCB Method OLM 04.2
	Grab	Subsurface Soil	Metals	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	28 days after VTSR for Hg analysis, 6 months after VTSR for analysis of others	6/00 NYSDEC ASP, Superfund CLP Inorganics
	Grab	Subsurface Soil	Cyanide	Glass, amber/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	14 days after VTSR for analysis	6/00 NYSDEC ASP, Method 335.2

VTSR - Verified Time of Sample Receipt at the laboratory

*Holding times based on the Generic Brownfields Quality Assurance Project Plan

Table 6-1 (continued)

SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time	Analytical Method
Site	Trip Blank	Water	Volatile Organics	Glass, clear/ 40 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	7 days after VTSR for analysis	6/00 NYSDEC ASP, VOC Method OLM 04.2

VTSR - Verified Time of Sample Receipt at the laboratory

Table 6-2

DATA QUALITY REQUIREMENTS

Parameter	Sample Matrix	CRDL*	Estimated Accuracy	Accuracy Protocol**	Estimated Precision	Precision Protocol**
Volatile Organics	Liquid Solid	10 10	0.87 - 1.18 ug/l	Vol. IV, Part XIX, Method 8240, Table 7	0.11 - 0.84 ug/l	Vol. IV, Part XIX, Method 8240, Table 7
Base Neutrals	Liquid Solid	10-50 330-1600	0.29 - 1.23 ug/l	Vol. IV, Part XIX, Method 8270, Table 7	0.13 - 1.05 ug/l	Vol. IV, Part XIX, Method 8270, Table 7
Acid Extractables	Liquid Solid	10-50 330-1600	0.29 - 1.23 ug/l	Vol. IV, Part XIX, Method 8270, Table 7	0.13 - 1.055 ug/l	Vol. IV, Part XIX, Method 8270, Table 7
Pesticides/PCBs	Liquid Solid	0.5-1.0 8.0-160	0.66 - 0.97 ug/l	Vol. IV, Part XIX, Method 8080, Table 4	0.15 - 0.47 ug/l	Vol. IV, Part XIX, Method 8080, Table 4
Metals	Liquid Solid	0.2-5000 0.2-5000	--	Vol. III, Part XIV, Method 200.7*** Table 4	--	Vol. III, Part XIV, Method 200.7*** Table 4
Cyanide	Liquid Solid	10 10	85% - 102% of recovery	Vol. III, Part XV, Method 335.2, Subpart 10	±0.005 - +0.094 mg/l	Vol. III, Part XV, Method 335.2, Subpart 10

*Contract Required Detection Limits - units are ug/l for liquid samples, ug/kg for solid samples.
** Reference: NYSDEC 10/95 ASP.
***If trace ICP is not used, then SW-846 Methods for:

Metal	Method
Selenium	7740
Lead	7421
Thallium	7841
Mercury	7470
Arsenic	7060

Table 6-2 (continued)

DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION, ACCURACY, AND COMPLETENESS

Matrix/Parameter	Precision (%)	Accuracy (%)
Soil/Sediment		
VOCs[a]	See Table 6-2a	See Table 6-2a
Extractables[a]	See Table 6-2b	See Table 6-2b
Pesticides/PCBs	See Table 6-2c	See Table 6-2c
Metals[b][c]	± 25	75-125
Water		
VOCs[a]	See Table 6-2a	See Table 6-2a
Extractables[a]	See Table 6-2b	See Table 6-2b
Pesticides/PCBs	See Table 6-2c	See Table 6-2c
Metals[b][c]	± 25%	75-125

NOTES:

(a) Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs, extractables, and pesticides/PCBs are listed in Table 6-2a, 6-2b and 6-2c, respectively. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

(b) Accuracy will be determined as percent recovery of matrix spikes when appropriate or the percent recovery of a QC sample if spiking is inappropriate. Precision will be determined as relative percent difference of matrix spike duplicate samples, or duplicate samples if spiking is inappropriate.

(c) Precision will be determined as the average percent difference for replicate samples. Accuracy will be determined as the percent recovery of matrix spike samples or laboratory control samples, as appropriate.

Source: 1995 NYSDEC ASP

Table 6-2a

DATA QUALITY REQUIREMENTS
ACCURACY REQUIREMENTS FOR VOCs

	Spike Recovery Limits (%)	
	Water	Low/Medium Soil
Surrogate Compound		
Toluene-d8	88-110	84-138
4-Bromofluorobenzene	86-115	59-113
1,2-Dichloroethane-d4	76-114	70-121
Matrix Spike Compound		
1,1-Dichloroethene	61-145	59-172
Trichloroethane	71-120	62-137
Chlorobenzene	75-130	60-133
Toluene	76-125	59-139
Benzene	76-127	66-142

Source: NYSDEC ASP

Table 6-2b

DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

Surrogate Compounds	Matrix	Precision	Accuracy %
d5-Nitrobenzene	Water	≤ 20	35-114
	Solid	≤ 25	23-120
2-Fluorobiphenyl	Water	≤ 20	43-116
	Solid	≤ 25	30-115
d14-Terphenyl	Water	≤ 20	33-141
	Solid	≤ 25	18-137
d5-Phenol	Water	≤ 20	10-110
	Solid	≤ 25	24-113
2-Fluorophenol	Water	≤ 20	21-110
	Solid	≤ 25	25-121
2,4,6-Tribromophenol	Water	≤ 20	10-123
	Solid	≤ 25	19-122
2-Chlorophenol-d4 (Advisory)	Water	≤ 20	33-110
	Solid	≤ 25	20-130
1,2-Dichlorobenzene-d4 (Advisory)	Water	≤ 20	16-110
	Solid	≤ 25	20-130

Table 6-2b (continued)

DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

	Matrix	Precision	Accuracy %
Matrix Spike Compounds			
1,2,4-Trichlorobenzene	Water	≤ 20	39-98
	Solid	≤ 25	38-107
Acenaphthene	Water	≤ 20	46-118
	Solid	≤ 25	31-137
2,4-Dinitrotoluene	Water	≤ 20	24-96
	Solid	≤ 25	28-89
Pyrene	Water	≤ 20	26-127
	Solid	≤ 25	35-142
N-Nitroso-Di-n-Propylamine	Water	≤ 20	41-116
	Solid	≤ 25	41-126
1,4-Dichlorobenzene	Water	≤ 20	36-97
	Solid	≤ 25	28-104
Pentachlorophenol	Water	≤ 20	9-103
	Solid	≤ 25	17-109
Phenol	Water	≤ 20	12-110
	Solid	≤ 25	26-90
2-Chlorophenol	Water	≤ 20	27-123
	Solid	≤ 25	25-102

Table 6-2b (continued)

DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

	Matrix	Precision	Accuracy %
Matrix Spike Compounds (continued)			
4-Chloro-3-methylphenol	Water	≤ 20	23-97
	Solid	≤ 25	26-103
4-Nitrophenol	Water	≤ 20	10-80
	Solid	≤ 25	11-114

* Accuracy will be determined as percent recovery of these compounds. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

Source:NYSDEC ASP

Table 6-2c

ADVISORY RECOVERY LIMITS
SURROGATE AND MATRIX SPIKE COMPOUNDS
FOR PESTICIDES/PCBs*

	Advisory Recovery Limits (%)	
	Water	Soil/Sediment
Surrogate Compound		
Decachlorobiphenyl	60-150	60-150
Tetrachloro-m-xylene	60-150	60-150
Matrix Spike Compound		
Lindane	56-123	46-127
Heptachlor	40-131	35-130
Aldrin	40-120	34-132
Dieldrin	52-126	31-134
Endrin	56-121	42-139
4,4'-DDT	38-127	23-134

*Samples do not have to be reanalyzed if these recovery limits are not met.

Source: NYSDEC ASP

The methods of analysis will be in accordance with the 2000 NYSDEC Analytical Services Protocols. Specific analytical procedures and laboratory QA/QC descriptions are not included in this QA/QC plan, but will be available upon request from the laboratory selected to perform the analyses. The laboratory will be New York State Department of Health (NYSDOH) Environmental Laboratory Approved Program (ELAP) certified for organic and inorganic analyses, and also NYSDOH Contract Laboratory Protocol (CLP) certified.

6.6.1 Data Representativeness

Representative samples will be collected as follows:

- Surface Soil - Samples will be collected from surface soil locations or test pits (backhoe bucket) using a sterile polystyrene scoop and/or wooden tongue depressor.

- Subsurface Soil - Samples will be obtained using a decontaminated split spoon or macro core sampler during soil boring construction and transferred into the container with a sterile polystyrene scoop and/or wooden tongue depressor.

Groundwater (Groundwater probe) - Samples will be obtained after the groundwater probe has been purged of three to five probe volumes and field measurements (pH, conductivity, temperature and turbidity) have stabilized, or until the well is purged dry (whichever occurs first) and allowed to recharge. Samples will be collected with disposable tubing equipped with a check valve.

- Equipment Calibration - Field equipment used for air monitoring will be calibrated daily before use according to the manufacturer's procedures.

- Equipment Decontamination - Non-sterile sampling equipment will be decontaminated prior to use at each location according to the NYSDEC approved procedures described on Section 6.8 of this QA/QC Plan.

6.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a NYSDOH ELAP and CLP certified laboratory, and the 2000 NYSDEC ASP. In addition, sample locations,

collection procedures and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

6.6.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory QA/QC protocols/standards, will be evaluated on a case-by-case basis.

6.7 Detailed Sampling Procedures

Two types of environmental samples will be collected from different locations as part of the brownfield investigation for the Whitesboro Street Site. These include soil and groundwater. Sample locations will consist of surface areas, soil borings, and groundwater probes. Actual locations are described in Section 5.0. Sampling procedures and equipment are described in this section. A summary of the sampling program, including sample media, locations, depths, equipment, rationale and analytical parameters is provided in Table 6-3. Sample collection will be performed in conformance with Dvirka and Bartilucci Consulting Engineer's Quality Assurance Procedures and Field Investigations Manual for Hazardous Waste Sites, which has been prepared in accordance with USEPA and NYSDEC requirements and guidelines.

When collecting soil samples, an attempt will be made to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the mechanism used to collect the soil must be properly decontaminated. An appropriate sampling device (i.e., decontaminated scoop or sterile wooden tongue depressor) will be utilized to transfer

Table 6-3
WHITESBORO STREET SITE
BROWNFIELD INVESTIGATION
SAMPLING MATRIX

Program Element	Environmental Media	Sample Type/Depth	Number of Samples	Equipment	Sample Analyses
Surface Soil Sampling	Surface Soil	Grab samples from 0-12 inches below the ground surface.	8	Disposable polyethylene scoop.	SVOCs, Pesticides, PCBs, TAL metals and CN
Subsurface Soil Sampling	Subsurface Soil	Grab samples from soil probes and depths to be determined in the field.	12	Disposable polyethylene scoop. Decontaminated dedicated direct push sampler.	VOCs, SVOCs, pesticides, PCBs, TAL metals and CN.
Groundwater Sampling	Groundwater	At surface of water in probe after purging of 3 to 5 probe volumes (minimum) of water.	12	Disposable polyethylene tubing equipped with a check valve	VOCs + MTBE, SVOCs, TAL metals (on 5 samples only)
Trip Blanks	Aqueous	Laboratory provided distilled water.	1*	Sample supplied by laboratory.	VOCs

*One trip blank will accompany each shipment of aqueous samples requiring volatile organic compound analysis.

the sample into the sample container. The sample should reflect and contain a good representation of the matrix it was taken from.

The sample will be transferred into the sample container as quickly as possible, with no mixing, to ensure that the volatile fraction is not lost.

The materials involved in groundwater sampling are critical to the collection of high quality monitoring information, particularly where the analyses of volatile, pH sensitive or reduced chemical constituents are of interest. Sterile disposable polyethylene bailers will be utilized for this project.

There will be several steps taken after the transfer of the soil or water sample into the sample container that are necessary to properly complete collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove excess sampling material. The container will not be submerged in water in an effort to clean it. Rather, if necessary, a clean paper towel moistened with distilled/deionized water will be used.

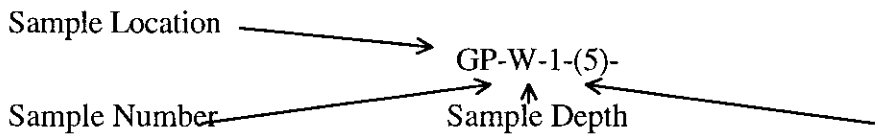
The sample container will then be properly labeled. Information such as sample number, location, collection time and sample description will be recorded in the field log book. Associated forms (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature (4°C) to be maintained during shipment to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

6.7.1 Sample Identification

All samples collected during the field investigation will be labeled with a sample identification code. The code will identify the sample location, sample matrix and series numbers for sample locations with more than one sample. Samples will be labeled according to the following system:

- Sample Location: - Soil Probe "SP"
  - Surface Soil "SS"
  - Groundwater Probe "GP"
- Sample Matrix: - Soil "S"
  - Water "W"
- Sample Number: - For circumstances where more than one sample of the same type and/or from the same location will be collected, a consecutive sample number will be assigned.
- Quality Assurance/ Quality Control (QA/QC): - Trip Blank "TB"

Based upon the above sample identification procedures, an example of a sample label may be:



6.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in the 2000 NYSDEC ASP and/or USEPA 5/99 and 1/00 SOWs. The holding time criteria identified in the ASP and SOWS will be followed, as specified in Table 6-1.

Prior to packaging any samples for shipment, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material and placed in a cooler (or laboratory shuttle) with a sufficient amount of bagged ice or "blue ice" packs in order to keep the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the sample during shipment will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure laboratory receipt within 48 hours of sample collection in accordance with NYSDEC and USEPA requirements. The laboratory will be notified prior to the shipment of the samples.

6.7.3 Soil (Surface)

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10.1).

2. Be certain that the sampling equipment is decontaminated utilizing the procedures outlined in Section 6.8.

3. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10.2 and 6.10.3).

4. At the desired location, clear surface debris (e.g., grass, rocks, twigs). Collect an adequate portion of soil from a depth of 0-2 inches using a decontaminated/sterile scoop and/or sterile wooden tongue depressor. If collecting volatile organics collect the sample from 6-12 inches below the surface. Transfer the sample directly into the sample container.

5. Return the sample container to the cooler.

6. If reusable, decontaminate the sampling equipment according to the procedures described in Section 6.8.

7. Place disposable personal protective equipment and disposable sampling equipment into 55-gallon drum in the designated secure area.

6.7.4 Soil (Probe)

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).

2. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).

3. Drive the probe to the desired sampling depth.

4. Retrieve the soil probe and immediately after opening it, obtain an organic vapor measurement with a FID or PID.

5. Remove a sample aliquot from the soil probe using the sterile scoop and/or tongue depressor, place into the open sample container and replace the container cover.

6. Return the sample container to the cooler.

7. If reusable, decontaminate the sampling equipment according to the procedures described in Section 6.8.

6.7.5 Groundwater (Probe)

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).

2. Remove the laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).

3. Drive the probe to the desired sampling depth.

4. Remove three to five times the volume of standing water from the probe until field measurements (pH, conductivity, temperature, and turbidity) stabilize.

5. Obtain a sample by using the dedicated polyethylene tubing equipped with a bottom check valve.

6. Gently pour the sample into the sample container taking care not to spill on outside of bottle or overfill container and replace cover on the sample container. Samples for volatile organic analyses, will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully, slide the septum, teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.

7. Return sample container to sample cooler.

8. Decontaminate equipment as described in section 6.8.

9. Place disposable personal protective equipment into a 55-gallon drum in the fenced area.

6.8 Decontamination Procedures

All field sampling equipment should be sterile and dedicated to a particular sampling point. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the chances of cross-contamination between sample locations. A decontamination station will be established for all field activities. This will be an area located away from the source of contamination so as not to adversely impact the decontamination procedure, but close enough to the sampling area to keep equipment handling to a minimum.

6.8.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling location and prior to leaving the site). Different decontamination procedures are used for various types of equipment that perform the field activities as discussed below. When using field decontamination, it is advisable to start sampling in the area of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

6.8.2 Decontamination Procedure for Drilling/Test Trench/Pit Equipment

All equipment such as drill rigs, backhoes and other mobile equipment should receive an initial cleaning prior to use at the site. The equipment will then be decontaminated prior to leaving the site and each time it returns on-site. Unless otherwise specified and approved, all wash/rinse solutions should be collected and contained on-site. The actual fate of this material will be determined after review of analytical data generated from samples and on-site discharge impacts have been evaluated.

After the initial washing, cleaning may be reduced to those areas that are in close proximity to materials being sampled. Drill rig items such as auger flights, drill rods, and drill bits are to be cleaned in between sample locations.

All decontamination generated wastes will be contained in 55-gallon drums and stored in the designated area.

Drilling equipment will be decontaminated in the following manner:

- Scrub all surfaces thoroughly with nonresidual nonionic anionic detergent (such as alconox) and tap water using a brush to remove particulate matter or surface film. This is necessary in order to remove any solids buildup on the back of the rig, auger flights, drill rods, drilling head, etc. Any loose paint chips, paint flakes and rust must also be removed.
- Steam clean (212°F).

Also, following the general cleaning procedures described above, all downhole/drilling items, such as split spoon samplers, or any other item of equipment which will come in direct contact with a sample during drilling will be decontaminated by steam cleaning.

6.8.3 Decontamination Procedure for Sampling Equipment

Teflon, PVC, polyethylene, polystyrene and stainless steel sampling equipment decontamination procedures will be the following:

- Wash thoroughly with nonresidual nonionic anionic detergent (such as alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly with tap water.
- Rinse thoroughly with distilled water.
- Rinse in a well ventilated area with methanol (pesticide grade) and air dry.
- Rinse thoroughly with distilled water and air dry.
- Wrap completely in clean aluminum foil with dull side against the equipment. For small sampling items, such as scoops, decontamination will take place over a drum specifically used for this purpose.

The first step, a soap and water wash, is to remove all visible particulate matter and residual oils and grease. This is followed by a tap water rinse and a distilled/deionized water rinse to remove the detergent. Next, a high purity solvent rinse is designated for trace organics removal. Methanol has been chosen because it is not an analyte of concern in the Target Compound List (TCL). The solvent must be allowed to evaporate and then a final distilled/deionized water rinse is performed. This rinse removes any residual traces of the solvent. The aluminum wrap protects the equipment and keeps it clean until it is used at another sampling location.

6.8.4 Decontamination Procedure for Well Casing/ Screen and Development/Purging Equipment

Field cleaning of well casing and screen should consist of a manual scrubbing to remove foreign material and steam cleaning, inside and out, until all traces of oil and grease are removed. If precleaned certified well casing and screen can be obtained from the manufacturer this would also be acceptable. This material should then be stored in such a manner so as to preserve it in this

condition. Special attention to threaded joints may be necessary to remove cutting oil or weld burn residues.

Materials and equipment that will be used within the monitoring well casing for the purposes of well development and purging shall also be decontaminated.

The submersible pump will be decontaminated by the following procedures:

1. Place pump in a water solution of an nonionic anionic surfactant solution (such as unscented Tide or Alconox) solution and wash the outside of the pump with a scrub brush.
2. Pump approximately five gallons of the wash solution through the pump.
3. Place pump in bucket of clean water and pump out five gallons of water.
4. Wipe down the cable with deionized water and a paper towel.
5. Decontamination water will be contained in DOT-approved 55-gallon drums pending characterization and disposal.

6.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP and CLP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment will be used. The laboratory's Standard Operating Procedures will be available upon request.

6.10 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with the sampling plan and QA/QC Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are to be composited (if required), preparing a Location Sketch, completing Sample Information Record Forms, Chain of Custody Forms and Boring, Well and Test Pit Construction Logs, maintaining a

daily Field Log Book, preparing Daily Field Activity Reports, completing Field Change Forms and filling out a Daily Air Monitoring Form. Copies of each of these forms, with the exception of the Air Monitoring Forms, are provided in Section 6.22. Proper completion of these forms and the field log book are necessary to support the consequent actions that may result from the sample analysis. This documentation will support that the evidence was gathered and handled properly.

6.10.1 Location Sketch

Each sampling point shall have its own location sketch (found in Section 2.22) with permanent references, to the maximum extent practicable.

6.10.2 Sample Information Record

At each sampling location, the Sample Information Record Form is filled out and maintained including, but not limited to, the following information:

- Site name
- Sample crew
- Sample location
- Field sample identification number
- Date
- Time of sample collection
- Weather conditions
- Temperature
- Sample matrix
- Method of sample collection and any factor that may affect its quality adversely
- Well information (groundwater only)

- Field test results
- Constituents sampled
- Remarks (Sample Compositing Information)

6.10.3 Chain of Custody

The Chain of Custody (COC) is initiated at the laboratory with bottle preparation and shipment to the site. The COC remains with the sample at all times and bears the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and appropriate handling of the bottles and samples. When the form is complete, it should indicate that there was no lapses in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession, or
- It is in the individual's view after being in his or her physical possession, or
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody Forms are provided by the laboratory contracted to perform the analytical services. At a minimum, the following information shall be provided on these forms:

- Project name and address
- Project number
- Sample identification number
- Date
- Time

- Sample location
- Sample type
- Analysis requested
- Number of containers and volume taken
- Remarks
- Type of waste
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, forms provided by the laboratory will be utilized. A copy of this form is contained in Section 6.22.

The Chain of Custody Form is filled out and signed by the person performing the sampling. The original of the form travels with the sample and is signed and dated each time the sample is relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler keeps one copy and a copy is retained for the project file. The sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample number
- Analysis to be performed
- Date of collection
- Compositing information

A copy of the completed form is returned by the laboratory with the analytical results.

6.10.4 Split Samples

Whenever samples are being split with another party, a Receipt for Samples Form must be completed and signed. A copy of this form can be found in Section 6.22. A copy of the COC Form will accompany this form. The present work plan does not provide for split samples.

6.10.5 Field Log Book

Field log books must be bound and should have consecutively numbered, water resistant pages. All pertinent information regarding the site and sampling procedures must be documented. Notations should be made in log book fashion, noting the time and date of all entries. Information recorded in this notebook should include, but not be limited to, the following:

The first page of the log contains the following information:

- Project name and address
- Name, address and phone number of field contact
- Waste generator and address, if different from above
- Type of process (if known), generating waste
- Type of waste
- Suspected waste composition, including concentrations

Daily entries are made for the following information:

- Purpose of sampling
- Location of sampling point
- Number(s) and volume(s) of sample(s) taken
- Description of sampling point and sampling methodology

- Date and time of collection, arrival and departure
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sampling site or photographs of sample collection
- Field observations, including results of field analyses (e.g., pH, temperature, specific conductance), water levels, drilling logs, and organic vapor and dust readings
- Signature of personnel responsible for completing log entries.

6.10.6 Daily Field Activity Report

At the end of each day of field work, the Field Operations Manager, or designee, completes this form noting personnel on-site and summarizing the work performed that day, equipment, materials and supplies used, results of field analyses, problems and resolutions. This form is then signed and is subject to review. A copy of the Daily Field Activity Report form is contained in Section 6.22.

6.10.7 Field Changes and Corrective Actions

Whenever there is a required or recommended investigation/sampling change or correction, a Field Change Form must be completed by the Field Operations Manager and NYSDEC on-site supervisor, and approved by the D&B Consulting Engineers and NYSDEC Project Managers.

6.11 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be done daily at the sampling site so that any

background contamination can be taken into consideration and the instrument calibrated accordingly.

2. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

Calibration procedures and preventive maintenance, in accordance with the NYSDEC 1995 ASP, for laboratory equipment is contained in the laboratory's standard operating procedures (SOP) and is available upon request.

6.12 Performance of Field Audits

During field activities, the QA/QC officer will accompany sampling personnel into the field to verify that the site sampling program is being properly implemented and to detect and define problems so that corrective action can be taken. All findings will be documented and provided to the Field Operations Manager. A copy of Dvirka and Bartilucci's Field Audit form is in Section 6.26.

6.13 Control and Disposal of Contaminated Material

During construction and sampling of the monitoring wells and borings installed during the remedial investigation, possibly contaminated waste, soil and water may be generated from drill cuttings, drilling fluids, decontamination water, development water and purge water. Drill cuttings will be handled in accordance with the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) - No. 4032 - Disposal of Drill Cuttings. Specifically, all soil and water associated with the wells or borings will be disposed of on-site. Decontamination water will also be disposed of on-site.

In general, soiled personal protective equipment (PPE) and disposable sampling equipment (i.e., bailers, tongue depressors, scoops) will be considered solid waste and contained and disposed off-site. If hazardous waste contamination of PPE or disposable equipment is suspected, due to elevated measurements of screening instruments, visual observations, odors or other means, PPE

and equipment will be drummed and secured on-site until a hazardous waste determination can be made. Once a determination has been made, an approved disposal method will be employed.

6.14 Documentation, Data Reduction and Reporting

A NYSDOH ELAP and CLP certified laboratory meeting requirements for documentation, data reduction and reporting will be used. All data will be cataloged according to sampling locations and sample identification nomenclature which is described in Section 6.7.1 of the QA/QC plan.

NYSDEC "Sample Identification and Analytical Requirement Summary" and "Sample Preparation and Analysis Summary" forms (for VOA Analysis, B/N-A Analysis, Pesticides/PCB Analysis and Inorganic Analysis) will be completed and included with each data package. These forms are contained in Section 6.23. The sample tracking forms are required and supplied by the 2000 NYSDEC ASP.

6.15 Data Validation

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that investigation data must be of known and acceptable quality. The analytical and validation processes will be conducted in conformance with the NYSDEC 2000 ASP and/or USEPA 5/99 and 1/00 SOWs.

Because the NYSDEC ASP is based on the USEPA CLP, the USEPA Functional Guidelines for Evaluating Organics Analyses for the Contract Laboratory Program (CLP) will assist in formulating standard operating procedures (SOPs) for the data validation process. The data validation process will ensure that all analytical requirements specific to the QA/QC plan are followed. Procedures will address validation of Routine Analytical Services (RAS) results based on the NYSDEC ASP Target Compound List and Target Analyte List for standard sample matrices.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a base upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "100% validation" of all data in any given data package.

"Qualified" analytical results for any one field sample will be established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision Accuracy criteria (i.e., QC acceptance limits) will be used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be discussed in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters will be verified in accordance with the procedures specified in the NYSDEC and USEPA program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure).

The standard operating guideline manuals for any specific analytical methodology required will specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete data package and the data validation report, including laboratory result data report sheets, with any qualifiers deemed appropriate by the data reviewer, and supplementary field QC sample result summary statement, will be provided with the site investigation report.

The following is a description of the two-phased approach to data validation which will be used for this investigation. The first phase is called checklisting and the second phase is the analytical quality review, with the former being a subset of the latter.

- Checklisting - The data package will be checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.

- Analytical Data Review – The data package will be closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have been preformed. Additionally, overall data quality and laboratory performance will be evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Summary data Validation/Usability report will be prepared as part of the site investigation report.

6.16 Performance and System Audits

A NYSDOH ELAP and CLP certified laboratory which has satisfactorily completed performance audits and performance evaluation samples shall be used.

6.17 Corrective Action

A NYSDOH ELAP and CLP certified laboratory shall meet the requirements for corrective action protocols, including sample "clean up" to attempt to eliminate/mitigate "matrix interference."

The 2000 NYSDEC ASP protocols include both mandatory and optional sample cleanup and extraction methods. GPC cleanup is required for soil samples by the 2000 NYSDEC ASP for semivolatile and pesticide/PCB analyses in order to meet contract required detection limits. Florisil column cleanup is required for the pesticide/PCB fraction of both soil and water samples. There are several optional cleanup and extraction methods noted in the 2000 NYSDEC ASP protocol. These include: Silica gel column cleanup, acid-base partition, steam distillation and sulfuric acid cleanup for PCB analysis.

It should be noted, that if these optional cleanup and extraction methods are requested by NYSDEC, holding time requirements should not be exceeded due to negligence of the laboratory. However, subsequent to selection of the analytical laboratory for this project, a meeting will be scheduled among representatives of the NYSDEC, D&B and the laboratory to discuss these issues and establish procedures to ensure good and timely communications among all parties.

6.18 Trip Blanks (Travel Blanks)

The primary purpose of this type of blank is to detect additional sources of contamination that might potentially influence contaminant values reported in actual samples both quantitatively and qualitatively. The following have been identified as potential sources of contamination:

- Laboratory reagent water
- Sample containers
- Cross contamination in shipment
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory
- Laboratory reagents used in analytical procedures

A trip blank consists of a set of 40 ml sample vials filled at the laboratory with laboratory demonstrated analyte free water. Trip blanks should be handled, transported and analyzed in the same manner as the samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, they just travel with the sample cooler. Trip blanks must accompany samples at a rate of one per shipment. The temperature of the trip blanks must be maintained at 4°C while on-site and during shipment. Trip blanks must return to the laboratory with the same set of bottles they accompanied in the field.

The purpose of a trip blank is to control sample bottle preparation and blank water quality as well as sample handling. Thus, the trip blank travels to the site with the empty sample bottles and back from the site with the collected samples in an effort to simulate sample handling conditions.

Contaminated trip blanks may indicate inadequate bottle cleaning or blank water of questionable quality. Trip blanks are implemented only when collecting water samples, and analyzed for volatile organic compounds only.

6.19 Field Blank (Field Rinsate Blank)/Equipment Blank

Based upon discussion with the NYSDEC, field blanks are not required for this project, since disposable bailers and sterile scoops are being utilized for sample collection.

6.20 Matrix Spikes/Matrix Spike Duplicates and Spiked Blanks

Matrix spike samples and blanks are quality control procedures, consistent with 6/00 NYSDEC ASP specifications, used by the laboratory as part of its internal Quality Assurance/Quality Control program. The matrix and matrix spike duplicates are aliquots of a designated sample (water or soil) which are spiked with known quantities of specified compounds. They are used to evaluate the matrix effect of the sample upon the analytical methodology as well as to determine the precision of the analytical method used. A matrix spike blank is an aliquot of analyte-free water, prepared in the laboratory, and spiked with the same solution used to spike the MS and MSD. The MSB is subjected to the same analytical procedure as the MS/MSD and used to indicate the appropriateness of the spiking solution by calculating the spike compound recoveries. The procedure and frequency regarding the MS, MSD and MSB are defined in the 2/00 NYSDEC ASP.

For this project site specific MS and MSDs will not be collected instead batch QC will be utilized. The laboratory is required to analyze an MSB at the same frequency as the MS/MSD.

6.21 Method Blanks

A method blank is an aliquot of laboratory water or soil which is spiked with the same internal and surrogate compounds as the samples. Its purpose is to define and determine the level of laboratory background contamination. Frequency, procedure and maximum laboratory containment concentration limits are specified in the 6/00 NYSDEC ASP as follows:

The laboratory shall prepare and analyze one laboratory reagent blank (method blank) for each group of samples of a similar matrix (for water or soil samples), extracted by a similar method (separatory funnel, continuous liquid extraction or sonication) and a similar concentration level (for volatile and semivolatile soil samples only) for the following, whichever is most frequent:

- Each case of field samples received, or
- Each 20 samples in a case, including matrix spikes and reanalyses, or
- Each 7 calendar day period during which field samples in a case were received (said period beginning with the receipt of the first sample in that sample delivery group) or
- Whenever samples are extracted.

Volatile analysis requires one method blank for each 12-hour time period when volatile target compounds are analyzed.

Semivolatile and pesticide method blanks shall be carried through the entire analytical process from extraction to final GC/MS or GC/EC analysis, including all protocol performance/ delivery requirements.

6.22 Field Management Forms

Contractor: _____
Operator: _____
Inspector: _____
Equip Type: _____

Dvirka and Bartilucci Test Pit Log

Project Name: _____
Project #: _____

Pit No. TP-_____
Sheet 1 of _____
Pit Location:

Groundwater Observations		
Water level		
Time		
Date		
Depth of pit		

Start: _____
Finish: _____
Weather: _____

Plot Plan

(see location map)

USCS Classification	Sample No.	Depth	Description	Comments
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
		18		
		19		
		20		

Stratigraphic Summary: _____

Driller:_____

Inspector:_____

Rig Type:_____

Drilling Method: _____

Dvirka and Bartilucci Boring Log

Project Name: _____

Project #:_____

Boring Depth: _____

Boring ID : ____

Sheet ____ of ____

Location:_____

_____

	Groundwater Observations		
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time):_____

Finish (Date & Time):_____

Weather: _____

_____

Elevation of Ground Surface: _____

Location Sketch:

Sample Interval	Sample No.	Blows		Field Description	Well Schematic	Comments

Soil Stratigraphy Summary _____

_____

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Well Construction Log

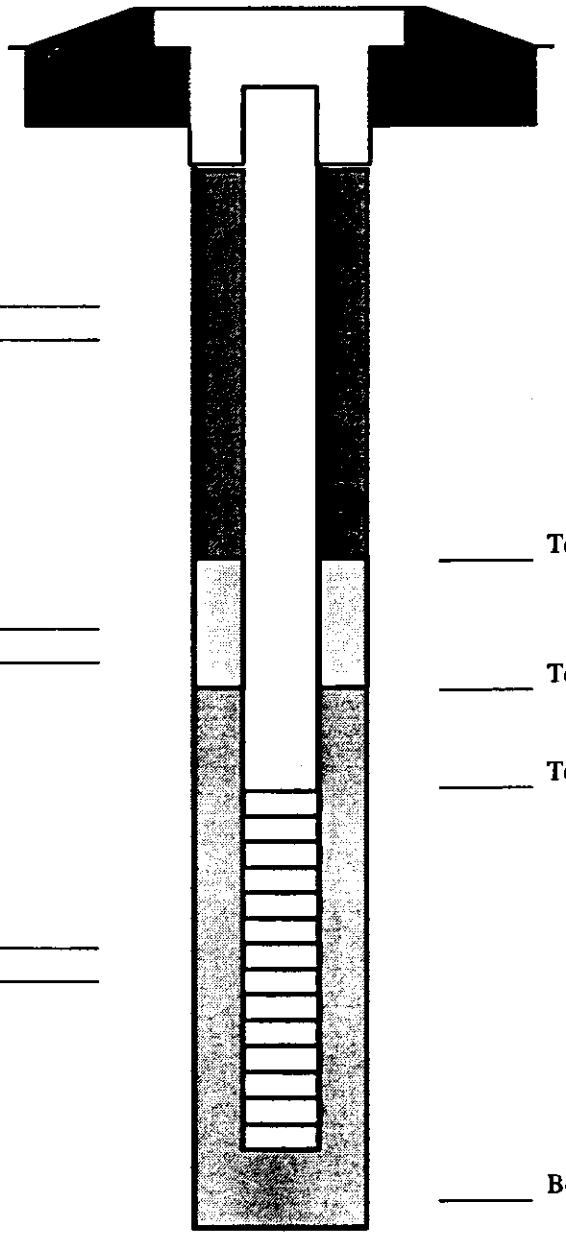
Site _____ Job No. _____ Well No. _____

Total Depth _____ Surface Elevation _____ Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser Dia. _____ Material _____ Length _____
Screen Dia. _____ Material _____ Length _____ Slot Size _____

SCHEMATIC



Surface Seal Type _____

Ground Surface
_____ Riser Elevation
_____ Bottom Surface Seal

Grout Type _____

_____ Top Seal

Seal Type _____

_____ Top Sand Pack

_____ Top Screen

Sand Pack Type _____
Size _____

_____ Bottom Screen

_____ Total Depth of Boring

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Well Construction Log

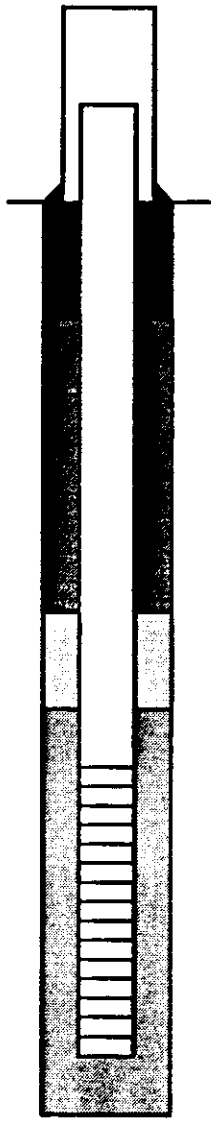
Site _____ Job No. _____ Well No. _____

Total Depth _____ Surface Elevation _____ Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser	Dia. _____	Material _____	Length _____			
Screen	Dia. _____	Material _____	Length _____	Slot Size _____		
Protective Casing	Dia. _____	Material _____	Length _____			

SCHEMATIC



_____ Protective Casing Stickup

_____ Riser Stickup

Ground Surface

Surface Seal Type _____
_____

_____ Bottom Surface Seal

Grout Type _____
_____

_____ Top Seal

Seal Type _____
_____

_____ Top Sand Pack

_____ Top Screen

Sand Pack Type _____
Size _____

_____ Bottom Screen

_____ Total Depth of Boring

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Date: _____

LOCATION SKETCH

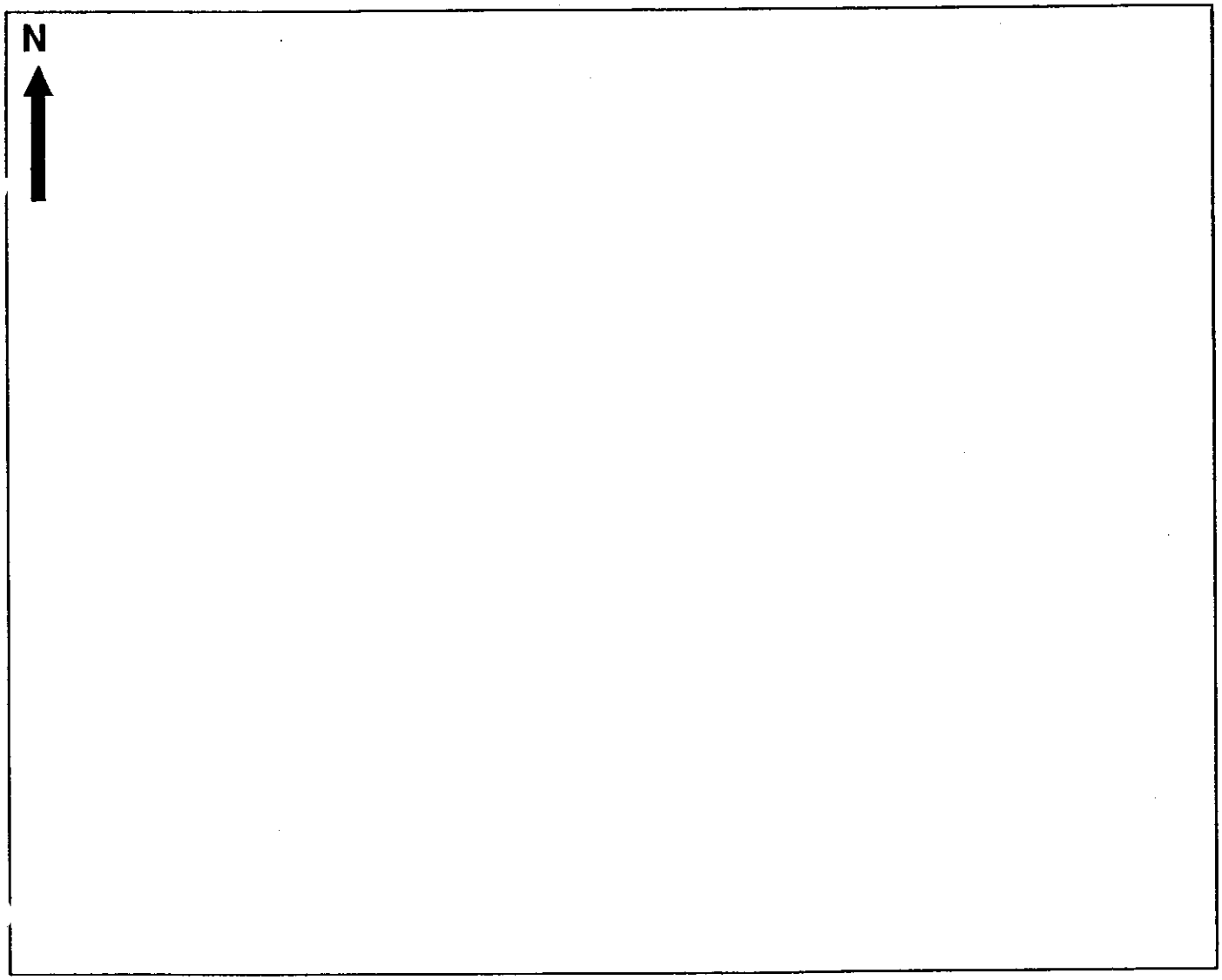
Project _____ Sample Crew _____

Sample(s) Locations(s) _____

Sample(s) and/or Well Number(s) _____

_____

Location of sample points, wells, borings, etc., with reference to three permanent reference points. Measure all distances, clearly label roads, wells and permanent features.



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Date: _____

SAMPLE INFORMATION RECORD

Site: _____ **Sample Crew:** _____

Sample Location/Well No. _____

Field Sample I.D. Number _____ **Time** _____

Weather _____ **Temperature** _____

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

_____ _____ _____ _____

_____ _____ _____ _____

Remarks:

_____

_____

_____

Well Casing Volumes

GAL/FT	**1¼" = 0.077**	**2" = 0.16**	**3" = 0.37**	**4" = 0.65**
	1½ =0.10	**2½ " = 0.24**	**3½ = 0.50**	**6" = 1.46**

DVIRKA
AND
BARTILUCCI

Receipt for Samples

Project Name: _____ Field Log Book Reference Number: _____

Project Address: _____ Sampled By: _____

Project Number: _____ Split With: _____

SAMPLE NUMBERS	DATE	TIME	COMP	GRAB	SPLIT SAMPLES	LOG BOOK PAGE NO.	TAG NUMBERS	SAMPLE LOCATION	NO. OF CONTAINERS	REMARKS

Transferred by (Signature)		Received by (Signature)		Telephone
Date	Time	Title	Date	Time

RFS

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

DAILY FIELD ACTIVITY REPORT

Report Number: _____ Project Number: _____

Field Log Book Page Number: _____

Project: _____

Address: _____

Weather: (AM) _____ Rainfall: (AM) _____ Inches

(PM) _____ (PM) _____ Inches

Temperature: (AM) _____ °F Wind Speed: (AM) _____ MPH Wind Direction: (AM) _____

(PM) _____ °F (PM) _____ MPH (PM) _____

Site Condition: _____

Personnel On Site:	Name	Affiliation	Arrival Time	Departure Time

Subcontractor Work Commencement: (AM) _____ (PM) _____

Subcontractor Work Completion: (AM) _____ (PM) _____

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B Engineers:

List specific inspection(s) performed and results (include problems and corrective actions):

List type and location of tests performed and results (include equipment used and monitoring results):

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):

Prepared by: _____ Reviewed by: _____

DVIRKA
AND
BARTILUCCI

FIELD CHANGE FORM

Project Name: _____

Project Number: _____ Field Change Number: _____

Location: _____ Date: _____

Field Activity Description: _____

Reason for Change: _____

Recommended Disposition: _____

_____ _____

Field Operations Officer (D&B Consulting Engineers) (Signature) Date

Disposition: _____

_____ _____

On-site Supervisor (NYSDEC) (Signature) Date

Distribution: Project Manager (D&B)
Project Manager (NYSDEC)
Field Operations Officer
On-site Supervisor (NYSDEC)

Others as Required: _____
_____
_____
_____

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

DAILY EQUIPMENT CALIBRATION LOG

Project Name: _____

Project Number: _____ Calibrated by: _____

Instrument Name and Model Number	Calibration Method	Time	Readings and Observations

6.23 NYSDEC Sample Identification, Preparation and Analysis Summary Forms

To be included with all lab data and with each workplan

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements*					
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER

*Check Appropriate Boxes

* CLP, Non-CLP (Please indicate year of protocol)
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd At Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd At Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd At Lab	Low Level Med. Level	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SAMPLE PREPARATION AND ANALYSIS FORM

B/N-A ORGANIC ANALYSES

Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxilary Clean Up	Dil/Conc Factor

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

INORGANIC ANALYSES

Sample ID	Matrix	Metals Requested	Date Rec'd	Date Analyzed

6.24 QA/QC Office Resume and DUSR Preparation Guidelines

Data Usability Summary Report (DUSR)

Background:

The purpose of the DUSR is to provide a thorough data evaluation by an experienced environmental scientist and/or the project Quality Assurance Officer.

Since it is recommended that Data Validation Reports be prepared by an independent third party (i.e., independent of the project management consulting firm and the analysis laboratory), the DUSR is an appropriate alternative when data quality and usability are not expected to be a significant issue. In these cases, the DUSR is an appropriate alternative since it is more cost effective and time efficient than data validation.

The DUSR and data deliverables will be reviewed by the NYSDEC Quality Assurance Unit. In most cases, we expect this review will result in agreement or minor differences which should be easily reconciled. If data validation is found to be necessary (e.g., pending litigation), it can be done at a later date by an independent third party on the data deliverable package.

Preparation of a DUSR on a NYSDEC ASP Category B or CLP Deliverables Package

The Environmental Scientist preparing the DUSR should submit a resume to the NYSDEC Quality Assurance Unit documenting relevant experience in environmental sampling and analysis methods and data review and statement of Bachelors Degree in Natural Science or Engineering.

The DUSR is prepared by reviewing and evaluating the analytical data. The parameters to be evaluated in reference to compliance with the analytical method protocols include all sample chain-of-custody forms, holding times, raw data (instrument print out data and chromatograms), calibrations, blanks, spikes, controls, surrogate recoveries, duplicates and sample data. If available, the Field Sampling Notes should also be reviewed and any quality control problems should be evaluated as to their effect on the usability of the sample data.

The DUSR describes the samples and analysis parameters reviewed. Data deficiencies, analytical method protocol deviations and quality control problems are described and their effect on the data is discussed.

Resampling/reanalysis recommendations are made. Data qualifications are documented for each sample analyte following the NYSDEC Analytical Services Protocol '91 Rev. guidelines.

Contact Christine McGrath, NYSDEC, Division of Hazardous Waste Remediation, Quality Assurance Unit, at (518) 457-3252, with any questions on preparing a DUSR.

Revised 11/95

ROBBIN A. PETRELLA

QUALITY ASSURANCE OFFICER

EDUCATION

SUNY at Buffalo, B.S. (Chemical Engineering) - 1986

PROFESSIONAL EXPERIENCE

Ms. Petrella's professional experience involving quality assurance and quality control spans 14 years. During this time, she served as a Sample and Data Analyst for two large environmental laboratories. Ms. Petrella was responsible, as Data Review Group Leader, for supervision of data validation and QA/QC coordination between the laboratory and clients. Her technical experience includes both the analysis and review of environmental samples using numerous protocols, including those developed by the United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), and New Jersey Department of Environmental Protection (NJDEP).

Since joining the firm, Ms. Petrella has been responsible for preparing Quality Assurance/Quality Control Plans and Waste Analysis Plans for Chemical Waste Disposal, Inc., IBM and Grumman Corporation. She has also prepared overall QA/QC programs for Grumman Laboratories.

Ms. Petrella has prepared QA/QC Plans and data validation/usability reports for remedial investigation and feasibility studies conducted in Cheektowaga, Schodack, North Tonawanda, Croton on the Hudson and Brentwood, New York. These tasks involved evaluation of the laboratory data to determine compliance with NYSDEC Analytical Services Protocols (ASP) and to determine usability if the data was not in accordance with ASP requirements.

Ms. Petrella has assisted in the preparation and performance of air sampling programs for remedial investigation/feasibility studies (RI/FS) conducted at landfill/Superfund sites in Wallkill, New York and East Northport, New York. She has also performed water supply sampling for a RI/FS in Rensselaer County, New York, and a surface and subsurface water and soil sampling program as part of a RI/FS in Elmira, New York.

Ms. Petrella has acted as the QA/QC officer, and prepared and performed field audits for Superfund site investigations in Tonawanda, New York; Owego, New York; Brookhaven, New York; and Hornell, New York, and for a major railroad facility in New York City. She has also assisted in the preparation of laboratory contracts for analytical services for hazardous waste studies in

Schodack, New York; Jamaica, New York; and the New York State Superfund Standby contract.

Ms. Petrella is responsible for performing laboratory audits on all laboratories having contracts with the firm as part of the New York State Superfund Program. She was also responsible for preparation of the landfill gas investigation work plan and report for a New York State Superfund site in Huntington, New York.

Ms. Petrella has been certified by the USEPA in both organic and inorganic data validation by successfully completing courses authorized by the USEPA. These certifications have also been accepted by the NYSDEC.

Ms. Petrella is responsible for the data validation of all data packages from an ongoing hydrogeologic investigation and landfill closure investigation in Brookhaven, New York. She is also responsible for validation of all data collected during field investigations for a large aerospace corporation and major utility on Long Island.

Ms. Petrella has acted as Project Manager for a standby project with the NYSDEC and a groundwater treatment project located in New Jersey.

Ms. Petrella is presently the Quality Assurance/Quality Control officer for the firm and responsible for reviewing all work relating to Quality Assurance/Quality Control for hazardous waste and NYS Part 360 projects undertaken by the firm. She is also responsible for preparation and maintenance of the Corporate Quality Assurance Manual, and for inventory and maintenance of the firm's field/sampling and monitoring equipment. As the QA/QC Officer, she reports directly to the Principal-in-Charge of the Hazardous Waste Remediation Division.

6.25 Data Quality Requirements and Assessment Summaries

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)

	Volatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
1.	Chloromethane	74-87-3	10	10	1200	(50)
2.	Bromomethane	74-83-9	10	10	1200	(50)
3.	Vinyl chloride	75-01-4	10	10	1200	(50)
4.	Chloroethane	75-00-3	10	10	1200	(50)
5.	Methylene chloride	75-09-2	10	10	1200	(50)
6.	Acetone	67-64-1	10	10	1200	(50)
7.	Carbon Disulfide	75-15-0	10	10	1200	(50)
8.	1,1-Dichloroethylene	75-35-4	10	10	1200	(50)
9.	1,1-Dichloroethane	75-35-3	10	10	1200	(50)
10.	1,2-Dichloroethylene(total)	540-59-0	10	10	1200	(50)
11.	Chloroform	67-66-3	10	10	1200	(50)
12.	1,2-Dichloroethane	107-06-2	10	10	1200	(50)
13.	2-Butanone	78-93-3	10	10	1200	(50)
14.	1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
15.	Carbon tetrachloride	56-23-5	10	10	1200	(50)
16.	Bromodichloromethane	75-27-4	10	10	1200	(50)
17.	1,2-Dichloropropane	78-87-5	10	10	1200	(50)
18.	cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
19.	Trichloroethene	79-01-6	10	10	1200	(50)
20.	Dibromochloromethane	124-48-1	10	10	1200	(50)
21.	1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
22.	Benzene	71-43-2	10	10	1200	(50)
23.	trans-1,3-Dichloropropene	10061-02-6	10	10	1200	(50)
24.	Bromoform	75-25-2	10	10	1200	(50)
25.	4-Methyl-2-pentanone	108-10-1	10	10	1200	(50)
26.	2-Hexanone	591-78-6	10	10	1200	(50)
27.	Tetrachloroethene	127-18-4	10	10	1200	(50)
28.	Toluene	108-88-3	10	10	1200	(50)
29.	1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200	(50)
30.	Chlorobenzene	108-90-7	10	10	1200	(50)
31.	Ethyl Benzene	100-41-4	10	10	1200	(50)
32.	Styrene	100-42-5	10	10	1200	(50)
33.	Total Xylenes	1330-20-7	10	10	1200	(50)

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

Note that the CRQL values listed on the preceding page may not be those specified in previous Analytical Services Protocols. These values are set at concentrations in the sample equivalent to the concentration of the lowest calibration standard specified in Exhibit D, Part II. Lower quantitation limits may be achievable for water samples by employing the methods in Exhibit D, Part X for Low Concentration Water for Organic Analyses.

VOLATILES

Water Samples

A 5 mL volume of water is purged with an inert gas at ambient temperature. The volatiles are trapped on solid sorbents, and desorbed directly onto the GC/MS. For a sample with compound X at the CRQL of 10 µg/L:

(10 µg/L) (5 mL) (10^{-3} L/mL) = 50 x 10^{-3} ug = 50 ng on the GC column

Low Level Soil/Sediment Samples

A 5 g aliquot of the soil/sediment sample is added to a volume of water in a purge tube, heated, and purged with an inert gas. The volatiles are trapped, and later desorbed directly onto the GC/MS. For a sample with compound X at the CRQL of 10 µg/Kg:

(10 µg/Kg) (5 g) (10^{-3} Kg/g) = 50 x 10^{-3} µg = 50 ng on the GC column

Medium Level Soil/Sediment Samples

A 4 g aliquot of soil/sediment is extracted with 10 mL of methanol, and filtered through glass wool. Only 1 mL of the methanol extract is taken for screening and analysis. Based on the results of a GC/FID screen, an aliquot of the methanol extract is added to 5 mL of reagent water and purged at ambient temperature. The largest aliquot of extract considered in Exhibit D, Part III is 100 uL. For a sample with compound X at the CRQL of 1200 µg/Kg:

(1200 µg/Kg) (4 g) (10^{-3} Kg/g) = 4800 x 10^{-3} µg = 4800 ng

This material is contained in the 10 mL methanol extract:

(4800 ng) / 10 mL = 480 ng/mL

Of which, 100 µL are purged from the reagent water.

(480 ng/mL) (100 µL) (10^{-3} mL/µL) = 480 x 10^{-1} ng = 50 ng on the GC column

Note that for both low and medium soil/sediment samples, while it may affect the purging efficiency, the volume of reagent water used in the purging process does not affect the calculations.

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

	Semivolatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
34.	Phenol	108-95-2	10	330	10,000	(20)
35.	bis(2-Chloroethyl) ether	111-44-4	10	330	10,000	(20)
36.	2-Chlorophenol	95-57-8	10	330	10,000	(20)
37.	1,3-Dichlorobenzene	541-73-1	10	330	10,000	(20)
38.	1,4-Dichlorobenzene	106-46-7	10	330	10,000	(20)
39.	1,2-Dichlorobenzene	95-50-1	10	330	10,000	(20)
40.	2-Methylphenol	95-48-7	10	330	10,000	(20)
41.	2,2'-oxybis(1-Chloro-propane) #	108-60-1	10	330	10,000	(20)
42.	4-Methylphenol	106-44-5	10	330	10,000	(20)
43.	N-Nitroso-di-n-propylamine	621-64-7	10	330	10,000	(20)
44.	Hexachloroethane	67-72-1	10	330	10,000	(20)
45.	Nitrobenzene	98-95-3	10	330	10,000	(20)
46.	Isophorone	78-59-1	10	330	10,000	(20)
47.	2-Nitrophenol	88-75-5	10	330	10,000	(20)
48.	2,4-Dimethylphenol	105-67-9	10	330	10,000	(20)
49.	bis(2-Chloroethoxy) methane	111-91-1	10	330	10,000	(20)
50.	2,4-Dichlorophenol	120-83-2	10	330	10,000	(20)
51.	1,2,4-Trichlorobenzene	120-82-1	10	330	10,000	(20)
52.	Naphthalene	91-20-3	10	330	10,000	(20)
53.	4-Chloroaniline	106-47-8	10	330	10,000	(20)
54.	Hexachlorobutadiene	87-68-3	10	330	10,000	(20)
55.	4-Chloro-3-methylphenol	59-50-7	10	330	10,000	(20)
56.	2-Methylnaphthalene	91-57-6	10	330	10,000	(20)
57.	Hexachlorocyclopentadiene	77-47-4	10	330	10,000	(20)
58.	2,4,6-Trichlorophenol	88-06-2	10	330	10,000	(20)
59.	2,4,5-Trichlorophenol	95-95-4	25	800	25,000	(50)
60.	2-Chloronaphthalene	91-58-7	10	330	10,000	(20)
61.	2-Nitroaniline	88-74-4	25	800	25,000	(50)
62.	Dimethyl phthalate	131-11-3	10	330	10,000	(20)
63.	Acenaphthylene	208-96-8	10	330	10,000	(20)
64.	2,6-Dinitrotoluene	606-20-2	10	330	10,000	(20)
65.	3-Nitroaniline	99-09-2	25	800	25,000	(50)
66.	Acenaphthene	83-32-9	10	330	10,000	(20)

Previously known by the name bis(2-Chloroisopropyl) ether

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)

	Semivolatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
67.	2,4-Dinitrophenol	51-28-5	25	800	25,000	(50)
68.	4-Nitrophenol	100-02-7	25	800	25,000	(50)
69.	Dibenzofuran	132-64-9	10	330	10,000	(20)
70.	2,4-Dinitrotoluene	121-14-2	10	330	10,000	(20)
71.	Diethylphthalate	84-66-2	10	330	10,000	(20)
72.	4-Chlorophenyl phenyl ether	7005-72-3	10	330	10,000	(20)
73.	Fluorene	86-73-7	10	330	10,000	(20)
74.	4-Nitroaniline	100-01-6	25	800	25,000	(50)
75.	4,6-Dinitro-2-methylphenol	534-52-1	25	800	25,000	(50)
76.	N-nitrosodiphenylamine	86-30-6	10	330	10,000	(20)
77.	4-Bromophenyl phenyl ether	101-55-3	10	330	10,000	(20)
78.	Hexachlorobenzene	118-74-1	10	330	10,000	(20)
79.	Pentachlorophenol	87-86-5	25	800	25,000	(50)
80.	Phenanthrene	85-01-8	10	330	10,000	(20)
81.	Anthracene	120-12-7	10	330	10,000	(20)
82	Carbazole	86-74-8	10	330	10,000	(20)
83.	Di-n-butyl phthalate	84-74-2	10	330	10,000	(20)
84.	Fluoranthene	206-44-0	10	330	10,000	(20)
85.	Pyrene	129-00-0	10	330	10,000	(20)
86.	Butyl benzyl phthalate	85-68-7	10	330	10,000	(20)
87.	3,3'-Dichlorobenzidine	91-94-1	10	330	10,000	(20)
88.	Benz(a)anthracene	56-55-3	10	330	10,000	(20)
89.	Chrysene	218-01-9	10	330	10,000	(20)
90.	bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10,000	(20)
91.	Di-n-octyl phthalate	117-84-0	10	330	10,000	(20)
92.	Benzo(b)fluoranthene	205-99-2	10	330	10,000	(20)
93.	Benzo(k)fluoranthene	207-08-9	10	330	10,000	(20)
94.	Benzo(a)pyrene	50-32-8	10	330	10,000	(20)
95.	Indeno(1,2,3-cd)pyrene	193-39-5	10	330	10,000	(20)
96.	Dibenz(a,h)anthracene	53-70-3	10	330	10,000	(20)
97.	Benzo(g,h,i)perylene	191-24-2	10	330	10,000	(20)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the Laboratory for soil/sediment, calculated on dry weight basis as required by the Protocol, will be higher.

Water Samples

A 1 L volume of water is extracted in a continuous liquid-liquid extractor with methylene chloride at a pH of approximately 2. This extract is reduced in volume to 1.0 mL, and a 2 µL volume is injected onto the GC/MS for analysis. For a sample with compound X at the CRQL of 10 µg/L:

(10 µg/L) (1 L) = 10 µg in the original extract

When the extract is concentrated, this material is contained in the 1 mL concentrated extract, of which 2 µL are injected into the instrument:

(10 µg/mL) (2 µL) (10^{-3} mL/µL) = 20 x 10^{-3} µg = 20 ng on the GC column

Low Soil Samples

A 30 g soil sample is extracted three times with methylene chloride/acetone at ambient pH, by sonication or Soxhlet. The extract is reduced in volume to 1.0 mL, and a 2 µL volume is injected onto the GC/MS for analysis. For a sample with compound X at the CRQL of 330 µg/Kg:

(330 µg/Kg) (30 g) (10^{-3} Kg/g) = 9900 x 10^{-3} µg = 9.9 µg

When the sample extract is to be subjected to Gel Permeation Chromatography (required) to remove high molecular weight interferences, the volume of the extract is initially reduced to 10 mL. This 10 mL is put through the GPC column, and only 5 mL are collected off the GPC. That 5 mL volume is reduced to 0.5 mL prior to analysis. Therefore:

(9.9 µg/10 mL) (5 mL) = 4.95 µg

This material is contained in the 0.5 mL extract, of which 2 µL are injected into the instrument:

(4.95 µg/0.5 mL) (2 µL) (10^{-3} mL/µL) = (1.98 x 10^{-3} µg) 20 ng on the GC column

Medium Soil Samples

A 1 g soil sample is extracted once with 10 mL of methylene chloride/acetone, which is filtered through glass wool to remove particles of soil. The filtered extract is then subjected to GPC clean up, and only 5 mL of extract are collected after GPC. This extract is reduced in volume to 0.5 mL, of which 2 µL are injected onto the GC/MS. For a sample with compound X at the CRQL of 10,000 µg/Kg:

(10,000 µg/Kg) (1 g) (10^{-3} Kg/g) = 10 µg

(continued)

Semivolatiles, Medium Soil, continued -

This material is contained in the 10 mL extract, of which only 5 mL are collected after GPC:

(10 µg) (5 mL/10 mL) = 5 ug

The volume of this extract is reduced to 0.5 mL, of which 2 µL are injected into the instrument:

(5 µg/0.5 mL) (2 µL) (10^{-3} mL/µL) = 20 x 10^{-3} ug = 20 ng on the GC column

Eight semivolatile compounds are calibrated using only a four point initial calibration, with the lowest standard at 50 ng. Therefore, the CRQL values for these eight compounds are 2.5 times higher for all matrices and levels.

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

	Pesticides/Arodors	CAS Number	Quantitation Limits* Water µg/L	Soil µg/Kg	On Column (ng)
98.	alpha-BHC	319-84-6	0.05	1.7	5
99.	beta-BHC	319-85-7	0.05	1.7	5
100.	delta-BHC	319-86-8	0.05	1.7	5
101.	gamma-BHC (Lindane)	58-89-9	0.05	1.7	5
102.	Heptachlor	76-44-8	0.05	1.7	5
103.	Aldrin	309-00-2	0.05	1.7	5
104.	Heptachlor epoxide	1024-57-3	0.05	1.7	5
105.	Endosulfan I	959-98-8	0.05	1.7	5
106.	Dieldrin	60-57-1	0.10	3.3	10
107.	4,4'-DDE	72-55-9	0.10	3.3	10
108.	Endrin	72-20-8	0.10	3.3	10
109.	Endosulfan II	33213-65-9	0.10	3.3	10
110.	4,4'-DDD	72-54-8	0.10	3.3	10
111.	Endosulfan sulfate	1031-07-8	0.10	3.3	10
112.	4,4'-DDT	50-29-3	0.10	3.3	10
113.	Methoxychlor	72-43-5	0.50	17.0	50
114.	Endrin ketone	53494-70-5	0.10	3.3	10
115.	Endrin aldehyde	7421-36-3	0.10	3.3	10
116.	alpha-Chlordane	5103-71-9	0.05	1.7	5
117.	gamma-Chlordane	5103-74-2	0.05	1.7	5
118.	Toxaphene	8001-35-2	5.0	170.0	500
119.	AROCLOR-1016	12674-11-2	1.0	33.0	100
120.	AROCLOR-1221	11104-28-2	1.0	67.0	200
121.	AROCLOR-1232	11141-16-5	1.0	33.0	100
122.	AROCLOR-1242	53469-21-9	1.0	33.0	100
123.	AROCLOR-1248	12672-29-6	1.0	33.0	100
124.	AROCLOR-1254	11097-69-1	1.0	33.0	100
125.	AROCLOR-1260	11096-82-5	1.0	33.0	100

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the Laboratory for soil/sediment, calculate on dry weight basis, as required by the Protocol, will be higher.

Water Samples

A 1 L volume of water is extracted three times with methylene chloride or by a continuous liquid-liquid extractor. This extract is reduced in volume to approximately 3 - 5 mL, and diluted up to 10.0 mL with clean solvent. When Gel Permeation Chromatography is performed, only 5 of the 10 mL of extract are collected after GPC.

Regardless of whether GPC is performed, either 1.0 or 2.0 mL of the 10.0 mL of the original extracts are taken through the remaining clean up steps (Florisil and sulfur removal). The volume taken through Florisil cleanup and the final volume of the extract after the clean up steps depends on the requirements of the autosampler. If the autosampler can handle 1.0 mL final extract volumes, this is the volume taken through Florisil and the final volume. If the autosampler cannot reliably handle 1.0 mL volumes, the volume is 2.0 mL. When using an autosampler, the injection volume may be 1.0 or 2.0 µL. Manual injections must use a 2.0 µL injection volume.

For a sample with compound X at the CRQL of 0.05 µg/L and an autosampler requiring a 1.0 mL volume:

(0.05 µg/L) (1 L) = 0.05 µg in the original extract

This material is contained in the 10.0 mL of extract:

(0.05 µg)/ (10.0 mL) = 0.005 µg/mL

Of which, only 1.0 mL is carried through the remaining clean up steps. For a final extract volume of 1.0 mL and a 1 µL injection volume:

(0.005 µg/L) (1 µL) (10^{-3} mL/µL) = 5×10^{-6} µg = 5 pg on the GC column

Soil Samples

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of pesticides/Aroclors. A 30 g soil sample is extracted three times with methylene chloride/acetone by sonication or Soxhlet extraction. The extract is reduced in volume to 10.0 mL and subjected to Gel Permeation Chromatography. After GPC, only 5.0 mL of extract are collected. However, as with the water sample described above, either 1.0 or 2.0 mL of that extract are subjected to the other clean up steps, so no loss of sensitivity results from the use of GPC. From this point on, the soil sample extract is handled in the same fashion as the extract of a water sample. For a sample with compound X at the CRQL of 1.7 µg/Kg:

(1.7 µg/Kg) (30 g) (10^{-3} Kg/g) = 51×10^{-3} µg = 51 ng in the original extract

This material is contained in the 10.0 mL of extract:

(51 ng)/10 mL = 5.1 ng/mL

(continued)

of which, only 1.0 or 2.0 mL are carried through the remaining cleanup steps For a final extract volume of 1.0 mL and a 1 µL injection volume:

$(5.1\ ng/mL)(1\ \mu L)(10^{-3}\ mL/\mu L) = 5.1 \times 10^{-3}\ ng = 5\ pg$ on the GC column.

For either water or soil samples, if the autosampler used requires a 2.0 mL final volume, the concentration in the 10.0 mL of extract above remains the same.

Using a 2 µL injection volume, twice the total number of picograms are injected onto the GC column. However, because the injection volume must be the same for samples and standards, twice as much material is injected onto the column during calibration, and thus the amount of compound X injected from the sample extract is equivalent to the amount of compound X injected from the calibration standard, regardless of injection volume.

If a single injection is used for two GC columns attached to a single injection part, it may be necessary to use an injection volume greater than 2 µL.

SECTION II

SUPERFUND-CLP INORGANICS

Superfund Target Compound List (TCL) and Contract Required Quantitation Limit

Parameter	Contract Required Quantitation Level (µg/L)
1. Aluminum	200
2. Antimony	60
3. Arsenic	10
4. Barium	200
5. Beryllium	5
6. Cadmium	5
7. Calcium	5000
8. Chromium	10
9. Cobalt	50
10. Copper	25
11. Iron	100
12. Lead	3
13. Magnesium	5000
14. Manganese	15
15. Mercury	0.2
16. Nickel	40
17. Potassium	5000
18. Selenium	5
19. Silver	10
20. Sodium	5000
21. Thallium	10
22. Vanadium	50
23. Zinc	20
24. Cyanide	10

1: Any analytical method specified in Exhibit D, CLP-Inorganics may be utilized as long as the documented instrument or method detection limits meet the Contract Required Quantitation Level (CRQL) requirements. Higher quantitation levels may only be used in the following circumstance:

If the sample concentration exceeds five times the quantitation limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Quantitation Limit. This is illustrated in the example below:

For lead:
Method in use = ICP
Instrument Detection Limit (IDL) = 40
Sample concentration = 220
Contract Required Quantitation Level (CRQL) = 3

The value of 220 may be reported even though instrument detection limit is greater than Contract Required Quantitation Limit. The instrument or method detection limit must be documented as described in Exhibit E.

2: These CRQLs are the instrument detection limits obtained in pure water that must be met using the procedure in Exhibit E. The quantitation limits for samples may be considerably higher depending on the sample matrix.

Regulatory Promulgated Parameters

In addition to the preceding lists, the Laboratory may be asked to analyze for any or all of the conventional water quality parameters as listed in 40CFR Part 136 or for the hazardous waste parameters listed in 40CFR Part 260 through 270.

Quantitation limits to be achieved for these analyses are specified.

6.26 Field Audit Form

DVIRKA
AND
BARTILUCCI

FIELD AUDIT FORM

Site: _____ Date: _____

Persons On-site: _____ QA/QC Officer Conducting Audit: _____

_____ Project: _____

_____

1. Is safety equipment in use (hardhats, respirators, gloves etc.): YES NO

2. Is a decontamination station, equipment and supplies on site and in working order:

Methanol	YES	NO
Alconox	YES	NO
D.I. Water	YES	NO
Scrub Brushes	YES	NO
Steam Cleaner	YES	NO

Comments: _____

_____

_____

3. Is the site/investigation areas secured (fence, markers, etc.): YES NO

Comments: _____

_____

_____

4. Is contaminated material properly stored and in a secure area: YES NO

Comments: _____

_____

_____

DVIRKA AND BARTILUCCI

FIELD AUDIT FORM (continued)

5. Are forms filled out properly:

Field Log Book	YES	NO
Chain of Custody	YES	NO
Equipment Calibration Log	YES	NO
Daily Field Activity Report	YES	NO
Location Sketch	YES	NO
Sample Information Record	YES	NO
Equipment Usage Form	YES	NO

Comments: _____

_____

_____

6. Is the proper sampling and field measurement equipment, including calibration supplies on site: YES NO

Comments: _____

_____

_____

7. Are there adequate sample containers, including deionized water for QA/QC:

Field Blanks	YES	NO
Trip Blanks	YES	NO

Comments: _____

_____

_____

8. Is the equipment decontaminated properly:

Sampling equipment	YES	NO
Construction equipment	YES	NO

Comments: _____

_____

_____

DVIRKA AND BARTILUCCI

FIELD AUDIT FORM (continued)

9. Is field measurement equipment calibrated:

Daily	YES	NO
Properly	YES	NO

Comments: _____

_____

_____

10. Are samples collected and labeled properly: YES NO

Comments: _____

_____

_____

11. Are samples stored at 4°C: YES NO

Comments: _____

_____

_____

12. Are coolers properly sealed and packed for shipment including Chain of Custody taped to underside of lid: YES NO

Comments: _____

_____

_____

13. Is a copy of the Field Investigation Work Plan available on site: YES NO

Comments: _____

_____

_____

DVIRKA AND BARTILUCCI

FIELD AUDIT FORM (continued)

14. Is a copy of the QA/QC Plan available on site: YES NO

Comments: _____

_____

_____

15. Are investigation personnel familiar with the Work Plan and QA/QC Plan: YES NO

Comments: _____

_____

_____

16. Are quality control samples taken:

Trip Blanks YES NO
Field Blanks YES NO

Comments: _____

_____

_____

17. Are samples shipped in a timely and appropriate manner: YES NO

Comments: _____

_____

_____

18. Has the laboratory been contacted regarding planned shipment of samples: YES NO

Comments: _____

_____

_____

DVIRKA
AND
BARTILUCCI

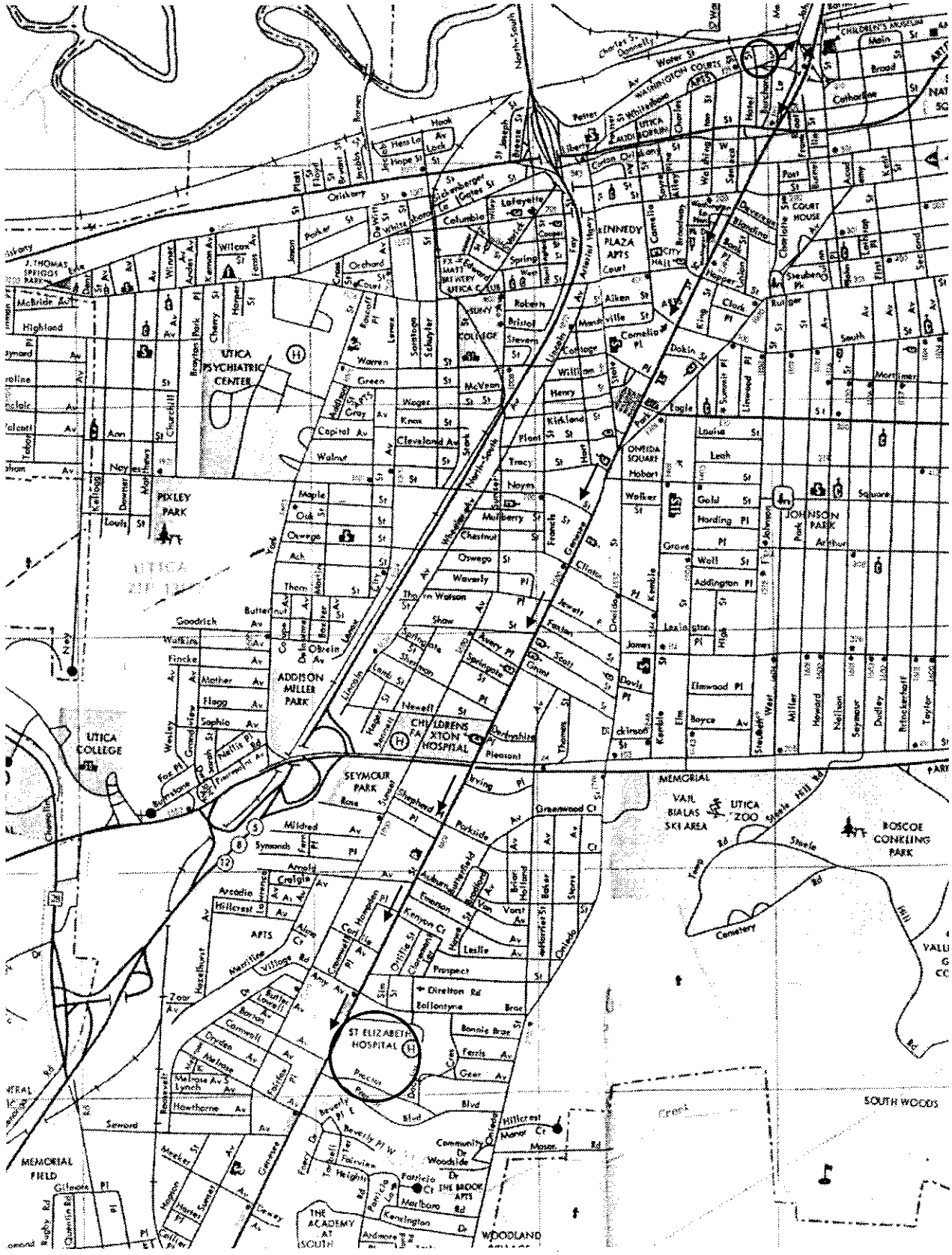
FIELD AUDIT FORM (continued)

General Comments: _____

_____

_____

_____



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26-28 WHITESBORO STREET SITE
UTICA, NEW YORK

HOSPITAL ROUTE MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 7-1

HEALTH AND SAFETY PLAN

APPROVALS

By their signature, the undersigned certify that this Site Health & Safety Plan (HASP) is approved and will be utilized for the Dvirka and Bartilucci, Consulting Engineers, 26-28 Whitesboro Street Project located in Utica, New York.

_____ _____

Thomas Maher Date

Dvirka and Bartilucci, Project Director

_____ _____

Gerald Gould Date

Dvirka and Bartilucci, Project Manager

_____ _____

William Ryan Date

Dvirka and Bartilucci, Corporate Health and Safety Officer

_____ _____

Dean Stahl Date

Dvirka and Bartilucci, Site Field Operations Manager

_____ _____

Dean Stahl Date

Dvirka and Bartilucci, Site Health and Safety Coordinator

_____ _____

Bruce Groves Date

Emilcott Associates, Inc., Health and Safety Consultant

7.0 HEALTH AND SAFETY PLAN

7.1 Introduction

This Health and Safety Plan (HASP) is being developed as part of the 26-28 Whitesboro Street Project located in Utica, New York. This plan and the subsequent activities of this project must be re-evaluated should project conditions change.

The procedures and protocols in this plan have been established to ensure that a mechanism is in place to cover project personnel in the event that hazards from the site contamination are encountered during the project. This plan addresses all surveying, drilling, and associated activities that will be performed by Dvirka and Bartilucci (D&B) and their subcontractors. Existing health and safety procedures are in place and will be referenced where appropriate. This HASP is not designed to replace existing procedures or to cover all health and safety procedures required during typical activities. The HASP covers those special and/or unique health and safety procedures ensuing from actual or potential contact with contaminated materials and the requirements pursuant to OSHA 1910 General Industry Standards, OSHA 1926 Construction Standards, and specifically, the OSHA Standard for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120), where applicable.

Compliance with this HASP is required of all authorized personnel (Dvirka and Bartilucci, project personnel, project support personnel and visitors) who enter the working areas of this project. Under no circumstances will any person enter an established restricted area or exclusion zone without meeting the requirements of this HASP.

The content of this HASP may change or undergo revision based upon monitoring results, changes in the technical scope of work or additional information made available to health and safety (H&S) personnel. Any changes proposed must be reviewed and approved by designated D&B personnel.

7.1.1 Project Location

SITE NAME:	26-28 Whitesboro Street
SITE LOCATION:	Utica, New York
ON-SITE TELEPHONE:	To be determined
ENTRY OBJECTIVES:	Soil/groundwater sampling, radiation survey

7.1.2 Project Personnel

This refers to all D&B operations and project management personnel, including Dvirka and Bartilucci subcontractors whose work responsibilities may require entry into project work zones. Project Personnel are divided into two categories: Contact project personnel and non -contact project personnel.

Contact Project Personnel - Refers to project personnel who have a reasonable potential to come into contact with contaminated soil, groundwater or soil gas and vapors. The specific job tasks will be evaluated to determine personnel classifications. The Health & Safety Coordinator (HSC) or designee [Field Operations Manager (FOM), e.g.] will assist with this determination.

Non-Contact Project Personnel - Refers to Project Personnel who are not reasonably expected to come into contact with contaminated soil, groundwater or soil gas and vapors. The specific job tasks will be evaluated to determine personnel classifications. The HSC or designee will assist with this determination.

Project Support Personnel - refers to all other persons who may enter the project work zone such as truck drivers, utility workers, and emergency crews (police, fire, ambulance) as well as any other personnel designated as a project visitor by D&B.

Project Personnel Assignments

Dvirka and Bartilucci

Project Director	Thomas Maher	516-364-9890
Project Manager	Gerald Gould	315-437-1142
Field Operations Manager	Dean Stahl	315-437-1142
Corporate Health and Safety Office	Bill Ryan	516-364-9890
Site Health and Safety Coord.	Dean Stahl	315-437-1142

Other Project Organizations

City of Utica	City Engineer	315-792-0152
Underground Utilities	UFPO	800-962-7962

Health & Safety Consultant

Emilcott Associates, Inc.	Bruce D. Groves, CIH	973-765-0991

Environmental Services

Dvirka and Bartilucci	Gerald Gould	315-437-1142

Drilling

Paratt-Wolff, Inc	Bill Morrow	315-437-1429

Geophysics

Naeva Geophysics, Inc.	Preston Hawkins	845-268-1800

Medical

Industrial Medical Associates		315-478-1977

7.1.3 Emergency Phone Numbers

Agency		Phone No.
Fire Department		911 or 315-724-5151
Police Department		911
Ambulance		911
Hospital:	St. Elizabeth Medical Center 2209 Genessee Street Utica, New York	315-798-8100

Route to hospital: East (1block) on Whitesboro Street, turn right onto John Street (1 block), merge left onto Genessee Street, proceed south 2.75 miles. Saint Elizabeth Medical Center is on the left (east) side of the street.

Poison Control Center	911
USEPA Region 2 Hotline	800-424-8802
US EPA Information Line	800-424-8802
National Response Center (NRC) for Oil/Chemical Spills	800-424-8802

7.2 Health and Safety Personnel

7.2.1 Health and Safety Personnel Designations

The following briefly describes the health and safety designations and general responsibilities for this project.

Project Director (PD) - Dvirka and Bartilucci.

The Project Director (PD) has overall executive responsibility for all activities and personnel on the site during all project activities described in this H&S Plan.

Project Manager (PM) – Dvirka and Bartilucci

The Project Manager will assure that all elements of the company health and safety program are addressed in the Site HASP.

Corporate Health and Safety Officer (HSO) or
Field Operations Manager (FOM) as designee - Dvirka and Bartilucci

The Health & Safety Officer (HSO) or desginee (e.g. the Field Operations Manager) has overall responsibility for the development, implementation and enforcement of this HASP. He/she will also approve any changes to this plan due to modification of procedures or newly proposed site activities.

The HSO or designee will be responsible for the development of safety protocols and procedures, pursuant to the hazardous waste aspects of this project, and will also be responsible for the resolution of any outstanding health and safety issues which arise during the conduct of site work.

The HSO will assign health and safety-related duties and responsibilities only to qualified individuals. The HSO or designee will provide technical assistance for high hazard or other project tasks as required. He/she may periodically conduct QA/QC surveys of the health and safety procedures implemented onsite. Before personnel may work in designated exclusion zones, status of medical clearance and applicable health and safety training must be presented to the HSO or his designee, pursuant to those requirements specified in OSHA 29 CFR 1910.120.

Site Health & Safety Coordinator – Dvirka and Bartilucci

Before personnel may work in designated exclusion zones, status of medical clearance and applicable health and safety training must be presented to the HSC or designee, pursuant to those requirements specified in OSHA 29 CFR 1910.120.

The HSC or designee will be present for all site activities that have the reasonable potential for bringing workers into contact with contaminated materials. The HSC has stop-work authorization, which he/she will execute upon determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation, such as extreme weather conditions. Authorization to proceed with work will be issued by the HSC after such action. The HSC or designee will initiate and execute all contact with support facilities and personnel when this action is appropriate.

Health and Safety Consultants – Emilcott Associates, Inc.

Emilcott Associates, Inc. will provide health and safety consulting services as needed.

7.3 Site and Project Description

7.3.1 Site History and Physical Description of Proposed Work

The 26-28 Whitesboro Street site is located in Utica, New York. The site is situated in a commercial area with nearby highways and railroad tracks. Work activities at the site will involve collection of soils and groundwater samples, and a radiation survey. A project staging area will be established on the corner of Water and Division Streets. Decontamination of project equipment will take place at this staging area. The project location is identified on the site map in Figure 2-1.

The site was occupied by a fishing rod manufacturer from 1920 to 1983, at which time it was owned by the Baggs Square Corporation, whose activities are unknown. Cajan Realty owned the

property from 1991 until 1993, when The City of Utica assumed ownership. The buildings on the property were destroyed by fire in 1994 or 1995 and subsequently demolished. At present, the site is a vacant lot. The property is approximately 1.63 acres in size and consists of eight individual tax parcels. The property presently is divided into a western portion (Area1) and an eastern portion (Area 2). The designation given to the two Areas by the New York State Department of Environmental Conservation is B00063-6.

7.3.2 Scope of Work

Work activities at the site will consist of collecting soil and groundwater samples and conducting a radiation survey. Decontamination of equipment will be conducted at the site. It is noted that only the activities that have the reasonable potential for contacting contaminated groundwater and/or soil are covered by this HASP. Additional information on the scope of work, work plan and project schedule can be found in Sections 2 through 6 of this Site Work Plan.

7.3.3 Results of Past Investigations

A Phase I Environmental Site Assessment (ESA) and a limited Phase II ESA were done for the property in 1997. Those investigations indicated the presence of contaminated soil in the north central portion of Area 1, although specific compounds and the extent of the contamination were not identified. Groundwater contamination was not detected in 1997. NYSDEC issued Spill Number 97-09722 for the property.

A second Phase II ESA was done in 1999. This investigation found fuel oil contamination in the soil and groundwater near the northern boundary of Area 1. Compounds typically found in gasoline were detected in the soil/groundwater interface in Area 2.

The materials found include:

- Styrene
- Naphthalene
- Ethylbenzene

- Toluene
- Xylene
- Trimethylbenzene
- n-Butylbenzene
- Fluorene

According to D&B's sampling protocol, the following potentially hazardous materials may be encountered during the project:

- Cyanide
- PCBs
- Volatile/semivolatile organic compounds (VOC/SVOC)
- Metals
- Pesticides
- Lead

Chemical Hazards:

VOC: This group of compounds has high vapor pressure (vaporize easily) and are readily detected by air monitoring instruments (PID and FID, e.g.). Since gasoline contamination is suspected, benzene could be encountered. Since the PEL for benzene is among the lowest of VOCs, benzene is generally targeted when establishing action levels for using respiratory protection and/or establishing site exclusion zones. Therefore, the air monitoring action levels for organic vapors used in determining the use of respiratory protection are based in part on the PEL for benzene. The primary routes of entry for the VOCs are inhalation of vapors and skin contact with VOC contaminated soil.

Cyanide: As a precaution, and due to lack of information about subsurface composition D&B has assumed that cyanides are present on the site. The primary routes of entry for cyanides are inhalation and ingestion of dust containing cyanides.

Pesticides/metals: For the most part, these materials present a contact hazard, with possible inhalation concerns from airborne dust.

7.4 Hazard Assessment

7.4.1 General Hazard Assessment

The probability of worker exposure to various hazards is dependent on the job task. The job tasks that involve contact with potentially contaminated soils and groundwater are expected to have a greater potential for exposure than job tasks that do not come into contact with the soil, interstitial soil gas and/or groundwater. Site workers may be exposed to chemical or other hazards by inhalation, ingestion, injection (penetration through skin), or dermal (skin) contact. To protect potentially exposed personnel, zones will be established, dust control measures will be implemented, respirators and personal protective equipment may be worn, personal and area air monitoring may be conducted, and decontamination procedures will be required, as circumstances dictate. These protective measures are discussed in the following sections: 7.5- Zones/Site Control, 7.6-Personnel Levels of Protection, 7.7-Monitoring Procedures, 7.10-Physical Hazards, and 7.12-Decontamination.

7.4.2 Scope of Work

The following activities encompass the anticipated scope of work for on-site activities:

- Surface soil sampling, soil probes and well drilling for groundwater monitoring wells for the investigation of contamination;
- Groundwater handling activities including pumping, siphoning, bucketing, interim containers handling, temporary storage and transport and disposal to on-site or off-site facilities
- Air monitoring for airborne contaminants/dust using direct reading instruments or other sampling methods
- Radiation survey using hand-held instruments

- Material handling, stockpiling and temporary storage of materials on-site, packaging of samples to be sent for analysis.

7.4.2.1 Operations

The following list incorporates anticipated on-site operations that will be completed during the investigation:

- Soil probes/borings and well drilling
- Staging, rigging and lifting
- Liquid transfer activities
- Material handling of potentially contaminated materials
- Decontamination of equipment and personnel

The following is a general discussion of the hazards that may be encountered on site. Additional information on any contaminants encountered during this project may be found in health and safety references, such as the NIOSH "Pocket Guide to Chemical Hazards."

7.4.3 Physical Hazard Analysis

Potential hazards that are most likely to be encountered at the site during field operations include, but are not limited to:

- Weather conditions (lightning, rain, and high winds, etc.)
- Slips, trips, falls on uneven/overgrown surfaces
- Heavy equipment traffic
- Striking and struck-by (heavy equipment)
- Moving or rotating machinery

- Flying debris from drilling
- Electrocution from overhead power lines and underground utilities (water, gas, sewer and process systems) and distribution (substation) components (transformers)
- Active rail and vehicular traffic

7.4.4.1 Biological hazards

The location of the site is such that a limited number of biological hazards may exist. These hazards may include, but are not limited to: ticks; microbiological agents (molds and fungi), improperly disposed of household garbage, poison plants such as poison ivy, oak and sumac, animals and rodents that may inhabit the site.

7.4.5 Chemical and Radiation Hazards

Radiation exposure can occur through ingestion, dermal absorption, inhalation of airborne dust, and accidental injection through skin punctures. Ionizing radiation takes three forms: alpha particles, beta and gamma/x-ray radiation. Alpha particles cannot penetrate skin or ordinary clothing and present mainly an inhalation hazard. Beta radiation can cause burns on the skin and affect subsurface blood. Protective clothing, as well as good hygiene and decontamination practices provides good protection against alpha and beta radiation. Gamma radiation can pass through the body and cause damage. Special protective clothing and barriers are required when gamma levels are high.

The chemicals of concern listed in Table 7-1 are potential contaminants previously identified or suspected to be in the groundwater and soil.

Potential for these exposures exist during the activities associated with surveying, drilling, and handling soil and water for sampling or disposal. Nearby automobiles and railroad traffic may also cause an increase in airborne exposure concerns when conducting operations close to the

surrounding roadways and railroad tracks. Precautions should be taken to continuously assess the workplace environment by observation and use of real-time-direct reading instruments during site operations where there exists a potential for contact with contaminants. Preventive measures must be taken to prevent an uncontrolled release or exposure to vapor, liquid or solid contaminants by workers and/or the general public. Assessment and prevention strategies are discussed in other sections of this HASP and must be practiced on a continuing basis by all on-site personnel throughout this project

Cyanides are a group of compounds based on a common structure formed when elemental nitrogen and carbon are combined. When cyanide combines with metals and organic compounds, it forms simple and complex salts and compounds.

Table 7-1
PERMISSIBLE LIMITS
AND HEALTH HAZARDS
OF CONTAMINANTS OF CONCERN
Source: NIOSH Pocket Guide to Chemical Hazards

Chemical	OSHA Permissible Exposure Limits	Primary Health Hazard (Target Organs)
VOC/SVOC		
Benzene	1 ppm, ST* 5 ppm	Eyes, skin, respiratory system (RS), blood, central nervous system (CNS), bone marrow
Toluene	200 ppm C**300 ppm	Eyes, skin, RS, CNS, liver, kidneys
thylbenzene	100 ppm	Eyes, skin, RS, CNS
Xylene	100 ppm	Eyes, skin, RS, CNS, gastrointestinal (GI) tract, blood, liver, kidneys
laphthalene	100 ppm	Eyes, skin, blood, liver, kidneys, CNS
Styrene	100 ppm C 200 ppm	Eyes, skin, RS, CNS
,2,4-Trimethylbenzene	NIOSH 25 ppm IDLH (none)	Eyes, skin, RS, CNS, blood
,3,5-Trimethylbenzene	NIOSH 25 ppm IDLH (none)	Eyes, skin, RS, CNS, blood
Fluorene	Not listed	
-Butylbenzene	Not listed	
METALS:		
rsenic	0.010 mg/m^3	Liver, kidneys, skin, lungs, lymphatic system
Barium	0.5 mg/m^3	Eyes, nose, throat, lungs, heart and GI tract

Chemical	OSHA Permissible Exposure Limits	Primary Health Hazard (Target Organs)
Cadmium	0.005 mg/m^3	RS, kidneys, prostate, blood
Chromium	0.5 mg/m^3	Eyes, skin, RS
Lead	0.050 mg/m^3	Eyes, GI tract, CNS, kidneys, blood, gingival tissue
Selenium	0.2 mg/m^3	Eyes, skin, RS, liver, kidneys, blood, spleen
OTHER COMPOUNDS		
PCBs	0.5 mg/m^3 (skin)	Skin, eyes, liver, reproductive system
Cyanide (potassium or sodium cyanide, as CN)	5.0 mg/m^3	Heart, eyes, nose, throat, skin

*ST - Short-Term Exposure Limit

**C - Ceiling Limit

A brief discussion of potential pathways of exposure and exposure control methods is presented below.

Inhalation - An inhalation exposure to volatile organic compounds and other gases and vapors would typically occur from exposure to the interstitial soil gas using vents or drill holes as pathways.

Contact with Skin and Eyes - Contaminated groundwater and sediments may come into contact with skin and eyes during work activities. Cotton coveralls, work gloves, and eye protection will be used, as necessary, to minimize and/or prevent skin and eye contact exposures.

Ingestion - Ingestion of contaminated materials may occur as a result of a hand-to-mouth contact (eating, drinking, smoking) in contaminated areas or prior to appropriate personal decontamination. Frequent and thorough washing of hands and face, restriction of food items and smoking in the work area, proper use of work clothing and personal decontamination will control the potential for ingestion of contaminated soils.

Because the potential for coming into contact with hazardous substances will vary with each job task, the probability of exposure will be assessed per task as discussed below:

7.4.6 Task Specific Hazard Assessment

At this site, potential exposure to contamination is dependent principally on work activity. Those work tasks that involve significant disturbance and contact with subsurface soil and water (e.g. drilling or excavation) have the highest project personnel exposure potentials. As such, this plan has established categories of work tasks based on worker exposure potential to site contaminants.

Non-Contact -Work activities that have little or no reasonable potential for contact or exposure to hazardous site contaminants.

Contact -Work activities that have some reasonable potential for contact or exposure to hazardous site contaminants.

7.4.6.1 Non-Contact Personnel

Limited Soil, Water & Soil Gas Contact

It is anticipated that the following activities require minimal soil and water contact, and should not result in exposure to potentially contaminated soil, water or soil gas and vapors. These activities should not require additional Health and Safety (H&S) considerations beyond those H&S practices already in place for this type of project. These tasks may include:

- Site Preparation
- Surveying
- Surface Restoration
- Air Monitoring activities
- Material Handling
- Geophysical Survey

Potential exposure to contaminated soil or water is not anticipated however, these operations will be evaluated and monitored as necessary. Access to the work zone is limited to Project Personnel, Project Support Personnel, and Authorized Visitors. Initially, exclusion zones will not be established for such activities. Exclusion zones will be established if visual evidence of contamination is observed, and/or instrument readings exceeding the action levels detailed in Section 7.7 are encountered.

In the event that contaminated materials are encountered, all project personnel involved in such areas (contact or non-contact) must meet the training requirements as defined in this HASP.

7.4.6.2 Contact Personnel

Contact with Groundwater, Soil Gas and Sediments

It is anticipated that personnel working in the following activities have some reasonable potential to come into contact with contaminated groundwater, soil gas and vapors and sediments. These activities include:

- Drilling
- Well Installation
- Handling of Drill Cuttings and Fluids
- Sample collection
- Liquid transfer activities
- Decontamination of equipment and personnel

These activities will be evaluated and monitored by the HSO and/or designee. Exclusion zones will be established as required. All project personnel required to work in designated exclusion zones must meet the training requirements for working in an exclusion zone as outlined in section 7.8 of this HASP. Personal protective clothing will be worn as defined in Section 7.6, or as determined by the HSO or designee.

7.4.6.3 Equipment

The following equipment is anticipated to be used on site during this project:

- Trucks and other support vehicles
- Drill rigs
- Liquid and solid soil sampling equipment

7.4.7 Activity Hazard Analysis

Based upon the equipment in use and the tasks to be completed, the following is a list of potential hazards or hazardous activities that may be encountered:

- Contact with overhead electrical lines and transformers and/or contact with underground utility services (electrocution, e.g.)
- Heavy equipment operation (noise, crushing, entanglement, e.g.)
- Exposure to contaminated and/or hazardous materials (soil and water): Inhalation of VOC, contact, ingestion of contaminants
- Adverse weather conditions: heat/cold stress
- Exposure to airborne dust contamination
- Heat and/ or cold stress
- Fire
- Slips/trips/falls due to slippery, uneven and/or unstable work surfaces
- Biologicals (snakes, ticks, stinging insects, etc.)
- Other physical hazards: Accidents with pedestrians, contact with unprotected

protrusions (fence posts, etc.), sharps (broken bottles, e.g.),

- Hazard caused from the use of PPE (decreased flexibility, sight obstruction, heat stress, etc.)

7.4.8 Contact Hazard Analysis

A hazard analysis was developed for the work activities that involved potential exposure to contamination at the site (contact work). The analysis was based on the potential for the hazard regardless of the contaminant concentrations. For example, the potential for an individual to come in contact with liquids or sediments during equipment decontamination is moderate to high. The actual hazard would be low if the liquids or sediments are not contaminated. Based upon the current contaminant level information, exposure to contamination is expected to be low. The following table outlines the hazard analysis for the Contact Work Activities.

TABLE 7-2
Hazard Analysis

Potential Hazard	Soil Boring Drilling	Well Installation	Sample Collection/ Liquid Transfer	Waste Handling (drill cuttings)	Decontamination
Inhalation of volatiles	Low to moderate	Low to moderate	Low to moderate	Low to moderate	Low
Skin & eye contact	Moderate	Moderate	Moderate to high	Moderate to high	Moderate to high
Ingestion	Low	Low	Low	Low	Low
Inhalation of dust	Low	Low	Low	Low	Low to moderate
Heat/Cold stress	Depends on temperature	Depends on temperature	Depends on temperature	Depends on temperature	Depends on temperature
Heavy equipment	Moderate to high	Moderate to high	Low	Low	Low to moderate
Tripping	Low	Low	Low	Low	Low
PPE	Low	Low	Low	Low	Low to moderate
Utilities	Moderate	Moderate	Low	Low	Low
Other Physical hazards	Moderate	Moderate	Moderate	Moderate	Moderate
Biological hazards	Low	Low	Low	Low	Low
Flammable hazards	Low	Low	Low	Low	Low

7.5 Zones/Site Control

A series of zones may be used to restrict access to work areas where potential contamination may be present and to prevent the accidental spread of contaminated materials. Three separate zones may be used at this site. These zones are identified as 1) the work zone, 2) the exclusion zone, and 3) the contamination reduction zone (CRZ). Initially, exclusion zones will not be established. Area classifications will change as circumstances may warrant. Exclusion zones will be established for other locations if certain conditions are met, i.e. the exceeding of project air monitoring action levels or the encountering of odorous or visibly contaminated materials.

7.5.1 Work Zone (WZ)

The work zone is the project work area. All physical project work activities will be conducted within the work zone. The work zone is restricted to project (contact and non-contact) personnel and project support personnel and visitors as defined in this document. Access to the site will be controlled by caution tape and/or safety cones around the equipment and work area. In addition, equipment will be secured at the end of each shift and covers will be placed over any open borings, trenches or pits. Unauthorized people will be prohibited from entering the site.

All personnel (project personnel, project support personnel, visitors) entering the work zone will be briefed by the HSC or designee prior to their initial entry. All Contact Project Personnel entering the work zone must meet the Training and Medical requirements as outlined in Sections 7.8 and 7. 9. The protective work clothing and equipment to be worn is defined in Section 6 or as required by the HSC or designee. All Contact Project Personnel and equipment exiting the work zone must be cleaned up before leaving the site or as required by the HSC.

If activities defined as non-contact are performed within the work zone. The HSC will monitor these activities. Exclusion zones will be established for these operations by the HSC or designee if the action levels listed in Tables 7-4 and 7-5 are exceeded, there are visible signs of contamination; and/or there are changes in operations or the knowledge of the site which would

go through decontamination. This zone will be contiguous with the exclusion zone. The area will be marked using flagging tape or other means to readily identify the boundary of the zone. Access to this zone will be limited to Contact Project Personnel exiting the Exclusion Zone and Decontamination Technicians assisting with decontamination. A separate equipment decontamination area will be established.

7.6 Work Clothing and Levels of Personnel Protection

7.6.1 Work Clothing

The HSC or designee will recommend appropriate levels of protective clothing to be worn in the event that hazardous materials are encountered. The levels of protection planned for this project are identified in the following chart. In general, typical work clothing will be worn on this project.

7.6.2 Levels of Protection

The level of protection to be worn by field personnel will be defined and controlled by the HSS or his designee. Below is a list of tasks and the respective levels of protection when working inside a project exclusion zone.

TABLE 7-3

TASK	LEVEL OF PROTECTION			
	Respirators/Supplied Air		PPE	
Activities	Initial	Contingent	Initial	Contingent
Drilling and Well Installation	D	C	D	C
Sample Collection	D	C	D	C
Waste Handling	D	C	D	C
Decontamination	D	C	D	C

Definition of Levels of Protection:

***Respirators*:**

Level D: No respirator is required.

Level C: Full or Half face, Air Purifying Respirator (APR) with combination HEPA (dusts, fumes, aerosols) and organic vapor cartridges. (Yellow)

***PPE*:**

Level D: Dedicated work coveralls or tyvek *
Gloves
Appropriate steel toe work boots
Hardhat
Safety glasses with side shields as needed

Level C: Polycoated tyvek disposable coveralls or equal substitute*
Vinyl, neoprene, nitrile rubber or butyl rubber outer gloves*
Surgical inner gloves
Appropriate leather work boots with chemically resistant outer boots* or chemically resistant rubber boots
Hardhat
Safety glasses with side shields as needed

- As determined by the HSC or designee

7.6.3 Donning and Doffing

Manufacturers procedures for donning and removing PPE ensembles will be followed in order to prevent damage to PPE, reduce and eliminate migration from the work area and a transfer of contaminants to the wearer's body or others.

7.6.4 Storage and Inspection

Since storage facilities will not be readily available on site, only minimal quantities of protective equipment will be maintained on site. Items such as gloves, protective suits, and hearing protection will be kept within a suitable storage area. Respirators will be stored in plastic bags when not in use.

Employees are responsible for inspecting personal protective equipment prior to donning, during use and at the end of the shift. Defective equipment shall be removed from service and reported to the HSC or designee. All reusable equipment will be maintained in a sanitary condition, in accordance with the manufacturer's recommendations.

7.7 Monitoring Procedures

7.7.1 Monitoring During Site Operations

Monitoring for this project is being conducted to provide data to assist in managing worker safety procedures in the exclusion zones, to delineate zones, and to assist with determination of appropriate levels of personal protective equipment. Site-specific action level criteria have been established for all the instruments that may be used in making field health and safety determinations. Other data, such as the visible presence of contamination and/or the steady state nature of air contaminant concentration, is also used in making field health and safety decisions. Therefore, it is possible that the HSC may establish exclusion zones and/or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established HASP action levels.

Contaminants of Concern

- Volatile/Semi-volatile Organic Contaminants
- Heavy metals (lead, etc.)

- Cyanide
- PCB/Pesticides

On-site air monitoring will be performed using some or all of the following instruments or equivalents:

- Portable photoionization detector (PID) or equivalent with a 10.6 eV lamp for the detection of organic vapors.

- Colorimetric detector tubes for specific air contaminants; i.e., benzene, etc. Colorimetric detector tubes can be used in conjunction with the PID to detect and quantify the concentration of selected contaminants in the air. The detector tubes to be employed must be sensitive in the concentration ranges in the action levels range for those contaminants. It should be realized that some "compound specific" detector tubes will also detect interference from other aromatic or aliphatic hydrocarbons; readings do not differentiate between which compounds are present. A hand pump and detector tubes for target compounds will be utilized as needed. If PID readings are elevated when compared to background (e.g., 1 ppm or more above background) or if separate phase product or odorous material is detected, then detector tubes for target compounds may be utilized.

- Respirable dust monitor(s) for the monitoring of particulate emissions. The Action Level indicated in Table 7-1 and 7-2 for respirable dust is based on considerations for potential exposures to nuisance dust as well as other particulate type contaminants such as heavy metals or contaminants that are attached to particulate matter. NYSDEC technical guidance document for Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites is also referenced.

- Personal and perimeter sampling will be conducted where there is a potential for exposure to airborne lead, pesticides, PCB or other metals. Full-shift personal sampling may be conducted to document exposures for various job class and/or work activities. At a minimum, perimeter sampling will include samples at the downwind property line. Samples will be sent to an American Industrial Hygiene Association (AIHA) certified

laboratory for analysis. Affected employees will be notified, in writing, of the results of the personal sampling within five days of the company's receipt of the sampling results.

All monitoring and surveillance equipment will be operated, maintained and calibrated in accordance with the manufacturer's instructions and D&B's quality assurance procedures. They will be checked daily for proper operation. Organic vapor monitoring will be conducted by trained field staff prior to, during and following sampling, or disturbance of soils and/or sediments. Should contamination levels indicate a hazard, the FOM, HSC or qualified designee will review monitoring procedures, results and required personal protective equipment to ensure personnel are adequately protected from the hazard.

Some monitoring and surveillance equipment is impacted by humidity (PID), cold weather (all electrical devices), communication transmissions and possibly high voltage electrical transmission wires. Any unusual meter responses should be documented and a diagnosis of potential influencing factors made to determine and eliminate the cause.

Several factors were considered in the establishment of the air monitoring action levels and instrument selection. The prevalence of the contaminants at the site, soil gas and vapor data, contaminant ionization potentials and OSHA permissible exposure levels were all evaluated.

7.7.2 Air Monitoring Locations and Action Level Criteria

The primary areas to be monitored during the project are the site perimeter and locations downwind of the work areas. A summary of the action levels to be used in association with these air monitoring activities, as well as other instrumentation which may be utilized at the discretion of the FOM, are presented in Tables 7-4 and 7-5.

When the PID readings are 5 units or more above background level, monitoring requirements required by the NYSDOH Community Air Monitoring Plan (CAMP) for vapor emission situations during ground intrusive activities shall be followed.

The recommendations provided in the NYSDEC Division of Environmental Remediation Guidance Document for Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites shall be followed regarding dust suppression and air monitoring.

7.7.2.1 Perimeter Monitoring

It is important that the location and maintenance of the exclusion zone boundaries are adequate to protect non- exclusion zone personnel. VOC and dust levels at the perimeters of the work and exclusion zones will be maintained below the established action levels. To help manage this task, air monitoring will be performed in the following manner.

7.7.2.2 Background Readings

Before any field activities commence, the general background levels of total volatiles will be sampled, and ambient environmental monitoring for total dust concentrations (when needed) will be conducted. During each work day, the perimeter of the exclusion zones will be monitored.

7.7.2.3 Perimeter Action Levels

The instrumentation action levels for the real time dust monitors at the perimeter sampling locations are as follows:

Table 7-4

INSTRUMENT	ACTION LEVEL	LEVEL OF PROTECTION OR ACTION REQUIRED
Aerosol Monitor	>2.5 mg/m^3 * TWA	Implement dust control measures or expand exclusion zone boundaries.
PID	>1 ppm above Bkgd (TWA -5min) > 5 ppm above Bkgd	Expand exclusion zone boundaries. Implement NYSDOH CAMP
Radiation Meter	> 20,000 cpm* or 8 µR/h**	Expand exclusion zone boundaries.

*cpm = counts per minute **µR/h = microroentgens/hour

7.7.3 Exclusion Zone Action Levels

These action levels are guidelines used by the HSC in making field health and safety decisions. Such decisions include: use of respiratory protection, placement of zone boundaries and stopping/resumption of work.

Table 7-5

INSTRUMENT	ACTION LEVEL * (at breathing zone of workers)	LEVEL OF PROTECTION OR ACTION REQUIRED
PID	<=5 ppm above background	No Respirator (Level D)
	> 5 ppm above Bkgd & <= 50 ppm above Bkgd (TWA-15 min)*	Respirator (Level C). Contact HSC or his designee
	> 50 ppm above Bkgd (TWA-15 min)*	Stop work, resume when readings abate.
Radiation Survey	> 20,000 cpm or 8 µR/h > 50,000 cpm or 20 µR/h	Monitor continuously Stop work, resume when readings abate.
Aerosol Monitor	>2.5 mg/m^3 * 15 min TWA Area sample in work area.	Implement dust control measures, Level C Respirator

* Reading taken at breathing zone heights.

7.7.4 Monitoring of Personnel

Personal or area monitoring for time weighted average (TWA) measurements may be performed during some operations and activities to qualitatively detect the presence of select volatile and/or semi volatile organic compounds. Personal monitoring will be performed as directed by the HSC or designee. Sampling collection and analysis will be conducted according to the procedures set forth in either the NIOSH Manual of Analytical Methods or the OSHA Analytical Methods Manual. An American Industrial Hygiene Association (AIHA) accredited laboratory will be used for sample analysis.

7.7.5 Permit-Required Confined Space Monitoring

Confined space entry is not anticipated during this project.

7.8 Training

7.8.1 Initial Site Training

Initial site briefing will be provided on-site by the HSC or designee for all Project Personnel (Contact and Non-Contact), Project Support Personnel and Visitors prior to initial entry onto the site. Site training will also be provided on an as needed basis to specifically address the activities, procedures, monitoring, and equipment for the site operations. Such training will include site and facility layout, hazards, and emergency services at the site, and will detail the provisions contained within this HASP. This training will be documented.

7.8.2 "Contact" Project Personnel Training

All Contact Project Personnel designated to work in the exclusion zones, as outlined in Section 7.5, are required to have successfully met the initial training requirement and refresher training requirements pursuant to OSHA 29 CFR 1910.120(e).

7.8.3 Supervisor Training

All "supervisory" personnel designated to work in any designated exclusion zones as outlined in Section 7.5 will be required to have successfully met the supervisory training requirement pursuant to OSHA 29 CFR 1910.120(e).

7.9 Medical Surveillance

All contact personnel engaged in on-site activities on this project must have baseline physical

examinations and be participants in their employer's medical surveillance program. This program must meet the requirements of 29 CFR 1910.120(f). Medical procedures beyond baseline physical and routine medical surveillance are not planned for this project. Medical records for employees are maintained at the corporate office and by the company's medical group. Medical records are maintained in accordance with the recordkeeping requirements of 29 CFR 1910.20. Additionally, any employee required to wear a respirator for Level C PPE will be approved by a licensed health care provider for respirator use as defined in the OSHA Respiratory Standard 29 CFR 1910.134.

In the unlikely event of an exposure event occurring, the affected employee will sent for any evaluation and treatment that may be needed to either the Corporate Medical Group, or to the designated hospital.

7.10 Physical Hazards and Safety Considerations for Site Operations

Note: This section is not intended to replace established health and safety procedures.

7.10.1 Weather

If severe weather occurs that may affect the safety of site workers, the Dvirka and Bartilucci Project Manager or designee shall stop affected field operations. The Project Manager or his designee will approve resumption of operations when weather conditions improve to acceptable levels.

7.10.2 Heat and Cold Stress

Depending on the time of year and weather conditions, cold and heat stress may be a potential problem. The HSC will ensure that the heat and cold stress programs are implemented and that adequate rest breaks and liquid (i.e., water, gatorade) consumption occur.

Proposed work/rest schedules will be dependent upon the weather conditions encountered

and the level of personal protective equipment being utilized by on-site personnel. The crew supervisor will use his judgement to establish and adjust work/rest schedules.

7.10.3 Noise

Excessive noise can be a problem during certain activities on site, such as well drilling or the use of load machinery. If necessary, as designated by the HSC, ear plugs or other hearing protection equipment will be made available for personnel use.

7.10.4 Illumination

If work activities occur before sunrise and/or after sunset or in dark or poorly lit indoor areas, lighting will be provided at each work area to meet the requirements of 29 CFR 1910.120(m).

7.10.5 Slip, Trip and Fall Hazards/Fall Protection

As in any work area, it is expected that the ground may be uneven, the surface may be unreliable due to settling, surface debris may be present, and wet or muddy areas may exist. Therefore, the potential for slipping, tripping, and falling is present, especially considering that respirators may be used which can impede vision. Severe trip hazards, like a sinkhole, will be identified in site meetings and demarcated by flags or caution tape.

A Fall Protection Program has been established to protect Dvirka and Bartilucci employees and outside contractors from injuries associated with falls from elevations. Protection from these hazards is achieved using a combination of fall hazard elimination, fall prevention systems, and personal fall arrest systems. Components of the Fall Protection Program include:

a. Responsibilities for fall control and protection;

b. Fall assessment checklist

c. Hazard Control Analysis

d. Equipment list and inspection

e. Contractor activities

f. Applicable OSHA regulations.

7.10.6 Electrical Hazards

To control the potential for electrical hazards operating heavy equipment will not be allowed within 15 feet of any overhead live electrical wires or equipment. Ground fault circuit interrupters shall be used on portable hand tools. FOM will be responsible for ensuring that all activities meet the appropriate electrical requirements outlined in the OSHA construction standards.

7.10.7 Lockout/Tagout

A Lockout/Tagout Program has been established to protect employees and contractors from injuries that could result from the unexpected or unplanned start-up or movement of machinery or equipment during maintenance, installation, adjustment, or servicing operations. This policy sets forth procedures, which will be used to ensure that employees are provided with the information and equipment they need to perform these tasks safely.

7.10.8 Dust Control

During all activities, dust control measures should be implemented if visible dust is observed at the perimeters of the exclusion zones. Dust control measures may include wetting the soil and/or covering stockpiled soils.

7.10.9 Traffic/Highway Safety

Project personnel may be required to wear safety vests when working on or adjacent to roadways and must comply with all applicable rules and regulations for traffic safety.

7.10.10 Guarding of Machinery and Equipment

Machinery and equipment guarding will be installed and maintained in accordance with 29 CFR 1910 and 1926 regulations. It is the responsibility of the HSC to assure compliance with OSHA guidelines for machine guarding.

7.10.11 Safe Driving Program

The standards of operation are designed to prevent vehicle accidents, comply with federal, state, and local regulations, prevent injury to employees and the public, and reduce vehicle operating and repair costs.

7.11 Communications

7.11.1 Hazard Communication

The HSC or designee is responsible for site specific training, maintaining and updating the site chemical inventory list, assuring labeling is adequate, obtaining and maintaining MSDS, notifying employees and contractors of the hazards associated with non routine tasks. The HSC shall inform any contractor of the potential hazards that may be encountered in the area where he/she will be working, should the HSC have such knowledge of these hazards.

7.11.2 General Communication

A primary and secondary means of communication will be provided. This may include two-way radios, portable telephones, or existing nearby telephones. Project personnel will be informed of the communication procedures during site briefings.

7.12 Decontamination Procedures

All personnel and equipment that have been within established exclusion zones shall be decontaminated. All decontamination facilities will be under the control of the HSC or designee. Clean-up activities may also occur for operations outside of the established exclusion zones. Such cleanup is part of typical monitoring and sampling, and other support operations.

7.12.1 Personnel Decontamination

Personnel decontamination facilities will be placed at the most practical location near established exclusion zones. If possible, these field decontamination facilities will be located upwind of the exclusion zone. Although decontamination facilities for Level D work are generally not required, some general decontamination procedures should be established at the site. At a minimum, a hand wash station or moist towellettes should be available at the site.

At a minimum, all personnel exiting established exclusion zones where Level C or B protection is utilized will be required to go through a wash and rinse process. This may consist of two tubs on the ground, one a wash tub and one a rinse tub. Personnel exiting the exclusion zones will be required to wash chemical protective clothing including: outer boots, outer gloves, and coveralls. This will be accomplished with a soapy water solution and scrub brushes. Personnel will then proceed to the next station, which will consist of a rinse tub containing clean water and a water sprayer. Personnel will stand in the tub and spray off their gloves, boots, and chemical protective clothing with clean water from the sprayer. Respiratory protection, if worn, will be removed after the rinse step.

7.12.2 Equipment Decontamination

Equipment decontamination will take place at the site as needed. Water generated as part of decontamination may be allowed to drain back into the *pre-existing* site soil. All field equipment that has been contaminated will be decontaminated before leaving the project site. The HSC or his designee will be responsible for equipment decontamination as needed.

7.13 Disposal Procedures

It is possible that solid and liquid wastes from sampling and drilling may be generated. Any waste materials containerized during the course of the project shall be appropriately marked pending sampling results and eventual disposal. All disposable personal protective equipment will be bagged or drummed, classified, and segregated for temporary storage on site for eventual disposal.

7.14 Emergency Plan

Emergency situations can be characterized as: fire or explosion, an environmental release, business interruption, or accident or injury to one of the field personnel. For incidents other than minor injuries to on site personnel, evacuation of the area will be conducted. The HSC and Project Superintendent will be notified immediately in the event of an evacuation.

Emergency phone numbers are listed in Section I of this Health and Safety Plan. In case of emergency, it is important that the following Incident Reporting Procedure be observed:

It is important to assure the quick and accurate transfer of information to all appropriate personnel in the event of an emergency situation. To simplify the procedure emergency situation can be reported by dialing 911. This includes incidents requiring police assistance, fire department, or medical emergencies.

Be sure you give the following information to the dispatcher:

1. Your full name

2. The nature of the incident (i.e. "Fire")

3. The location of the incident (i.e., "Street location and nearest intersection") The more specific the better.

4. What you need (i.e. "Fire Department and First Aid")

5. If you are able, where you will meet emergency responders (i.e. At end of West Street, near train tracks)

6. If applicable, a call back number or your pager number (e.g., "I'll be at the scene; my pager number is 123-4567").

7. Status of the situation. (e.g., is the situation stabilized or "I have the fire under control")

8. If anyone is injured or in need of emergency assistance (e.g., "A mechanic working on a pump was burned.")

7.14.1 Site Emergency Coordinator

The ***Site Emergency Coordinator*** is: Dean Stahl

7.14.2 Evacuation

In the event of an emergency situation, all personnel will evacuate and assemble at designated meeting areas. For efficient and safe area evacuation and assessment of the emergency situation, the HSC, Site Emergency Coordinator or alternate will have authority to initiate proper action if outside services are required. The Site Emergency Coordinator will ensure that access for emergency equipment is provided and that all combustion apparatus (e.g.; operating machinery) has been shut down once an emergency situation has been identified.

7.14.3 Personnel Injury

In the event of an emergency situation, the local emergency response group will be called. In case of a life threatening situation, emergency first aid shall be applied on-site as deemed necessary, then decontaminate and transport the individual to the nearest medical facility if needed.

The local rescue squad shall be contacted for transport as necessary in an emergency. Since some situations may require transport of an injured party by other means, transportation by automobile may be required.

7.14.4 Personnel Exposure Treatment

SKIN CONTACT:	Use copious amounts of soap and water. Wash and/or rinse affected area thoroughly, then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
INHALATION:	Move to fresh air and, if necessary, decon/transport to hospital.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate, if possible, and transport to emergency medical facility. The HSC will provide medical data sheets to medical personnel as requested (see Section XIV).

7.14.5 Safety Equipment

Basic emergency and first aid equipment will be made available at the Project Work Zone and/or the CRZ, as appropriate. This shall include a first aid kit and other safety-related equipment.

7.15 Community Relations

Informing the community about activities and/or an incident requires careful planning and the designation of a person to be the official contact between the community and the work facility. The person's responsibilities include working with the media and other agencies or community groups, and acting as the disseminator of authorized information. All written or verbal information releases to the media or other outside parties must be approved by the PM and D&B Public Relations Officer. It is important that field employees never answer questions directly from outside agencies and the media. All requests must be referred to the PM or designated Information Officer.

7.16 Recordkeeping

The HSC and/or designee will maintain health and safety information records for the site. The following information will be recorded as needed:

- Weather conditions (temperature, wind speed and direction)
- Air monitoring equipment calibration records
- Air monitoring results (date, time, location, data, instrument, person conducting sampling)
- Training Records
- Medical Surveillance Records
- Health and Safety Audit records
- Description of operation(s)
- Description of accident(s) (OSHA 200 log)
- Non-compliance with the HASP

7.17 Authorizations

Personnel authorized to enter the project work zones and exclusion zones at this site must be approved by the HSC or designee. Authorization will involve completion of appropriate training courses and medical examination requirements as outlined by this HASP, and review and sign-off of this HASP.

8.0 CITIZEN PARTICIPATION PLAN

As part of the Environmental Brownfields Site Investigation to be conducted at the 26-28 Whitesboro Street Site, Utica, New York this site-specific Citizen Participation Plan (CPP) has been developed to provide the transfer of project related information to interested parties.

8.1 Elected Officials

The following elected officials have been identified:

Mayor of Utica
Timothy Julian
1 Kennedy Plaza
Utica, New York 13502
315 792-0100

President of Common Council
Patrick Donovan

Common Council Members
Rose Ann Convertino
Howard C. Welch
Anne R. Sullivan
Robert M. Palmieri
Kelly M. Walters
Dayne Evans
Mello J. Testa
Lorraine E. Arcuri
Michael R. Caruso

Oneida County Executive
Ralph J.Eannace Jr.,
Oneida County Office Building
800 Park Avenue
Utica, NY 13501
315-798-5800

Oneida Co. Board of Legislators
Gerald J. Fiorini, Chairman
1800 Bedford St
Rome, NY 13440
315-336-6190
315-798-5900

NYS Assembly 116th District
RoAnne Destitio, Assemblywoman
Room #401, State Office Building
207 Genesee Street
Utica, NY 13501
315-732-1055

NYS Senate, 47th District
Raymond A. Meier
State Office Building
207 Genesee Street, 4th Floor
Utica, NY 13501
315-793-2360

US Congressman, 23rd District
Sherwood Boehlert
10 Broad Street
Utica, NY, 13501

Oneida Co. EMC
Jessica Breiten
321 Main Street
Utica, NY 13501
315-798-5713

8.2 Affected and/or Interested Public and Media

The following list of parties who have expressed an interest in the site investigation or are potentially affected by the site or the EBSI program will be updated as required to include those who express an interest in the investigation by attending meetings, responding to fact sheets or contacting project representatives. The following interested and/or affected parties have been identified:

Organizations

Utica Marsh Council, Inc.
PO Box 73
Utica, NY 13503

Water Quality Coordinating Committee - Oneida Co
Oneida County SWCD
121 Second St
Oriskany, NY 13424
315-736-3334

Mohawk Valley Chamber Of Commerce
258 Genesee Street - #38
Utica, NY 13502
(315) 724-3151 ~ Fax: (315) 724-3177

Kirkland Bird Club
c/o Matt Perry
3787 Dawes Ave
Clinton, NY 13323

Izaak Walton League - Utica Chapter
Chester Wilczek - President
1227 York St
Utica, NY 13502
315-724-4490

Oneida County
Utica Economic Development Zone
Heather Nowicki
Dept. of Urban & Econ. Development
One Kennedy Plaza
Utica, NY 13502
Phone: 315-792-0181
Fax: 315-797-6607
e-mail:ecodev@borg.com

Public

Commercial Travel Mutual Insurance Co
C/o Donald Falkenstern
70 Genesee Street
Utica, NY 13502

Mark & Wesley Smith
105 Washington Street
Utica, NY 13502

Venus of Malta, Inc.
PO Box 4026
Utica, NY 13504

Media

Observer Dispatch
221 Oriskany Blvd
Utica, NY 13501

Rome Daily Sentinel
PO Box 471
Rome, NY 13440
315-337-4000

The Pennysaver
PO Box 203
Robinson Road
Clinton, NY 13323
315-853-6103

Forever of New York
News Director - Dave Andrews
8280 Clark Mills Road
Whitesboro, NY 13492-3902
(315) 736-0780

WKTV
PO Box 2
Smith Hill Rd
Utica, NY 13503
(315) 733-0404

WOUR - FM Radio
239 Genesee St
Utica, NY 13502
(315) 797-0803

WUTR TV
PO Box 20
Smith Hill Rd
Utica, NY 13503
(315) 797-5332

WLFH Radio
PO Box 4490
Utica, NY 13504-4490

8.3 Identification of City of Utica Contacts

The following individuals from the City of Utica can be contacted regarding the site investigation:

Utica City Engineer
Carson Sorrell
Department of Engineering

1 Kennedy Plaza
Utica, NY 13502
(315) 792-0152

Utica City Brownfields Coordinator
Joseph Hobika, Jr.
1 Kennedy Plaza
Utica, NY 13502
(315) 792-0152

8.4 Identification of NYSDEC and NYSDOH Contacts

The following individuals from the NYSDEC and the New York State Department of Health (NYSDOH) can be contacted regarding the site investigation:

New York State Department of Environmental Conservation

Project Manager
Jack Marsch
NYSDEC
State Office Building
207 Genesee Street
Utica, New York 13501
315 793-2554

Citizen Participation Specialist
Steven Litwhiler
NYSDEC
State Office Building
Watertown, New York 13503
(315) 785-2252

Department of Health

Oneida County Health Dept
800 Park Ave
Utica, NY 13501

New York State Department of Health
5665 NYS Route 5
Herkimer, New York 13350

8.5 Identification of Document Repositories

Two locations where documents related to this investigation will be available for public review have been identified. One will be the City Engineer's Office and the other will be the Utica Public Library. The addresses, telephone numbers and hours of the two repositories are:

Utica City Clerk
1 Kennedy Plaza
Utica, NY 13502

Mon – Fri 8:30 – 4:30

City of Utica
Department of Engineering
1 Kennedy Plaza
Utica, NY 13502

Mon – Fri 8:30 – 4:30

8.6 Description of Citizen Participation Activities

The following citizen participation activities are planned of this project:

- Announcement through a mailing to the contact list provided in Sections 8.1 through 8.4 above and through local news media of the availability of the Site Investigation and Remedial Alternatives Report (SI/RAR) Work Plan that provides a brief analysis of the proposed investigation field work.

- Announcement through a mailing to the contact list provided in Sections 8.1 through 8.4 above and through local news media of the availability of the Proposed Remedial Action Plan (PRAP), a brief summary of the proposed cleanup, and a 45 day period for submission of written comments.

- Public meeting to present the results of the draft Site Investigation Report, draft Remedial Alternatives Report and PRAP.

- Administration of the 45-day public comment period before the remedial alternative is selected to obtain the public's views of the PRAP.

- Preparation of a Responsiveness Summary that addresses public comments about the PRAP.

- Notification of the public of the availability of the Record of Decision (ROD) when it is finalized.