Work Plan for the Remedial Investigation and Feasibility Study at the Former Bright Outdoors Site Site No. 7-04-023 Johnson City, New York

May 2004

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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List of Acronyms

ASC	Analytical Services Center
ASP	Analytical Services Protocol
BGS	below ground surface
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
COC	chain-of-custody
DER	Division of Environmental Remediation
DOT	United States Department of Transportation
DUSR	Data Usability Summary Report
E & E	Ecology and Environment Engineering, P.C.
EDD	electronic data deliverable
EPA	United States Environmental Protection Agency
FS	feasibility study
GC	gas chromatography
GIS	geographic information system
HASP	Health and Safety Plan
hr	hour
ID	inner diameter
IDW	investigation-derived waste
L	liter

List of Acronyms (Cont.)

LMS	Lawler, Matusky & Skelly Engineers
µg/L	micrograms per liter
MBE	Minority-owned Business Enterprise
MS	mass spectrometry
NAD	North American Datum
NGVD	National Geodetic Vertical Datum
NTU	nephelometric turbidity unit
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
PRAP	Proposed Remedial Action Plan
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RBC	risk-based concentration
RI	Remedial Investigation
SCG	Standards, Criteria, and Guidelines
TAGM	Technical Administrative Guidance Memorandum
TBC	to be considered

List of Acronyms (Cont.)

TCA	1,1,1-trichloroethane
TCE	trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
TSP	trisodium phosphate
URS	URS Consultants, Inc.
USGS	United States Geological Survey
VOC	volatile organic compound
WBE	Woman-owned Business Enterprise

1 Introduction

Pursuant to Work Assignment No. D003493-44, accepted on February 26, 2004, Ecology and Environment Engineering, P.C. (E & E) has prepared this work plan on behalf of the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), for remedial investigation (RI)/feasibility study (FS) services at the Former Bright Outdoors site (Site No. 7-04-023), located at 631 Field Street, Johnson City, New York (see Figure 1-1).

The objectives of the RI are to:

- Identify the source area of the 1,1,1-trichloroethane (TCA) and trichloroethene (TCE) contamination;
- Compare current groundwater quality with data obtained in previous investigations;
- Verify pathways of contaminant migration;
- Assess potential impacts on indoor air quality; and
- Identify potential remedial alternatives to mitigate contamination problems that pose threats to public health and the environment.

In order to accomplish these objectives, the investigation described herein has been designed in accordance with NYSDEC Technical Administrative Guidance Memorandum (TAGM) number HWR-89-4025, “Guidelines for Remedial Investigations/Feasibility Studies,” and TAGM number HWR-90-4030, “Selection of Remedial Actions at Inactive Hazardous Waste Sites.”

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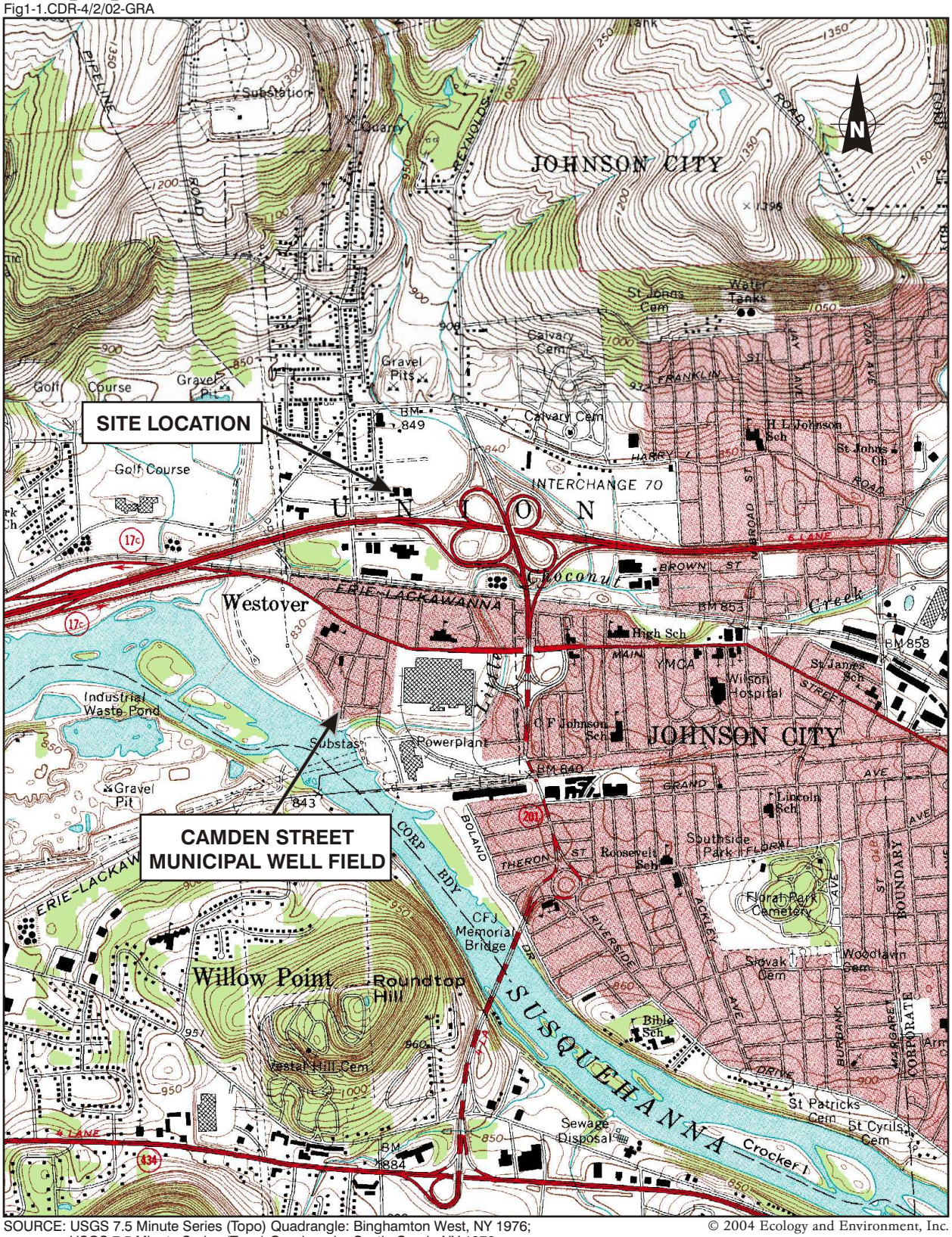

SOURCE: USGS 7.5 Minute Series (Topo) Quadrangle: Binghamton West, NY 1976;
USGS 7.5 Minute Series (Topo) Quadrangle: Castle Creek, NY 1976.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 1-1 SITE LOCATION MAP
FORMER BRIGHT OUTDOORS SITE
JOHNSON CITY, NEW YORK

2 Background Information

2.1 Site Description

Two commercial properties, the former Bright Outdoors (currently SamScreen, Inc.) and the neighboring Innovation Associates were previously identified as potential sources of TCA and TCE contamination to the Clinton Street-Ballpark Aquifer, a highly productive, United States Environmental Protection Agency- (EPA) designated sole-source aquifer. NYSDEC listed the Former Bright Outdoors site on the Registry of Inactive Hazardous Waste Sites as a "Class 2" site in July 2002. Although both facilities were commercial/light industrial businesses, the former Bright Outdoors facility appears to be the source of contamination to this aquifer based on the results of investigation conducted to date. The former Bright Outdoors business manufactured PVC pipe and vinyl polyester for the manufacture of outdoor upholstery. A soft drink bottling company operated at this location prior to 1984.

The site is bordered by Field Street and New York State (NYS) Route 17 to the south, a commercial facility (The Storage Mall) to the east, another commercial facility (Wegman's grocery store) to the north, and residential properties along Marie Street to the west. Several other industries exist in the vicinity. These are primarily south of NYS Route 17 and include: a bus garage, chemical manufacturing facility, power plant, and United States Air Force Plant 59. Most importantly, the Camden Street Municipal Well Field is located approximately 0.6 mile south-southwest of the site. This well field consists of three wells ranging from 89 to 100 feet deep (USGS 1997) that supply a portion (4 million gallons per day [LMS 1997]) of the drinking water to the village of Johnson City.

The former Bright Outdoors property is relatively flat-lying and is covered mostly by buildings and asphalt, with less than 20% of the ground surface covered by grass. The closest surface water body to the site is Finch Hollow Creek, a tributary to the Little Choconut Creek, located approximately 1,200 feet northeast of the site (see Figure 1-1). These creeks are, in turn, tributary to the Susquehanna River, which is approximately 3,200 feet south-southwest of the site. The Susquehanna River is classified by NYSDEC as Class "A" (6 New York Codes, Rules, and Regulations [NYCRR] 930). Little Choconut Creek and its tributaries

are Class "C" (6 NYCRR 931). Runoff from the site on Field Street cannot directly enter these streams except via storm sewers.

2.2 Site History

This area has a long history of TCA contamination, beginning in 1991 when this volatile organic compound (VOC) was detected at approximately 10 micrograms per liter (µg/L) in Johnson City's Municipal Well Field at Camden Street. The Camden Street Municipal Well Field draws water from the Clinton Street-Ballpark Aquifer.

Beginning in 1991, URS Consultants, Inc. (URS) performed a hydrogeologic assessment of the area surrounding the Camden Street Municipal Well Field, north to Main Street. This investigation identified TCA in several monitoring wells at concentrations similar to those detected in the municipal wells, and concluded that the source area appeared to lie to the north. Subsequent investigation by URS north of Main Street and south of NYS Route 17 identified additional TCA contamination in water table samples. Argonne National Laboratory conducted an investigation from 1991 to 1993 that identified TCA contamination of groundwater at Air Force Plant 59, approximately 1,000 feet east of the Camden Street Municipal Well Field.

The United States Geological Survey (USGS) conducted similar studies in the area in 1994 and detected up to 445 µg/L of TCA and 68 µg/L of TCE on the south side of Field Street.

An investigation conducted in 1997 by Lawler, Matusky & Skelly Engineers (LMS) on behalf of NYSDEC attempted to identify other potential sources of contamination to the Camden Street Municipal Well Field. This NYSDEC investigation began in 1997 at the Field Street location. Soil samples were collected but no VOCs were detected. Groundwater samples were collected at depths of 12 to 25 feet below ground surface (BGS), and chlorinated VOCs were detected at several locations with a maximum concentration of 260 µg/L of TCA.

E & E conducted a Preliminary Site Assessment (PSA) on behalf of NYSDEC in 2002 in order to further delineate potential sources of contamination in the Field Street area. Similar levels of TCA contamination were found in the areas identified during the 1997 investigation by NYSDEC. Groundwater samples were collected up and downgradient of both the SamScreen, Inc. and Innovation Associates buildings to delineate the horizontal and vertical extent of contamination. Field screening for total volatile organic halides was conducted and results ranged from non-detect to 187 µg/L. Laboratory analysis confirmed these results and identified a maximum TCA concentration of 160 µg/L on the west side of the SamScreen, Inc. building and a maximum TCE concentration of 91 µg/L on the east side of the SamScreen, Inc. building.

This information prompted NYSDEC to list the Former Bright Outdoors site on the Registry of Inactive Hazardous Waste Sites as Class 2, which is a "…site at which hazardous waste constitutes a significant threat to the environment, as described in section 375-1.4 of this Part" (6 NYCRR 375-1.8).

2.3 Conceptual Site Model

The Former Bright Outdoors site is located in the Susquehanna River basin and is situated over the Clinton Street-Ballpark Aquifer. Numerous hydrogeologic studies were conducted in the vicinity including, but not limited to:

- Randall, A.D. 1977, *The Clinton Street-Ballpark Aquifer in Binghamton and Johnson City, NY*, NYSDEC Bulletin 73.
- Randall, A.D., 1986, *Aquifer Model of the Susquehanna River Valley in Southwestern Broome County, NY*, Water Resources Investigation Report 85-4099.
- USGS, 1982, *Geohydrology of he Valley Fill Aquifer in the Endicott-Johnson-City Area*, Open File Report 82-268.
- USGS, 1982, *Atlas of Eleven Selected Aquifers in New York*, Open File Report 82-553.
- USGS, 1997, *Hydrogeology and Water Quality of the Clinton Street-Ballpark Aquifer near Johnson City, New York*, Open File Report 97-102.

In addition, several site-specific environmental investigations have been performed in relation to the contamination of the Camden Avenue Municipal Well Field. These reports, which provide additional hydrogeologic information, include, but are not limited to:

- URS Consultants, 1992, *Contaminant Source Investigation, Johnson City Wellfield*, prepared for NYSDEC.
- URS Consultants, 1993, *Contaminant Source Investigation, Johnson City Wellfield, Addendum 1*, prepared for NYSDEC.
- Nashold, B. et al, 1994, *Supplemental Site Investigation for Air Force Plant 59, Johnson City, NY*, prepared by Energy Systems Division, Argonne National Laboratory.
- Earth Tech, 1995, *Remedial Investigation Report, Air Force Plant 59*, prepared for U.S. Air Force Center for Environmental Excellence.
- Lawler, Matusky & Skelly Engineers, 1997, *Immediate Investigation Work Assignment Data Report, Johnson City Wellfield*, prepared for NYSDEC.

The following is a very brief description of the physical characteristics of the region based on the above references. The Clinton Street Ballpark Aquifer is approximately 3 square miles and is associated with a neighboring aquifer, the Endicott-Johnson City Aquifer. The aquifers consists primarily of glaciofluvial and glaciolacustrine valley fill deposits. The basic stratigraphic sequence consists of shale bedrock overlain by relatively impermeable lodgment till, in turn overlain by extensive deposits of highly permeable glacial kame and outwash deposits. Occasional occurrences of interbedded fine-grained ice-contact deposits are also present. The thickness of the overburden deposits has been found to range from approximately 60 to over 100 feet in the vicinity. In general, the kame and outwash deposits consist of sand and gravel and are capable of high water yield. Fine-grained beds of silts and clays, where locally present, can restrict the downward flow of groundwater and contaminants; however, these deposits are discontinuous and in general do not separate the aquifer into distinct layers. Groundwater near the Susquehanna River generally flows toward the river; however, at depth, groundwater has been shown to flow beneath and independent of the river (URS 1992).

During the 2002 PSA, the highest levels of VOC contamination were detected on the east and west sides of the SamScreen, Inc. building. Higher concentrations were generally associated with coarser-grained materials, such as sand and gravel, where contaminant migration is expected to occur. However, silt and clay layers were also found to contain measurable concentrations of TCA and TCE. A lack of contamination in upgradient borehole HP-1 suggests that the former Bright Outdoors and/or Innovation Associates properties are sources of the detected contamination. Previous investigations by NYSDEC revealed VOC contamination along the northern boundaries of these properties suggesting possible upgradient sources. However, it is possible that one or both of these properties was also the source of this previously detected contamination, considering the relatively flat hydraulic gradient observed at the site during the PSA.

The horizontal distribution of contaminants detected during previous investigations suggests that the former Bright Outdoors facility is the primary source. The presence of contamination at depth indicates that contaminants migrate downward from the source as well as horizontally downgradient, to the south.

The only historical evidence incompatible with this conceptual model is a relatively high concentration of TCA (270 µg/L) previously detected on the east central portion of the Innovation Associates property, near the loading dock. This concentration was observed during NYSDEC's 1995 investigation of the property (NYSDEC 1995, Recra 1995). Therefore, the Innovation Associates property may also have contributed to the contamination. However, because of the flat hydraulic gradient observed at the site, flow direction is expected to vary slightly on a seasonal basis, making identification of a single source or distinguishing between sources difficult based on groundwater contaminant distribution. Other historical

data tend to support the concept of the central portion of the former Bright Outdoors property as a possible source. The highest levels detected during the 1997 investigations (LMS 1997 and USGS 1997) were generally found south and south-southwest (downgradient) of the former Bright Outdoors building, with lower concentrations south of Innovation Associates.

3 Remedial Investigation and Feasibility Study Tasks

The tasks and requirements of this work assignment are specified in Schedule 1 of E & E's contract D003493, *Work Element II - Phased Remedial Investigation/Feasibility Study*. The following is a summary of the work assignment scope.

3.1 Task 1: Work Plan

Scope of Work Development

On March 2, 2004, E & E had a conference call with the NYSDEC Central Office Project Manager. The project scope was discussed and questions regarding the work assignment were answered. It was also decided that a site visit would be necessary unless building/site drawings showing equipment, piping, sumps, and drains could be obtained. E & E reviewed existing documentation regarding the site and prepared a scoping memorandum (dated March 24, 2004) detailing E & E's understanding of the project requirements.

The scope of work was subsequently revised based on a site visit conducted on March 25, 2004. This meeting included representatives from NYSDEC's Central Office and Region 7, the Broome County Health Department, and E & E. After the site walkover, E & E personnel stopped at the Johnson City Planning Department to review building plans and records for the former Bright Outdoors facility. This work plan describes the methods for implementing the scope of work developed for this site.

3.2 Field Investigation

The RI proposed for the Former Bright Outdoors site will include an investigation of subsurface soils, groundwater, and indoor air sampling; a site survey; and analytical services.

Laboratory analysis will be performed by E & E's Analytical Services Center (ASC), which is certified by the Environmental Laboratory Accreditation Program, on a standard turnaround-time basis, except as specifically noted. Table 3-1 summarizes the proposed sampling and analysis for each medium. The complete

Table 3-1: Proposed Chemical Analysis, Bright Outdoors Site
Remedial Investigation

Sample Location/Type	Analysis	Method Reference	Turnaround Time	Field Samples	Dupes	Trip Blanks	Rinse Blanks	MS	MSD	Total Samples
On-site Facility Sampling										
Subslab Soil	VOCs	OLM04.2	28 days	7	1	0	0	1	1	10
Subslab Air/Soil Gas	VOCs, chlorinated	TO-14A	28 days	4	0	0	0	0	0	4
Drainline sediment	VOCs	OLM04.2	28 days	5	0	0	0	0	0	5
Subsurface Soil	VOCs	OLM04.2	28 days	26	2	0	2	2	2	34
Subsurface Soil	Sieve, hydrometer, moisture content	ASTM	28 days	5	0	0	0	0	0	5
Groundwater - Hydropunch	VOCs	OLM04.2	28 days	7	1	5	1	1	1	16
Groundwater - Wells	VOCs	OLM04.2	14 days	6	1	1	0	1	1	10
Off-site Groundwater										
Groundwater - Wells	VOCs	OLM04.2	14 days	5	0	1	0	0	0	6
Adjacent Residential Properties										
Indoor Air	VOCs, chlorinated	TO-14A	14 days	6	1	0	0	0	0	7
Subslab Air/Soil Gas	VOCs, chlorinated	TO-14A	14 days	4	0	0	0	0	0	4
Ambient (Outdoor) Air	VOCs, chlorinated	TO-14A	14 days	2	0	0	0	0	0	2
Off-site Commercial Properties										
Indoor Air	VOCs, chlorinated	TO-14A	14 days	2	0	0	0	0	0	2
Subslab Air/Soil Gas	VOCs, chlorinated	TO-14A	14 days	3	0	0	0	0		3
Ambient (Outdoor) Air	VOCs, chlorinated	TO-14A	14 days	1	0	0	0	0	0	1
Investigation-Derived Waste (IDW)										
IDW - Groundwater	TCLP Metals	6010B	28 days	1	0	0	0	0	0	1
IDW - Groundwater	TCLP VOCs (includes ZHE)	8260B	28 days	1	0	0	0	0	0	1
IDW - Groundwater	pH	9040B	28 days	1	0	0	0	0	0	1
IDW - Soil	TCLP Metals	6010B	28 days	1	0	0	0	0	0	1
IDW - Soil	TCLP VOCs (includes ZHE)	8260B	28 days	1	0	0	0	0	0	1
IDW - Soil	pH	9045C	28 days	1	0	0	0	0	0	1

Notes:

- All chemical analyses to be conducted in accordance with NYSDEC ASP (2000) with Level B reporting requirements.
- All chemical analyses to be conducted by E&E's Analytical Services Center. Geotechnical analyses to be conducted by a subcontracted lab.
- Standard analyte list unless otherwise specified.

Key:

IDW = Investigation-derived waste.
MS = Matrix spike.
MSD = Matrix spike duplicate.
TCLP = Toxicity Characteristic Leaching Procedure.
VOCs = Volatile organic compounds.
ZHE = Zero headspace extraction.

analyte list is presented in the site-specific Quality Assurance Project Plan (QAPP) (Appendix B). Analytical data will be presented in the RI Report.

All field activities are expected to be conducted by personnel wearing Level D personal protective equipment (PPE). However, field team members will maintain Level C respiratory protection equipment on site, should the need for its use arise.

E & E will coordinate with NYSDEC to establish access permission to conduct the field investigation at the site and off-site sampling locations. E & E's site investigation activities will commence following establishment of access permission.

3.2.1 Mobilization

This task includes all preparation and pre-fieldwork activities including:

- Literature review. All existing pertinent documentation pertaining to the site will be reviewed.

- Base map development. Appropriate geographic information system (GIS) data layers and images will be acquired for mapping purposes. This will include aerial images from the NYS GIS Clearinghouse, property ownership and environmental data from the Broome County Planning Department, building plans from the Johnson City Planning Department, etc.

- Access agreements. Properties that will require access during RI fieldwork will be identified and property owners will be contacted to obtain permission to conduct the field activities.

- Mobilization. Administrative and general mobilization tasks such as subcontract preparation, scheduling, equipment rental and purchase (see Appendix E), etc. will be performed.

3.2.2 Indoor Facility Sampling

3.2.2.1 Sub-slab Air Sampling

Air (soil gas) samples will be collected from four locations beneath the concrete slab of the former Bright Outdoors building for the purpose of identifying potential VOC source areas beneath the building. Samples will be collected by drilling through the concrete slab, installing a tube through the floor, and drawing a sample into a Summa canister. The air samples will be analyzed for chlorinated VOCs by gas chromatography (GC)/mass spectrometry (MS) Method TO-14A (see Table 3-1). Sample locations are depicted on Figure 3-1.

Equipment

- Heavy duty rotary hammer drill;

- Drill bit, 1-inch diameter, minimum 18 inches long;
- Drill bit, ½-inch diameter, minimum 18 inches long;
- Building power source or generator;
- Teflon-lined polyethylene sample tubing, ½-inch outer diameter, approximately 4 feet long;
- Water;
- Bentonite powder;
- Evacuated Summa canister with regulator pre-calibrated at the laboratory to collect a 6-liter (L) sample within 1 hour (hr) (6 L/hr);
- Adjustable wrench;
- Wet/dry vacuum; and
- Concrete and hydraulic cement.

Procedures

- Select a sampling location that is away from the line of traffic and will not be disturbed during sample collection.
- Drill a 1-inch diameter hole approximately half way through the concrete floor. Extend the hole with the smaller bit (1/2-inch diameter) through the remaining thickness and approximately 3 inches into the gravel sub-base.
- Insert the sample tubing through the floor into the sub-base gravel. The open end of the tubing should remain free of debris and the tubing should fit snugly in the ½-inch diameter hole.
- Pack the remainder of the hole around the tubing with wetted bentonite ensuring an air-tight connection around the sample tubing.
- Place the Summa canister adjacent to sample location on a stable surface.
- Record the Summa canister serial number on the chain-of-custody (COC) form and in the field notebook.

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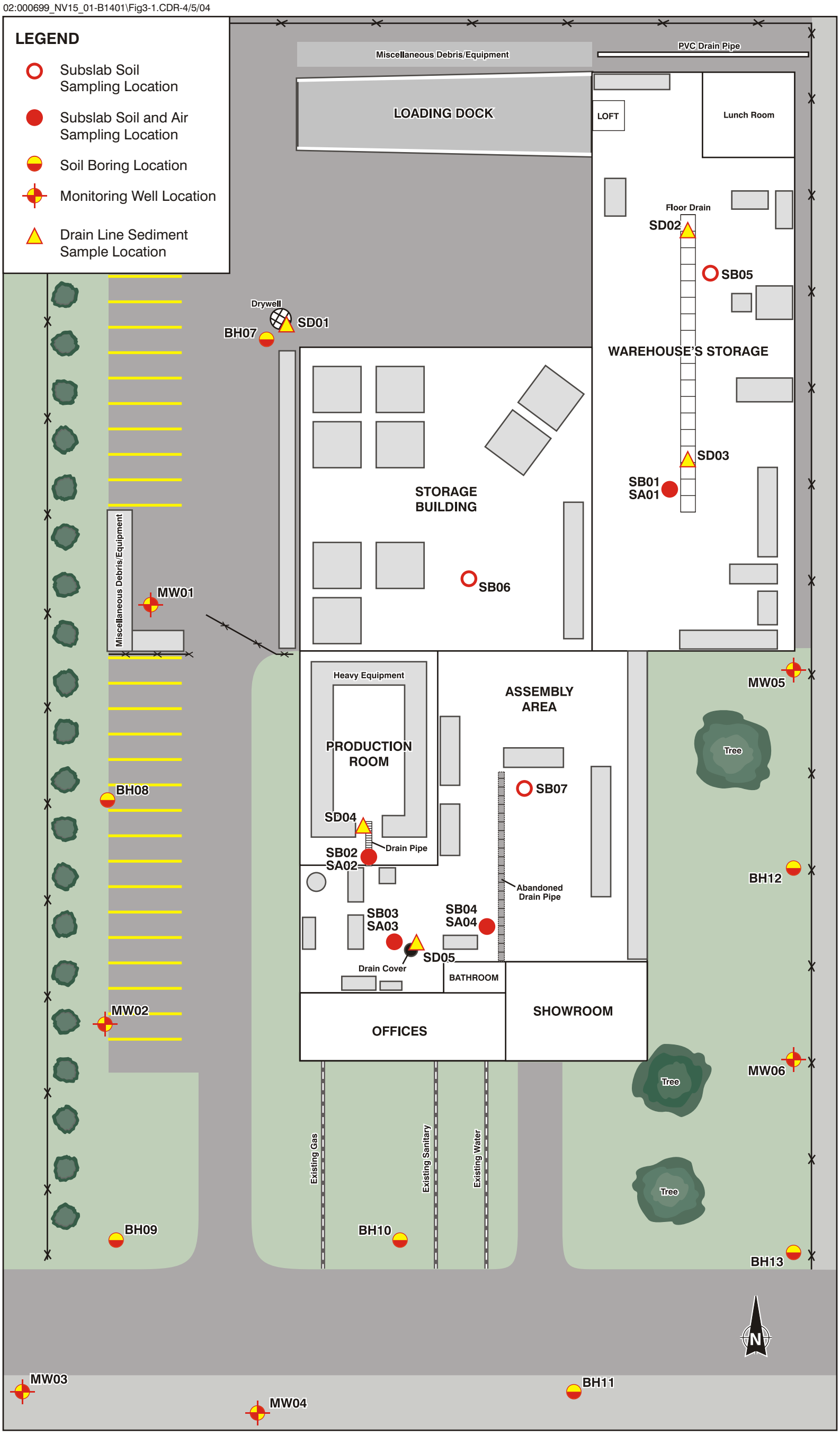

SCALE
0 50 100 Feet

Figure 3-1 Proposed Facility Sampling Locations
Former Bright Outdoors Site
Johnson City, New York

- Remove the brass plug from canister fitting and install the pressure gauge/metering valve if not already equipped.
- Open and close canister valve. Record gauge pressure, which must read greater than 25 inches of mercury.
- Remove the brass plug from the gauge and connect the sample tubing to the inlet valve.
- Open canister valve to initiate sample collection.
- Upon completion of sampling (1 hour), close the canister valve.
- Disconnect and discard the sample tubing.
- Install the brass plug on the canister.
- Place the sample container in the original box.
- Complete the sample collection log with the appropriate information and log each sample on the COC form.
- Conduct subsurface soil sampling at the same location, if required (see Section 3.2.2.2).
- Backfill the hole with dry concrete to 4 inches below grade. Top off hole with hydraulic cement mixed with water level to the floor surface.
- Clean up the area around the sampling location.
- Decontaminate the drill bit prior to use at the next location.

3.2.2.2 Sub-slab Soil Sampling

Subsurface soil samples will be collected from up to eight locations beneath the concrete slab of the former Bright Outdoors building for identifying potential VOC source areas beneath the building. Samples will be collected by drilling through the concrete slab and gravel sub-base and pushing a soil collection probe into the underlying soil. Samples will be collected from approximately the top 10 inches of soil beneath the gravel sub-base. The soil samples will be analyzed for VOCs (see Table 3-1). Seven sample locations are depicted on Figure 3-1; an eighth sample may be collected based on observations made during sample collection.

Equipment

- Rotary hammer drill;
- Drill bit, 1-inch diameter, minimum 18 inches long;
- Building power source or generator;
- Stainless-steel soil sampling probe, ¾-inch diameter, minimum 36 inches long;
- Stainless-steel spoons and bowls;
- Appropriate sample containers (see QAPP in Appendix B);
- Cooler with ice;
- Water;
- Wet/dry vacuum;
- Concrete and hydraulic cement; and
- Floor corer, 3-inch diameter (if required).

Procedures

- Select a sampling location that is away from the line of traffic and will not be disturbed during sample collection.
- Drill a 1-inch diameter hole through the concrete floor. Extend the hole through the gravel sub-base.
- Drive the soil sampling probe approximately 10 inches into the soil beneath the gravel sub-base. Remove the probe from the hole.
- Remove the soil core from the sampling probe using a stainless-steel spoon. Transfer directly to the sample containers if possible; otherwise, place in a stainless-steel bowl and then into the sample containers, minimizing disturbance of the soil.
- If the gravel beneath the concrete slab collapses into the hole preventing use of the soil sampling probe, then drill a 3-inch diameter hole through the concrete with the floor corer and remove as much of the gravel/subsurface material as necessary to insert the sampling rod.

- Upon collection, the samples will be placed in a cooler maintained with ice at 4 degrees Celsius (°C).

- The samples will be packaged, and shipped to the laboratory via overnight delivery with COC documents prepared in accordance with the procedures specified in Section 3.2.9.

- Backfill the hole with dry concrete to 4-inches below grade. Top off hole with hydraulic cement mixed with water level to the floor surface.

- Clean up the area around the sampling location.

- Decontaminate the drill bit and sampling tube prior to use at the next location.

3.2.2.3 Drainline Sediment Sampling

Sediment samples will be collected from four locations inside the former Bright Outdoors building (the drain in machinery area, near the office, and two ends of the floor trench in the warehouse) and one location outside the building (the outdoor drywell). The five sample locations are depicted on Figure 3-1. The purpose of this sampling is to identify if these drains were previously used to dispose of TCA and TCE from the building. Sediment samples will be collected directly from the drain piping and will be analyzed for VOCs (see Table 3-1).

Equipment

- Stainless-steel spoons and bowls;

- Appropriate sample containers (see QAPP in Appendix B);

- Cooler with ice.

- Wet/dry vacuum;

- Tool box containing an adjustable wrench, screw drivers, and a small socket set; and

- Crowbar.

Procedures

- Remove the drain cover and place next to sample location.

- Collect an adequate amount of sediment using a disposable stainless-steel spoon. Transfer directly to the sample containers if possible; otherwise, place in a stainless-steel bowl and then into the sample containers, minimizing disturbance of the soil.

- Decant excess liquid as necessary and secure jar.
- Upon collection, the samples will be placed in a cooler maintained with ice at 4°C.
- Package and ship the samples to the laboratory via overnight delivery with COC documents prepared in accordance with the procedures specified in Section 3.2.9.
- Clean up the area around the sampling location and re-attach drain cover.
- Decontaminate tools and bowl prior to use at the next location.

3.2.3 Indoor Residential/Commercial Property Sampling

Indoor air and sub-slab air samples will be collected in the basements of four residential homes along Marie Street (house numbers 144, 146, 148, and 150) (see Figure 3-2). In addition, two commercial properties south of the site will have indoor air and sub-slab air samples collected. One indoor air sample and one sub-slab air sample will be collected from the basement of 130 Oakdale Road and one indoor air sample and two sub-slab air samples will be collected from the basement of 701 Azon Road (see Figure 3-3). There will also be one ambient air sample collected outside of the four Marie Street residences and one collected outside of the two commercial properties. If it is not possible to collect all four residential indoor air samples on one day, then additional ambient air samples will be collected for each day that sampling is done in that area.

These locations were selected based on their proximity to previously detected groundwater contamination along the western and southern boundaries of the former Bright Outdoors property. The purpose of this sampling is to determine if groundwater contamination potentially impacts indoor air quality and human health. Sub-slab air samples will be collected in the same manner as that described in Section 3.2.2.1. Whole air samples will be 24-hour composites collected in Summa canisters in the basements of the homes. The air samples will be analyzed for chlorinated VOCs by GC/MS Method TO-14A (see Table 3-1).

3.2.3.1 Sub-slab Air Sampling

Residential sub-slab air (soil gas) sampling will be conducted using the same equipment and procedures described in Section 3.2.2.1. These 1-hour samples will be collected prior to the indoor air samples.

3.2.3.2 Indoor Air Sampling

Residential indoor whole air sampling will be conducted after the sub-slab air sampling is completed. The sampling procedure includes presampling inspection and preparation of homes, product inventories, collection of samples, and sample analysis (analytical method selection). The presampling inspection will be

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Source: Aerial image 2002, NYS GIS Clearinghouse

0 25 50 100 150 Feet

Figure 3-2 Proposed Outdoor and Residential Sampling Locations Former Bright Outdoors Site Johnson City, New York

performed prior to testing (if possible) to evaluate the type of structure, floor lay-out, and physical conditions of the building(s) being studied and to identify and minimize conditions that may affect or interfere with the proposed testing. Once the pre-sampling procedures are completed, an appointment will be made with the homeowner to do the 24-hour test in the basement. The air samples will be analyzed for chlorinated VOCs (see Table 3-1).

Equipment

- Evacuated Summa canister with regulator pre-calibrated at the laboratory to collect a 6-L sample in 24 hours (0.25 L/hr); and
- Photo-ionization detector (PID).

Procedures

- Perform presampling inspection, product inventories, and preparation of homes with the homeowner present. Select a sampling location that is away from the line of traffic and will not be disturbed during sample collection.
- Identify any potential indoor air contamination sources on the building inventory form (see Appendix C).
- Correct the potential interferences sources prior to sampling by either removing the source from the indoor environment or by ensuring that containers are tightly sealed.
- Once these interfering conditions are corrected, aggressive ventilation may be needed prior to testing to eliminate residual contamination. Any ventilation will be done 24 hours or more prior to the scheduled sampling time.
- During the scheduled sampling time, perform general air sampling using the PID to insure potential interferences sources will not interfere with the test.
- Place the Summa canister at sample location on a stable surface. The intake will be placed at approximately 3 to 4 feet above the floor; however, the actual location and height will be determined based on actual conditions and with Regulator approval.
- Record the Summa canister serial number on the COC and in the field notebook.
- Remove the brass plug from canister fitting and install the pressure gauge/metering valve if not already equipped.

- Open and close canister valve. Record gauge pressure, which must read greater than 25 inches of mercury.
- Remove the brass plug from the gauge and open canister valve to initiate sample collection.
- Upon completion of sampling (24 hours), close the canister valve.
- Install the brass plug on canister.
- Place the sample container in the original box.
- Complete the sample collection log with the appropriate information and log each sample on the COC form.
- Clean up the area around the sampling location.

3.2.3.3 Ambient Air Sampling

Outdoor ambient air samples will be collected approximately simultaneously with indoor basement air samples collected at the Marie Street residences and Oakdale/Azon Road commercial properties for assessment of background conditions. One ambient air sample will be collected near the Marie Street residences. The Summa canister will be placed in a secure location, away from residential activity and out of sight of passersby, if possible, in the backyard of one of the middle houses (146 or 148 Marie Street). If the four indoor basement air samples cannot all be collected at approximately the same time, then an additional ambient air sample will be collected for each day of indoor air sampling. At the commercial properties, the Summa canister will also be placed in a secure location out of sight. The location of the ambient air sample will be selected at the time of sampling; however, 701 Azon Road is preferred for security reasons because this road is less traveled than Oakdale Road. The two commercial properties will likely be sampled on the same day, necessitating the collection of only one ambient air sample.

Equipment, procedures, and analyses will be the same as that described in Section 3.2.3.2 above for indoor air sampling with the exception that an indoor inventory is not required. However, ambient air sampling locations will avoid garages, sheds, and other potential locations of stored volatile chemicals (gasoline, cleaners, etc.). The locations of potential interferences will be noted in the field logbook.

3.2.4 Borehole and Monitoring Well Drilling

3.2.4.1 Borehole Subsurface Soil Sampling

Up to 13 borings will be installed at the site by Northstar Drilling of Cortland, New York. The purpose of the subsurface soil investigation is to define the nature and extent of subsurface soil and groundwater contamination, and determine the

source of contamination. A drill rig will be used to turn a 4 1/4-inch inner diameter (ID) hollow stem auger and drive a split-spoon sampler continuously through the subsurface soil until the water table is reached and every 5 feet thereafter to a total depth of 50 feet BGS. Actual boring depths will be determined in the field based on physical observations and organic vapor readings. Up to two soil samples will be collected from each borehole and submitted for target compound list (TCL) VOCs analysis. These samples will be collected from the depth interval exhibiting the highest degree of contamination (based on visual observations, odor, air monitoring readings, etc.). If no contamination is detected in the field, a single sample will be collected at the water table interface.

Five soil samples will also be collected for geotechnical analysis including sieve, hydrometer, and moisture content. General locations of proposed borehole locations are shown on Figure 3-1. However, some well locations may be moved based on the results of the indoor air and soil sampling, with the approval of NYSDEC's Project Manager.

Prior to initiating intrusive subsurface activities, E & E will coordinate with the Underground Facilities Protection Organization to identify and locate underground utilities.

Equipment

- Dedicated stainless-steel spoons;
- Decontaminated split-spoon samplers;
- PID;
- Appropriate sample containers (see QAPP in Appendix B); and
- Cooler with ice.

Procedures

- Once extracted from the hole, the split-spoon sampler will be placed on sheet plastic and opened to expose the soil core. The core will be scanned with a PID to evaluate the presence and concentration of organic vapors. A description of the soil core will be noted in the logbook;
- If the sample appears to be contaminated, it will be placed in the appropriate sample containers using a dedicated stainless-steel spoon or trowel. If a more contaminated interval is encountered at a greater depth, the first sample will be discarded and the new sample will be collected with a new dedicated spoon or trowel and placed in new containers;

- Upon collection the samples will be placed in a cooler maintained with ice at 4°C;

- Package and ship the containers to the laboratory via overnight delivery with COC documents prepared in accordance with the procedures specified in Section 3.2.9; and

- Decontaminate split-spoon sampler prior to next use.

3.2.4.2 Borehole Groundwater Sampling

One groundwater sample will be collected from each borehole during drilling, approximately 7 feet below the water table.

Equipment and Supplies

- New disposable polyethylene bailers;

- 1-inch ID Schedule 40 polyvinyl chloride (PVC) casing and screen;

- Appropriate sample containers (see QAPP in Appendix B); and

- Cooler with ice.

Procedures

- Advance the 4 1/4-inch ID hollow stem augers 5 feet into the water table and collect a split-spoon soil sample;

- Once the split-spoon sampler is removed, insert a 1-inch temporary well casing with a 5-foot screen to the bottom of the borehole;

- Use a new disposable polyethylene bailer to collect a groundwater sample from the borehole and fill the appropriate sample containers;

- Upon collection the samples will be placed in a cooler maintained with ice at 4°C; and

- The samples will be packaged, and shipped to the laboratory via overnight delivery with COC documents prepared in accordance with the procedures specified in Section 3.2.9.

3.2.4.3 Monitoring Well Installation and Development

Upon completion of vertical profiling, six boreholes will be converted into permanent flush-mount monitoring wells by installing PVC screen and riser through the hollow-stem auger to the desired depth. General locations of proposed monitoring well locations are shown on Figure 3-1. However, some well locations may be moved based on the results of the indoor air and soil sampling, with the approval of the NYSDEC's Project Manager.

Monitoring Well Installation

Once borehole drilling is completed, six new flush-mount monitoring wells will be installed at the Former Bright Outdoors Site. The wells will be installed to a target depth of 50 feet through the 4 1/4-inch ID hollow-stem augers. Each well will be constructed using a 10-foot segment of 2-inch ID PVC screen having 0.10-inch slot size, followed by 2-inch ID Schedule 40 PVC to 2.5 feet above grade. A threaded PVC cap will be placed on the bottom of the screen. All PVC connections will be flush-threaded. A sand pack of Morie No. 0 sand (or equivalent size) will extend from the bottom of the screen to 2 feet above the screen. It will be followed by 2-foot-thick pelletized bentonite seal. A 5% bentonite/cement grout mix will then be installed to grade. A half an hour respite is required between hydration of the bentonite and installation of the grout mix. Each well will be constructed as a flush-mount monitoring well with a lockable flush-mount housing and a lockable expansion cap keyed alike. Figure 3-4 illustrates the proposed well construction.

Monitoring Well Development

Only new monitoring wells will be developed. After well construction is complete, but no sooner than 24 hours after grout placement, the wells will be developed. Well development will be performed using the equipment and procedures described below. Development water from the wells will be handled according to methodology described in Section 3.2.13.

Equipment and Supplies

- Electronic water level indicator graduated to 0.01 foot;
- New disposable polyethylene bailers and new polypropylene line and/or new disposable polyethylene check valves connected to polyethylene tubing;
- pH/temperature/conductivity meter; and
- Turbidity meter.

Procedures

- Slowly lower the electronic water level probe of the instrument until the indicator light illuminates and/or the alarm sounds and record the depth to water from a marked reference point in E & E's Geotechnical logbook on the well development form;

- Lower the probe to the bottom of the well casing and record the total depth of the well from a marked reference point in E & E's Geotechnical logbook on the well development form;

- Calculate the volume of water in the well using the formula provided on the well development form;

- Slowly lower a new disposable polyethylene bailer or a new disposable polyethylene check valve and tubing below the water surface and remove a small volume of water;

- Record the initial temperature, pH, conductivity, and turbidity on the well development form;

- Begin to remove water from the well using a surging method in order to draw fine sediments out of the sand pack and into the well for removal;

- Record the temperature, pH, conductivity, and turbidity on the well development form every five to 10 minutes, or at the removal of each well volume;

- Well development will be performed until pH, specific conductance, and temperature have stabilized over three consecutive readings and turbidity of the discharge is 50 nephelometric turbidity units (NTUs) or less;

- If substantial improvement has been noted through the development process but the proposed goal of 50 NTUs has not been met, well development will be considered complete after two hours of purging; and

- Decontaminate the water level indicator and the meters prior to use at the next location.

3.2.5 Groundwater Sampling

3.2.5.1 Water Level Measurements

Once the new wells have been properly developed, static groundwater level measurements will be collected from all new monitoring wells, as well as five existing off-site wells in a single day (see Figures 3-1 and 3-4). In addition, data will also be acquired from the Johnson City Water Department regarding pumping rates

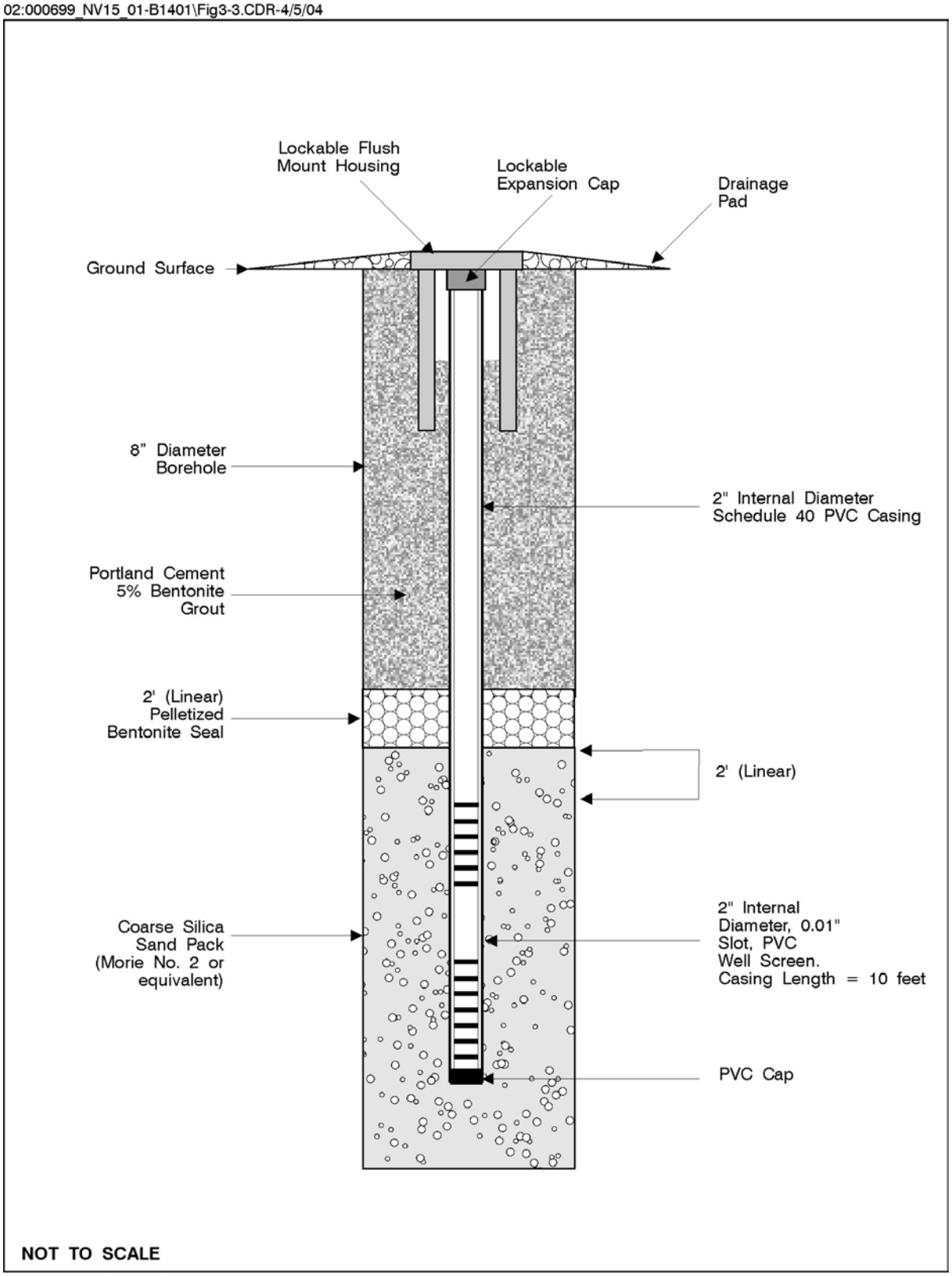
02:000699_NV15_01-B1401\Fig3-3.CDR-5/7/04

SOURCE: Aerial Images: New York State GIS Clearinghouse
Well Locations: URS Corporation, 1993

SCALE
0 500 1,000 Feet

Figure 3-3 Off-Site Air Sampling and Existing Monitoring Well Locations, Former Bright Outdoors Site Johnson City, New York

02:000699_NV15_01-B1401\Fig3-3.CDR-4/5/04



SOURCE: Ecology and Environment Engineering, P.C.

Figure 3-4 Flush-Mount Overburden Monitoring Well Construction

and water levels in the Camden Avenue wells. The purpose of the survey is to interpret the elevation data and determine groundwater flow conditions of the soil.

Equipment

- Electronic water level indicator graduated to 0.01 feet.

Procedures

- Slowly lower the electronic water level probe of the instrument until the indicator light illuminates and/or the alarm sounds;
- Pull the probe above the water surface and repeat the measurement;
- Note the depth to water from a marked reference point on the well casing or surface water marker in E & E's Geotechnical logbook; and
- Decontaminate any part of the water level indicator which was submerged by triple rinsing with deionized water prior to use at the next location;

3.2.5.2 Groundwater Sampling

One round of groundwater samples will be collected from all new monitoring wells and five existing off-site wells surrounding the Former Bright Outdoors site. New wells will be sampled no sooner than 24 hours after development is complete in order to allow the well to recover with groundwater representative of the underlying formations in the immediate vicinity of the well. All groundwater samples will be tested for TCL VOC analysis (see Table 3-1). Groundwater sampling will be performed using the equipment and procedures described below. Purged water will be handled in the same manner as the development water (see Section 3.2.13).

Equipment

- Electronic water level indicator graduated to 0.01 foot;
- Disposable polyethylene bailers and new polypropylene line;
- pH/temperature/conductivity meter;
- Turbidity meter;
- Appropriate sample containers (see QAPP in Appendix B); and
- A cooler with ice.

Procedures

- Slowly lower the electronic water level probe of the instrument until the indicator light illuminates and/or the alarm sounds and record the depth to water from a marked reference point in the logbook;
- Lower the probe to the bottom of the well casing and record the total depth of the well from a marked reference point in the logbook;
- Calculate the volume of water in the well using the formula provided on the well development form;
- Slowly lower a new disposable polyethylene bailer below the water surface and remove a small volume of water;
- Record the initial temperature, pH, conductivity, and turbidity in the logbook;
- Begin to purge three to five times the volume of water standing in the well casing;
- Record the temperature, pH, conductivity, and turbidity every five to 10 minutes, or at the removal of each well volume;
- Purge until pH, specific conductance, and temperature have stabilized over three consecutive readings, turbidity of the discharge is 50 NTUs or less, and at least three well volumes have been removed;
- If 50 NTUs cannot be obtained after five well volumes, collect the sample parameters;
- Placed samples in a cooler maintained with ice at 4°C upon collection; and
- Package and ship the samples to the laboratory via overnight delivery with COC documents prepared in accordance with the procedures specified in Section 3.2.9.

3.2.6 Hydraulic Testing

Slug testing will be performed to determine the parameters of the aquifer to provide data about groundwater and to evaluate a pump and treat alternative. After all the tests are completed, the slug test data will be evaluated in Aqtesolv to determine approximate hydraulic conductivity values (K).

Equipment and Supplies

- Electronic water level indicator graduated to 0.01 foot.

- 30 psi miniTROLL data logger.
- Pocket-Situ PC.
- 1-gallon containers of distilled water.
- Funnel(s).

Procedures

- Slowly lower the electronic water level probe of the instrument until the indicator light illuminates and/or the alarm sounds and record the depth to water from a marked reference point in the logbook;
- Lower the 30 psi miniTROLL data logger probe approximately 5 feet below the water level and secure the cable to the top of the well casing;
- Program the miniTROLL data logger for a falling head test according to the manufacturers instructions (using a logarithmic recording cycle);
- "Instantaneously" add 1 gallon of distilled water down the well casing (approximately 6 feet of water) and begin the test;
- Depth-time measurements will be recorded until the water level returns to within at least 10% of static conditions or a sufficient number of readings have been made to clearly show a trend on a semilog plot of time versus depth; and
- Remove the miniTROLL and decontaminate any part of the probe which was submerged by triple rinsing with distilled water prior to use at the next location.

3.2.7 Site Survey

Lu Engineers of Penfield, New York, will perform the site survey. Surveying will include:

- Horizontal locations and vertical elevations of approximately 13 boreholes, six on-site monitoring wells, and five off-site monitoring wells; and
- The establishment of the horizontal location of key site features such as roadways, buildings, and other aboveground appurtenances (such as manholes covers) identified at the site.

Vertical control will be established to the nearest ±0.1 foot for all ground shots. Monitoring well inner casing elevations require a control accuracy of +0.05 foot and will be reported to the nearest 0.01 foot. Elevations will be determined relative to a National Geodetic Vertical Datum (NGVD) station monument or NYS-approved monument. A reference to an existing NGVD or NYS monument likely

exists from previous efforts conducted at the site. If a monument does not exist within proximity to the site such that it cannot be referenced within one day's effort, a reference elevation will be assigned based on off-site monitoring well elevations reported in earlier studies.

Coordinates will be given in the State Plane Central Zone (feet), North American Datum (NAD) 1983 to an accuracy of ±0.5 foot. If horizontal control is not available, local control shall be established using building corner coordinates derived from georeferenced aerial images available from the NYS GIS Clearinghouse and a site benchmark installed at the site by the surveyor.

3.2.8 Air Monitoring

The site safety officer will perform air monitoring during site activities to characterize airborne contaminant concentrations, including those of volatile organic vapors and explosive gases. The air monitoring will be conducted for the protection of site workers and the community and to characterize environmental samples. The Health and Safety Plan (HASP) (see Appendix A) specifies the monitoring equipment to be used for contaminants of interest and the frequency with which the monitoring will be performed.

Action levels for each monitoring instrument are also detailed in the HASP. Levels of organic vapors will be measured in the workers' breathing zone, for which action levels are based. Oxygen-deficient and combustible atmospheres will not be monitored at the workers' breathing zone. Instead, these monitors will be positioned at a location (e.g., at the top of the boreholes) that will measure a worst-case contaminant level and will provide the earliest possible warning that a hazardous condition may be forming.

3.2.9 Sample Containers and Preservation

The volumes and containers for soil and water samples as well as sample preservation and holding time requirements are presented in Tables 3-2 and 3-3. Air samples will be collected as subatmospheric pressure samples in Summa passivated stainless-steel canister equipped with preset flow regulators. Summa canisters will be certified clean by the ASC. For soil and water samples, pre-washed sample containers will be provided by the ASC and prepared in accordance with EPA bottle-washing procedures.

Soil and water samples will be stored on ice pending delivery to the ASC. Summa canisters will be stored in a cool, dry location in their original outer packaging and do not require ice. Chemical preservation will not be required for VOC samples.

Table 3-2 Sample Containers, Volumes, Preservation, and Holding Times for Soil and Sediment Samples

Parameter	Method	Containers for Solid Samples	Chemical Preservation[a]	Holding Time[a]
TCL VOCs	OLM04.2	Two 40-mL or one 4-oz. glass vial with septum	7 days	7 days
TCLP Metals/ Mercury	6010B	One 8-oz. glass jar	NA	26 days[b] for mercury, 180 days for metals
TCLP Volatile Organics	8260B	One 8-oz. glass jar	NA	7 days
pH	9045C	One 4-oz. glass jar	ASAP	ASAP

[a] All samples to be cooled to 4°C. Chemical preservative applies to aqueous samples only. Holding time applies to aqueous samples; holding times for solid samples are to be the same as aqueous samples. Holding times are based on verified times of sample receipt and are consistent with NYSDEC requirements.

[b] Time listed is from TCLP extraction.

Key:
ASAP = As soon as possible.
NA = Not applicable.
oz. = Ounce.
TCL = Target Compound List.
TCLP = Toxicity characteristic leaching procedure.
VOC = Volatile organic compounds.

Table 3-3 Sample Containers, Volumes, Preservation, and Holding Times for Aqueous Samples

Parameter	Method	Containers for Aqueous Samples	Chemical Preservation[a]	Holding Time[a]
TCL VOCs	OLM04.2	Two 40-ml glass vials with septa	7 days	7 days
TCLP Metals/ Mercury	6010B	One 1-L HDPE bottle[c]	NA	26 days[b] for mercury, 180 days for metals
TCLP Volatile Organics	8260B	Two 40-ml glass vials with septa[c]	NA	7 days
pH	9040B	One 125-mL HDPE bottle	ASAP	ASAP

[a] All samples to be cooled to 4°C. Holding times are based on verified times of sample receipt and are consistent with NYSDEC requirements.

[b] Time listed is from TCLP extraction.

[c] TCLP analysis of water samples assumes less than 0.5% solids.

Key:
ASAP = As soon as possible.
HDPE = High-density polyethylene.
L = Liter.
mL = Milliliter.
NA = Not applicable.
TCL = Target Compound List.
TCLP = Toxicity characteristic leaching procedure.
VOC = Volatile organic compounds.

Sample Labeling, Packaging and Shipping, and Custody

Sample Labeling. All samples will be assigned a unique sample identifier (see QAPP in Appendix B). Labels for each sample container will contain the sample identifier, date of sample collection, analytical parameters, and type of preservation used. The sampler will initial any change in the label information prepared prior to sample collection.

Sample Packaging and Shipping. Soil and water sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. They will be placed in coolers in such a manner as to eliminate the chance of breakage during shipment and ice in plastic bags will be placed in the coolers to keep the samples at 4°C throughout shipment.

Sample shipment will be performed in strict accordance with all applicable United States Department of Transportation (DOT) regulations. The samples will be shipped to the ASC by an overnight courier service. Arrangements will be made with the ASC Project Manager for samples that are to be delivered to a laboratory on a weekend so that holding times are not compromised. The shipping address is as follows:

Analytical Services Center
4493 Walden Avenue
Lancaster, NY 14086
716/685-8080
Attn: Ms. Barbara Krajewski

Sample Custody. A sample is considered to be in custody under the following conditions:

- The sample is directly in one's possession,
- The sample is clearly in one's view,
- The sample is placed in a locked location, or
- The sample is in a designated secure area.

In order to demonstrate that the samples and coolers have not been tampered with during shipment, adhesive custody seals will be used. The custody seals will be placed around the cap of each sample container and across the cooler lids in such a manner that they will be visibly disturbed upon opening the sample container or cooler. The seals will be signed or initialed and dated by field personnel at the time they are affixed to the container and cooler.

Documentation of sample COC is necessary to demonstrate that the integrity of the samples has not been compromised between collection and delivery to the laboratory. A COC record will accompany each sample cooler to document the transfer of custody from the field to the laboratory. All information requested in the COC record will be completed. In addition, the airbill number assigned by the overnight courier will be listed on the COC record. One copy of the COC form will be retained by the sampler and placed in the project records file. The remaining pages will be sealed in a plastic bag and placed inside of the cooler. Upon receipt at the laboratory, the COC forms will be completed. It is the responsibility of the ASC to document the condition of custody seals and sample integrity upon receipt.

3.2.10 Analytical Program

Table 3-1 provides a summary of sampling and analysis for the Former Bright Outdoors site. The ASC will follow the NYSDEC Analytical Services Protocol (ASP) of June 2000 for all analytical methods, quality assurance (QA)/quality control (QC), holding times, and reporting requirements. All laboratory analyses will be performed by the ASC with the exception of geotechnical testing (sieve, hydrometer, and moisture content), which will be subcontracted. Data generated by the ASC will be reported with full data package (Level B) and standard laboratory electronic data deliverable (EDD). Sample analysis results for the site characterization will undergo independent data review for usability by a third party data validator. Data for waste and water disposal will not be reviewed. The data reviewer will follow the NYSDEC Guidance for the Development of Data Usability Summary Reports (DUSRs), June 1999. Project-specific qualifiers and data review requirements are listed in Appendix B.

3.2.11 Field Quality Control Samples

Table 3-1 provides a summary of field QC samples to be collected for the investigation. Field QC samples include field duplicates, trip blanks, rinsate blanks, and additional volume for laboratory matrix spike/matrix spike duplicate analyses. Field duplicates will be collected from both aqueous and solid samples at a frequency of one per 20 samples. Trip blanks will be filled at the laboratory and transported to the site with the bottles for each day VOCs are collected. One trip blank will be taken to the sample locations and returned in the cooler to be shipped to the laboratory. All sample portions for VOCs collected on a single day will be transported in the same cooler. Trip blanks will be used for aqueous matrices only. Rinsate blanks will be collected from any non-dedicated or non-disposable sampling equipment. Rinsate blanks will be collected by passing deionized water obtained from the ASC over the equipment after decontamination is completed. One rinsate blanks will be collected from each set of equipment for every 20 samples collected. The only non-dedicated equipment planned for use includes split-spoon and Hydropunch samplers. Additional details pertaining to field QC requirements are included in the QAPP in Appendix B.

3.2.12 Decontamination Procedures

All decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. All intrusive and groundwater sampling equipment will be decontaminated before and after each location is drilled and sampled. Special attention will be given to all downhole tooling, which will be decontaminated prior to and following each use. Decontamination of large equipment will consist of the following:

- Removal of foreign matter; and
- High-pressure steam cleaning.

The following alternative procedure will be used for smaller equipment and may also be employed for downhole tooling:

- Initially remove all foreign matter;
- Scrub with brushes in trisodium phosphate (TSP) solution;
- Rinse with deionized water; and
- Allow to air dry.

A temporary decontamination area will be established on site using heavy plastic sheeting as a pad. The primary purpose of the pad will be to decontaminate downhole tooling and drill rig units. Fluids generated during decontamination will be handled according to procedures outlined below.

3.2.13 Investigation-derived Waste Handling

The following types of investigation-derived waste (IDW) may be generated: soil from subsurface drilling; decontamination water; groundwater from development, purging, and sampling; and spent PPE. Waste streams will not be mixed and will be segregated to the maximum extent possible.

Investigation-derived soils and water will be field-screened for organic vapors with a PID and visual inspected to initially determine whether these wastes are potentially contaminated. Soil cuttings that are not significantly contaminated (PID readings of 5 parts per million [ppm] or less and lack of staining, sheen, etc.) will be spread on the ground near the site of generation or may be replaced in the hole. Similarly, groundwater and decontamination water that do not exhibit signs of significant contamination (PID readings of 5 ppm or less and lack of staining, sheen, etc.) will be discharged to the surface near the site of generation or as close as reasonably possible.

Any wastes that provide an indication of contamination (PID readings greater than 5 ppm, staining, sheen, odor, etc.) will be containerized in DOT-approved 55-gallon drums and stored on site in a secondary containment unit pending analysis and disposal. All drums containing IDW will be labeled with the type of generated material, site name, location where the material was generated, and date the material was generated. One soil and one water sample have been budgeted for Toxicity Characteristic Leaching Procedure (TCLP) VOC, TCLP metals, and pH analyses to characterize the waste for disposal. Costs for disposal of an estimated six drums of non-hazardous waste have been included.

Unless field screening indicates that PPE and other solid wastes are contaminated, this material will be double-bagged and disposed of off site as non-regulated solid waste.

3.3 RI Report

E & E will publish a draft and final RI report consisting of the site background data compiled during the investigation, investigation procedures undertaken, data gathered, and data interpretation. This document will also include a photo log that documents site activities and findings, as well as groundwater monitoring well soil boring logs. All analytical data will be reviewed by a third-party data validator who will prepare a DUSR. DUSRs for all laboratory chemical analytical data will also be included in the report.

A conceptual site model representing site dynamics for sources, affected media, release mechanisms, and potential contamination pathways and receptors will be developed. The analytical data will be screened against New York State Standards, Criteria, and Guidelines (SCGs) or other guidance to be considered (TBC). This shall include *Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC TAGM 4046) for subsurface soils; NYSDEC Class GA Ambient Water Quality Standards and Guidance Values for groundwater; and EPA Region III Risk-Based Concentration (RBC) tables. For air sample results, EPA Region III RBCs for air and/or other guidance to be discussed with NYSDOH and NYSDEC at the time of reporting will be used for comparison. In addition, NYSDOH is expected to issue new draft guidelines for multiple environmental media. If available at the time of the report, these values will also be considered. The initial screening will serve to evaluate potential exposure risks to humans. Based on the comparison, a qualitative evaluation of potential risk will be presented. However, costs have not been included for a human health or habitat-based risk assessment because it is unknown at this time whether either risk assessment will be needed.

3.4 Feasibility Study

This task includes the development of an FS to meet NYSDEC goals to be protective of human health and the environment. The FS will be conducted, in general, based upon guidance by NYSDEC and EPA for RI/FS work (NYSDEC Final TAGM #4030, *Selection of Remedial Actions at Inactive Hazardous Waste Sites*,

and EPA, *Guidance for Conducting Remedial Investigations and Feasibility Studies* under the Comprehensive Environmental Response, Compensation and Liability Act [CERCLA]). In general, an FS evaluates alternative approaches to meeting cleanup objectives.

Incorporating the guidance provided by TAGM #4030, the process to be followed for the FS will be:

- Development of remedial action objectives;
- Development of remedial alternatives and technologies;
- Screening of alternatives;
- Detailed analysis of remedial alternatives; and
- Selection of remedy.

Each component is discussed below.

3.4.1 Development of Remedial Objectives

The first step in the FS process is to determine which areas may require remediation. This is accomplished by first developing cleanup goals. Cleanup goals are set for each medium based on medium-specific receptors and exposure routes. For this project, cleanup goals will be based on NYS SCGs or other guidance TBC.

However, no SCGs have been established for soil, except for certain compounds such as polychlorinated biphenols. Thus, cleanup goals for soil require consideration of TBC guidance values, several of which use typical exposure scenarios to calculate soil contaminant concentrations that correspond to acceptable carcinogenic and systemic contaminant risks. These TBC guidance values may include the *Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC TAGM 4046), EPA Ecological Soil Screening Levels, EPA Region III RBC tables, and draft NYSDOH guidance.

For groundwater, the process is more straightforward. All groundwater in New York is considered a drinking water resource, and thus is subject to state drinking water standards. NYSDEC Class GA waters criteria (Technical and Operational Guidance Series [TOGS] 1.1.1, Ambient Water Quality Standards and Guidance Values, NYSDEC Division of Water 1993 [updated June 1998]) will be considered SCGs for the groundwater at the site.

Once the cleanup goals have been set, the area requiring remediation will be determined by comparing RI data to the cleanup goals. Remedial alternatives and technologies will then be developed to meet these cleanup goals.

3.4.2 Development of Remedial Alternatives and Technologies

Development of remedial alternatives involves identifying technologies appropriate for treating the types of wastes within the media identified in the RI and assembling those technologies into alternatives. Both treatment technologies and containment technologies will be identified. It is assumed that approximately five alternatives will be developed, and each alternative will address all contaminated media.

3.4.3 Screening of Alternatives

The alternatives developed in Section 3.4.2 will be screened against the criteria of effectiveness and implementability to reduce the number of alternatives retained for detailed analysis. Including the no-action alternative for each media, E & E assumes that three alternatives will be retained for each contaminated media -- soil, groundwater, and air. This will also identify whether a treatability study or additional field investigations are required to support the detailed analysis of alternatives.

3.4.4 Detailed Analysis of Remedial Alternatives

In this section of the FS, each alternative will be fully described (including development of capital, operation and maintenance [O & M], and present-worth costs), and then evaluated both individually and comparatively. The individual evaluations will analyze each alternative against the following seven criteria:

- Short-term impacts and effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume;
- Implementability;
- Cost;
- Compliance with SCGs and TBCs (as appropriate); and
- Overall protection of human health and the environment.

Following individual analyses, the alternatives will be comparatively reviewed and evaluated.

3.4.5 Selection of Remedy

Based on the evaluation in the detailed analysis, E & E will select a remedy that is protective of human health and the environment, cost-effective, and meets SCGs to the extent practicable. The selection of remedy will be made considering a preference for alternatives that include, as a principal element, treatment that sig-

nificantly and permanently reduces volume, toxicity, and/or mobility of contaminants. A conceptual design of the selected remedy will also be presented. If requested by NYSDEC, E & E will attend a public meeting at the completion of the FS. E & E will also provide additional data analysis, limited to available information, as necessary for NYSDEC to prepare a Proposed Remedial Action Plan (PRAP).

3.5 Public Participation

E & E will participate in the community involvement process to the extent required by NYSDEC. Based on information provided by the NYSDEC Project Manager, it is currently anticipated that the extent of E & E's involvement with this process will be limited to providing technical support at public participation meetings. To that end, three meetings have been included in the budget as follows:

A work plan public meeting to be scheduled following acceptance of the final RI/FS work plan will be attended by E & E's project manager and project geologist.

An RI report public meeting to be scheduled following acceptance of the final RI report will be attended by E & E's project manager and project geologist.

A PRAP public meeting to be scheduled following issuance of the PRAP by NYSDEC will be attended by E & E's project manager and project engineer.

In addition, if requested, E & E can participate in other community involvement issues in accordance with NYSDEC guidance. However, costs for these tasks have not been included. These additional tasks may include:

- Identifying stakeholders;
- Preparing, distributing, and posting fact sheets and other written information;
- Planning, advertising, and running public information meetings;
- Establishing a local document repository; and
- Compiling and/or addressing public comments on plans and reports.

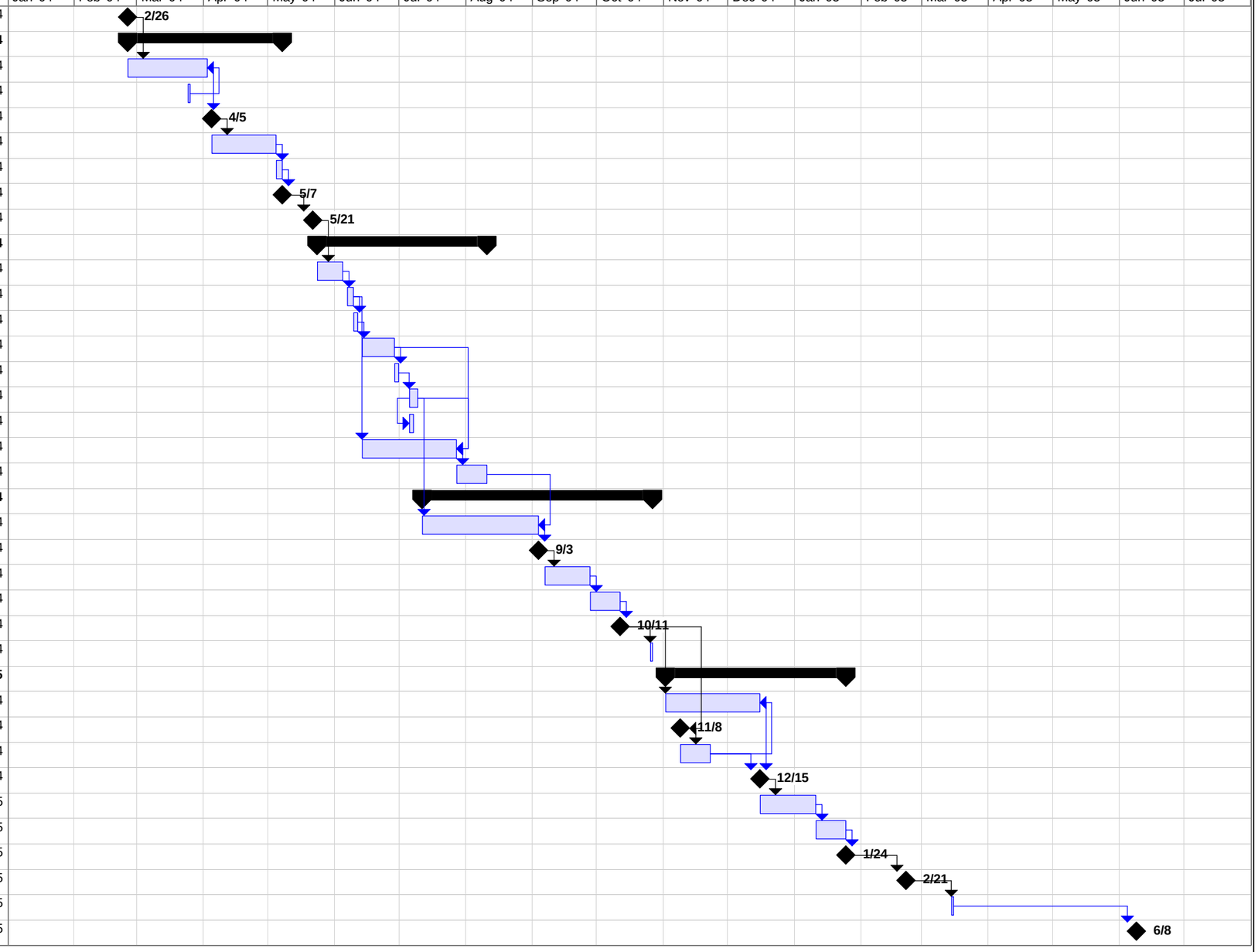
4 Schedule

The project schedule is presented on Figure 4-1.

RI/FS Schedule
Former Bright Outdoors Site

Site #7-04-023

ID	Task Name	Duration	Start	Finish
1	Accept Work Assignment	0 days	Thu 2/26/04	Thu 2/26/04
2	**Work Plan**	**52 days**	**Thu 2/26/04**	**Fri 5/7/04**
3	Draft Work Plan Prep	27 days	Thu 2/26/04	Fri 4/2/04
4	Site Visit	1 day	Thu 3/25/04	Thu 3/25/04
5	Draft Work Plan Submittal	0 days	Mon 4/5/04	Mon 4/5/04
6	NYSDEC Review	22 days	Mon 4/5/04	Tue 5/4/04
7	Final Work Plan Prep	3 days	Wed 5/5/04	Fri 5/7/04
8	Final Work Plan Submittal	0 days	Fri 5/7/04	Fri 5/7/04
9	Issue Notice to Proceed	0 days	Fri 5/21/04	Fri 5/21/04
10	**RI Fieldwork**	**55 days**	**Mon 5/24/04**	**Tue 8/10/04**
11	Mobilize/Agency Contact	9 days	Mon 5/24/04	Fri 6/4/04
12	Indoor Air Sampling	3 days	Mon 6/7/04	Wed 6/9/04
13	Indoor Facility Sampling	2 days	Thu 6/10/04	Fri 6/11/04
14	Borehole/Well Drilling	11 days	Mon 6/14/04	Mon 6/28/04
15	Well Development	2 days	Tue 6/29/04	Wed 6/30/04
16	Groundwater Levels, Sample, Slug Test	4 days	Tue 7/6/04	Fri 7/9/04
17	Surveying	2 days	Tue 7/6/04	Wed 7/7/04
18	Sample Analysis	31 days	Mon 6/14/04	Tue 7/27/04
19	Data Validation	10 days	Wed 7/28/04	Tue 8/10/04
20	**RI Report**	**76 days**	**Mon 7/12/04**	**Tue 10/26/04**
21	Draft RI Report Preparation	40 days	Mon 7/12/04	Fri 9/3/04
22	Draft RI Report Submittal	0 days	Fri 9/3/04	Fri 9/3/04
23	NYSDEC Review 2	15 days	Tue 9/7/04	Mon 9/27/04
24	Final RI Report Prep	10 days	Tue 9/28/04	Mon 10/11/04
25	Final RI Report Submittal	0 days	Mon 10/11/04	Mon 10/11/04
26	RI Report Public Meeting	1 day	Tue 10/26/04	Tue 10/26/04
27	**FS Report**	**55 days**	**Tue 11/2/04**	**Mon 1/24/05**
28	Prepare FS Report	30 days	Tue 11/2/04	Wed 12/15/04
29	FS Alternatives Submittal	0 days	Mon 11/8/04	Mon 11/8/04
30	NYSDEC Review 3	10 days	Tue 11/9/04	Mon 11/22/04
31	Draft FS Submittal	0 days	Wed 12/15/04	Wed 12/15/04
32	NYSDEC Review 4	15 days	Thu 12/16/04	Mon 1/10/05
33	Prepare Final FS Report	10 days	Tue 1/11/05	Mon 1/24/05
34	Final FS Report Submittal	0 days	Mon 1/24/05	Mon 1/24/05
35	NYSDEC Issues PRAP	0 days	Mon 2/21/05	Mon 2/21/05
36	PRAP Public Meeting	1 day	Tue 3/15/05	Tue 3/15/05
37	NYSDEC Issues ROD	0 days	Wed 6/8/05	Wed 6/8/05



Task | Progress | Summary | External Tasks | Deadline

Split | Milestone | Project Summary | External Milestone

ecology and environment, inc.

5 Staffing Plan

E & E proposes the following primary staffing plan for completion of this work assignment:

Contract Manager: David Albers, P.E.
Project Manager: Richard Watt, P.G.

Task 1: Work Plan
Brian Cervi and Shawn Gardner: Prepare work plan
Heather Pula: Prepare site-specific QAPP
Brian Cervi: Prepare site-specific HASP
Richard Watt: Document review, costing, and schedule development

Task 2: Remedial Investigation
Brian Cervi: Project Geologist/Field Team Leader
James Mays: Field Assistant/Site Safety Officer
Barbara Krajewski: ASC Project Manager
Marcia Galloway: Quality Assurance Officer
Heather Pula: Project Chemist
Richard Watt and Brian Cervi: Report Authors
Gene Florentino and Richard Watt: Report Review

Task 3: Feasibility Study
Shawn Gardner: Report Preparation
David Albers and Richard Watt: Review

Personnel biographies will be provided upon request.

6 Subcontracting Requirements

Up to four subcontractors will be used for this project. Three have been selected for surveying, drilling, and data validation services. The fourth will be selected at a later date for waste disposal should this task be required (an estimated budget has been included).

The following is a summary of the subcontracted services and winning subcontractors for this project:

- Site survey: Joseph C. Lu Engineers, P.C. of Penfield, New York, a Minority-owned Business Enterprise (MBE);
- Drilling: Northstar Drilling of Cortland, New York, a Woman-owned Business Enterprise (WBE).
- Third party data validation: Data Validation Services, of North Creek, New York, a WBE.

The scope of work and cost estimate for each subcontractor are presented in Appendix D.

7

Budget Estimate

The following Schedule 2.11 contains a breakdown of estimated costs associated with completion of this work assignment.

E & E has prepared this schedule in accordance with the contractual requirements of the standby contract. Also indicated on Schedule 2.11(b-1) are direct administrative labor hours budgeted as requested in NYSDEC's cover letter to the work assignment for these sites.

5/7/2004 File: Bright Outdoors RIFS Costing-REV.XLS 3:24 PM

ECOLOGY AND ENVIRONMENT ENGINEERING P.C.
COST ESTIMATE
New York State DEC
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

1 Work Plan
2.1 RI Fieldwork
2.2 RI Report
3 Feasibility Study
4 Public Meetings

Rates for Year Ending January 31, 2003 (2/1/02 - 1/31/03)

Rate/Hr	Labor Category	Totals	1	2.1	2.2	3	4
$73.88	IX	0	0	0	0	0	0
$54.21	VIII	0	0	0	0	0	0
$46.87	VII	0	0	0	0	0	0
$39.85	VI	505	64	211	138	52	40
$34.15	V	82	10	0	12	40	20
$28.14	IV	0	0	0	0	0	0
$25.12	III	187	2	0	26	159	0
$22.40	II	909	100	463	256	70	20
$17.49	I	238	22	74	110	28	4
	TOTAL HOURS	1,921	198	748	542	349	84

1)	Total Labor Cost		$52,147	$5,567	$20,074	$14,221	$9,490	$2,795
2)	Overhead	185%	96,473	10,299	37,137	26,309	17,557	5,171
3)	Total Labor and Overhead		148,620	15,866	57,211	40,530	27,047	7,966
4)	Travel		6,596	121	5,776	0	0	699
5)	Other Direct Costs		10,166	95	9,016	760	275	20
6)	E&E Analytical Services		14,505	0	14,505	0	0	0
7)	**Subtotal**		179,887	16,082	86,508	41,290	27,322	8,685
8)	Subcontractors		34,042	0	32,020	2,022	0	0
9)	**Subtotal**		213,929	16,082	118,528	43,312	27,322	8,685
11)	Fixed Fee (on Line 3)	7.5%	11,147	1,190	4,291	3,040	2,029	597
12)	**Subtotal Project Price**		$225,075	$17,272	$122,818	$46,352	$29,351	$9,282
13)	Subcontract Fee *	4.0%	990	0	990	0	0	0
14)	**TOTAL PRICE**		$226,065	$17,272	$123,809	$46,352	$29,351	$9,282

* Note: Subcontract Fee only on unit price subcontracts of value equal to or greater than $10,000

1 Work Plan

LABOR DETAIL

NSPE	Travel Hours	Field Work People	Days	H/Day	M-Day	Field Hours	In-House Hours	Pubs	Total
IX					0				
VIII					0				
VII					0				
VI					0		64		64
V					0		10		10
IV					0				
III					0			2	2
II	7	1	1	5	1	5	68	20	100
I					0		6	16	22
TOTAL	7				1	5	148	38	198

E&E ANALYTICAL SERVICES Total

TOTAL E&E ANALYTICAL SERVICES

TRAVEL DETAIL

	Unit	# Units	$/Unit	Total
Airfare: Buffalo/Albany	RT		$350.00	
Travel Agent Fee			$28.00	
Per Diem: Albany	Day		$47.00	
Per Diem: Broome County	Day	1	$31.00	$ 31
Lodging: Broome County	Night		$55.00	
Local Tax on Lodging **15.00%**				
Auto Rental	Day		$50.00	
Mini Van Rental	Day	1	$70.00	$ 70
Local Mileage	Mile		$0.38	
Parking	Day			
Gasoline/Tolls	RT			$ 20
TOTAL TRAVEL COSTS				$ 121

E&E Equipment Period # Periods # Units $/Unit Total

All equipment must be rented from an outside vendor or purchased for use

TOTAL E&E EQUIPMENT COSTS

OTHER DIRECT COST DETAIL

	Unit	# Units	$/Unit	Total
Communication Costs	Call	1	$5.00	$ 5
Blueprinting	Page		$1.75	
CAD Computer Usage	Hour		$10.00	
Protective Clothing: Level D	Day		$15.00	
Protective Clothing: Level C	Day		$50.00	
Protective Clothing: Level B	Day		$70.00	
Shipping: Lab Samples	lbs.		$54.00	
Shipping: Equipment	lbs.			
Shipping: Other Fedex Priority	5 lbs.		$22.00	
Postage (FED-EX PRIORITY)	2 lbs.		$17.00	
Purchased Items - Incidentals	Lump Sum			
Outside Equipment Rental	Lump Sum			
Miscellaneous Field Supplies/ODCs	Lump Sum			$ 90
TOTAL OTHER DIRECT COSTS				$ 95

SUBCONTRACTORS Services to be Performed Cost Plus or Unit price Subcontract Price

UNIT PRICE SUBCONTRACTORS (Quotes > $10,000)

TOTAL SUBCONTRACTOR COSTS

2.1 RI Fieldwork

LABOR DETAIL

NSPE	Travel Hours	Field Work People	Days	H/Day	M-Day	Field Hours	In-House Hours	Pubs	Total
IX					0				
VIII					0				
VII					0				
VI	21	1	7	10	7	70	120		211
V					0				
IV					0				
III					0				
II	63	2	17	10	34	340	60		463
I					0		74		74
TOTAL	84				41	410	254		748

E&E ANALYTICAL SERVICES

	Total
Soil, water, and air analyses	$ 14,505
TOTAL E&E ANALYTICAL SERVICES	$ 14,505

TRAVEL DETAIL

	Unit	# Units	$/Unit	Total
Airfare: Buffalo/Albany	RT		$ 350.00	
Travel Agent Fee			$ 28.00	
Per Diem: Albany	Day		$47.00	
Per Diem: Broome County	Day	43.5	$31.00	$ 1,349
Lodging: Broome County	Night	36	$55.00	$ 1,980
Local Tax on Lodging 15.00%				$ 297
Auto Rental	Day	4	$ 50.00	$ 200
Mini Van Rental	Day	24	$ 70.00	$ 1,680
Local Mileage	Mile		$ 0.38	
Parking	Day			
Gasoline/Tolls	RT			$ 270
TOTAL TRAVEL COSTS				$ 5,776

E&E Equipment

	Period	# Periods	# Units	$/Unit	Total
All equipment must be rented from an outside vendor or purchased for use					
TOTAL E&E EQUIPMENT COSTS					

OTHER DIRECT COST DETAIL

		Unit	# Units	$/Unit	Total
Communication Costs		Call	16	$5.00	$ 80
Blueprinting		Page		$1.75	
CAD Computer Usage		Hour		$10.00	
Protective Clothing: Level D		Day	36	$15.00	$ 540
Protective Clothing: Level C		Day		$50.00	
Protective Clothing: Level B		Day		$70.00	
Shipping: Lab Samples	40	lbs.	12	$54.00	$ 648
Shipping: Equipment		lbs.		$0.00	
Shipping: Other Fedex Priority		5 lbs.		$22.00	
Postage (FED-EX PRIORITY)		2 lbs.		$17.00	
Purchased Items - Incidentals		Lump Sum			$ 330
Outside Equipment Rental		Lump Sum			$ 6,913
Miscellaneous Field Supplies/ODCs		Lump Sum			$ 505
TOTAL OTHER DIRECT COSTS					$ 9,016

SUBCONTRACTORS

	Services to be Performed	Cost Plus or Unit price	Subcontract Price
Lu Engineers	Surveying		$ 5,058
TBD	Landscaping/site repair		$ 1,000
TBD	Waste Disposal		$ 1,200

UNIT PRICE SUBCONTRACTORS (Quotes > $10,000)

Northstar Drilling	Drilling	$ 22,874
	tax	$ 1,887
TOTAL SUBCONTRACTOR COSTS		$ 32,020

2.2 RI Report

LABOR DETAIL

NSPE	Travel Hours	Field Work People	Days	H/Day	M-Day	Field Hours	In-House Hours	Pubs	Total
IX					0				
VIII					0				
VII					0		-		
VI					0		138		138
V					0		12		12
IV					0				
III					0		20	6	26
II					0		192	64	256
I					0		52	58	110
TOTAL					0		414	128	542

E&E ANALYTICAL SERVICES Total

TOTAL E&E ANALYTICAL SERVICES

TRAVEL DETAIL	Unit	# Units	$/Unit	Total
Airfare: Buffalo/Albany	RT		$ 350.00	
Travel Agent Fee			$ 28.00	
Per Diem: Albany	Day		$47.00	
Per Diem: Broome County	Day		$31.00	
Lodging: Broome County	Night		$55.00	
Local Tax on Lodging **0.00%**				
Auto Rental	Day		$ 50.00	
Mini Van Rental	Day		$ 70.00	
Local Mileage	Mile		$ 0.38	
Parking	Day			
Gasoline/Tolls	RT			
TOTAL TRAVEL COSTS				

E&E Equipment Period # Periods # Units $/Unit Total

All equipment must be rented from an outside vendor or purchased for use

TOTAL E&E EQUIPMENT COSTS

OTHER DIRECT COST DETAIL	Unit	# Units	$/Unit	Total
Communication Costs	Call	4	$5.00	$ 20
Blueprinting	Page		$1.75	
CAD Computer Usage	Hour	56	$10.00	$ 560
Protective Clothing: Level D	Day		$15.00	
Protective Clothing: Level C	Day		$50.00	
Protective Clothing: Level B	Day		$70.00	
Shipping: Lab Samples	lbs.		$54.00	
Shipping: Equipment	lbs.		$0.00	
Shipping: Other Fedex Priority	5 lbs.		$22.00	
Postage (FED-EX PRIORITY)	2 lbs.		$17.00	
Purchased Items - Incidentals	Lump Sum			
Outside Equipment Rental	Lump Sum			
Miscellaneous Field Supplies/ODCs	Lump Sum			$ 180
TOTAL OTHER DIRECT COSTS				$ 760

SUBCONTRACTORS	Services to be Performed		Cost Plus or Unit price	Subcontract Price
Data Validation Services	Air Samples	23	$21	$ 483
	Soil & Water Samp	81	$19	$ 1,539

UNIT PRICE SUBCONTRACTORS (Quotes > $10,000)

TOTAL SUBCONTRACTOR COSTS $ 2,022

3 Feasibility Study

LABOR DETAIL

NSPE	Travel Hours	Field Work People	Days	H/Day	M-Day	Field Hours	In-House Hours	Pubs	Total
IX					0				
VIII					0				
VII					0		-		
VI					0		52		52
V					0		40		40
IV					0				
III					0		156	3	159
II					0		46	24	70
I					0		12	16	28
TOTAL					0		306	43	349

E&E ANALYTICAL SERVICES Total

TOTAL E&E ANALYTICAL SERVICES

TRAVEL DETAIL	Unit	# Units	$/Unit	Total
Airfare: Buffalo/Albany	RT		$ 350.00	
Travel Agent Fee			$ 28.00	
Per Diem: Albany	Day		$47.00	
Per Diem: Broome County	Day		$31.00	
Lodging: Broome County	Night		$55.00	
Local Tax on Lodging **0.00%**				
Auto Rental	Day		$ 50.00	
Mini Van Rental	Day		$ 70.00	
Local Mileage	Mile		$ 0.38	
Parking	Day			
Gasoline/Tolls	RT			
TOTAL TRAVEL COSTS				

E&E Equipment Period # Periods # Units $/Unit Total

All equipment must be rented from an outside vendor or purchased for use

TOTAL E&E EQUIPMENT COSTS

OTHER DIRECT COST DETAIL	Unit	# Units	$/Unit	Total
Communication Costs	Call	5	$5.00	$ 25
Blueprinting	Page	40	$1.75	$ 70
CAD Computer Usage	Hour	18	$10.00	$ 180
Protective Clothing: Level D	Day		$15.00	
Protective Clothing: Level C	Day		$50.00	
Protective Clothing: Level B	Day		$70.00	
Shipping: Lab Samples	lbs.		$54.00	
Shipping: Equipment	lbs.		$0.00	
Shipping: Other Fedex Priority	5 lbs.		$22.00	
Postage (FED-EX PRIORITY)	2 lbs.		$17.00	
Purchased Items - Incidentals	Lump Sum			
Outside Equipment Rental	Lump Sum			
Miscellaneous Field Supplies/ODCs	Lump Sum			
TOTAL OTHER DIRECT COSTS				$ 275

SUBCONTRACTORS Services to be Performed Cost Plus or Unit price Subcontract Price

UNIT PRICE SUBCONTRACTORS (Quotes > $10,000)

TOTAL SUBCONTRACTOR COSTS

4 Public Meetings

LABOR DETAIL

NSPE	Travel Hours	Field Work People	Days	H/Day	M-Day	Field Hours	In-House Hours	Pubs	Total
IX					0				
VIII					0				
VII					0				
VI	14	1	2	5	2	10	16		40
V	7	1	1	5	1	5	8		20
IV					0				
III					0				
II	7	1	1	5	1	5	8		20
I					0		4		4
TOTAL	28				4	20	36		84

E&E ANALYTICAL SERVICES Total

TOTAL E&E ANALYTICAL SERVICES

TRAVEL DETAIL	Unit	# Units	$/Unit	Total
Airfare: Buffalo/Albany	RT		$ 350.00	
Travel Agent Fee			$ 28.00	
Per Diem: Albany	Day		$47.00	
Per Diem: Broome County	Day	6	$31.00	$ 186
Lodging: Broome County	Night	4	$55.00	$ 220
Local Tax on Lodging **15.00%**				$ 33
Auto Rental	Day	4	$ 50.00	$ 200
Mini Van Rental	Day		$ 70.00	
Local Mileage	Mile		$ 0.38	
Parking	Day			
Gasoline/Tolls	RT			$ 60
TOTAL TRAVEL COSTS				$ 699

E&E Equipment Period # Periods # Units $/Unit Total

All equipment must be rented from an outside vendor or purchased for use

TOTAL E&E EQUIPMENT COSTS

OTHER DIRECT COST DETAIL	Unit	# Units	$/Unit	Total
Communication Costs	Call	4	$5.00	$ 20
Blueprinting	Page		$1.75	
CAD Computer Usage	Hour		$10.00	
Protective Clothing: Level D	Day		$15.00	
Protective Clothing: Level C	Day		$50.00	
Protective Clothing: Level B	Day		$70.00	
Shipping: Lab Samples	lbs.		$54.00	
Shipping: Equipment	lbs.		$0.00	
Shipping: Other Fedex Priority	5 lbs.		$22.00	
Postage (FED-EX PRIORITY)	2 lbs.		$17.00	
Purchased Items - Incidentals	Lump Sum			
Outside Equipment Rental	Lump Sum			
Miscellaneous Field Supplies/ODCs	Lump Sum			
TOTAL OTHER DIRECT COSTS				$ 20

SUBCONTRACTORS Services to be Performed Cost Plus or Unit price Subcontract Price

UNIT PRICE SUBCONTRACTORS (Quotes > $10,000)

TOTAL SUBCONTRACTOR COSTS

Section 7
Schedule 2.11(a) Summary of Work Assignment Price

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

1.	Direct Salary Costs (Schedule 2.11(b))		$52,147
2.	Indirect Costs		$96,473
3.	Direct Non-Salary costs (Schedules 2.11(c) and (d))		$31,267
	Subcontract Costs		
	Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.11(e))		

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	Lu Engineers	Surveying	$5,058
B	TBD	Waste Disposal	$1,200
C	Data Validation Services	Air Samples; Soil & Water Samples	$2,022
D	TBD	Landscaping/site repair	$1,000
4.	Total Cost-Plus-Fixed-Fee Subcontracts		**$9,280**

Unit Price Subcontracts (Schedule 2.11(f))

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	Northstar Drilling	Drilling	$24,762
B			
C			
D			
5.	Total Unit Price Subcontracts		**$24,762**

6.	Subcontract Management Fee	990	
7.	Total Subcontract Costs (Lines 4+5+6)		$34,042
8.	Fixed Fee		$35,032
9.	Total Work Assignment Price (Lines 1+2+3+7+8)		$11,147
			$226,065

NOTE: Rates are in accordance with Section 2.10 of the State Superfund Standby Contract #D003493

Section 7
Schedule 2.11(b) Direct Labor Hours Budgeted

ECOLOGY AND ENVIRONMENT ENGINEERINGg, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

DIRECT LABOR HOURS BUDGETED - BY NSPE GRADE

Rates for Year Ending February 1, 2003

NSPE Grade	IX	VIII	VII	VI	V	IV	III	II	I	Total	Labor	Overhead		Fee	
Rate/Hour	$73.88	$54.21	$46.87	$39.85	$34.15	$28.14	$25.12	$22.40	$17.49	Hours	Cost	185%	SUBTOTAL	7.50%	TOTAL
TASK DESCRIPTION															
1 Work Plan	0	0	0	64	10	0	2	100	22	198	$5,567	$10,299	$15,866	$1,190	$17,056
2.1 RI Fieldwork	0	0	0	211	0	0	0	463	74	748	20,074	37,137	57,211	4,291	61,502
2.2 RI Report	0	0	0	138	12	0	26	256	110	542	14,221	26,309	40,530	3,040	43,570
3 Feasibility Study	0	0	0	52	40	0	159	70	28	349	9,490	17,557	27,047	2,029	29,076
4 Public Meetings	0	0	0	40	20	0	0	20	4	84	2,795	5,171	7,966	597	8,563
Est. Direct Labor Hours	0	0	0	505	82	0	187	909	238	1,921					
Est. Direct Labor Cost	$0	$0	$0	$20,124	$2,800	$0	$4,697	$20,362	$4,163	**TOTALS**	$52,147	$96,473	$148,620	$11,147	$159,767

Section 7
Schedule 2.11(c) Direct Non-Salary Costs

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

ITEM	Maximum Reimbursement Rate	Unit	Estimated No. of Units		Total Estimated Costs
A. IN-HOUSE COSTS*					
Communication Costs	$ 5.00	Call	30		150.00
Blueprinting	$ 1.75	Page	40		70.00
CAD Computer Usage	$ 10.00	Hour	74		740.00
Protective Clothing: Level D	$ 15.00	Day	36		540.00
Protective Clothing: Level C	$ 50.00	Day	-		-
Protective Clothing: Level B	$ 70.00	Day	-		-
Shipping: Lab Samples	$ 54.00	lbs.	12		648.00
Shipping: Equipment		lbs.	-		-
Shipping: Other Fedex Priority	$ 22.00	5 lbs.	-		-
Postage (FED-EX PRIORITY)	$ 17.00	2 lbs.	-		-
Purchased Items - Incidentals		Lump Sum			330.00
Outside Equipment Rental		Lump Sum			6,913.00
Miscellaneous Field Supplies/ODCs		Lump Sum			775.00
E&E Analytical Services		Lump Sum			14,505.00
				Subtotal	24,671.00
B. MISCELLANEOUS					
1. TRAVEL					
Airfare: Buffalo/Albany	$ 350.00	RT	-		-
Per Diem: Albany	$ 47.00	Day	-		-
Per Diem: Broome County	$ 31.00	Day	50.50		1,565.50
Lodging: Broome County	$ 55.00	Night	40.00		2,200.00
Local Tax on Lodging	15.00%				330.00
Auto Rental	$ 50.00	Day	8.00		400.00
Mini Van Rental	$ 70.00	Day	25.00		1,750.00
Local Mileage	$ 0.375	Mile	-		-
Parking		Day	-		-
Gasoline/Tolls		RT	-		350.00
				Subtotal	6,595.50
TOTAL DIRECT NON-SALARY COSTS					**$ 31,266.50**

NOTES: *PPE Costs are estimated. Actual costs will be billed.

Schedule 2.11(c) - 1.1

Direct Non-Salary Costs, Proposed Sampling Costs
Work Assignment # D003493-44

Item		Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Turn-Around Mark-up ($)	Total Estimated Cost ($)
Analysis	Method				
TCL Volatiles (VOCs), soil & sediment	OLM04.2	$100	49	$0	$4,900
TCL Volatiles (VOCs), water	OLM04.2	$100	16	$0	$1,600
TCL Volatiles (VOCs), water	OLM04.2	$100	16	$25	$2,000
Chlorinated VOCs	TO-14A	$215	23	$0	$4,945
TCLP Volatiles (VOCs)	8260 B	$95	2	$0	$190
TCLP Metals	6010 B	$125	2	$0	$250
Sieve, Hydrometer, Moisture content	ASTM	$120	5	$0	$600
pH	9045 C	$10	2	$0	$20
		Totals:	115		$14,505

Section 7
Schedule 2.11(d) Equipment Usage Schedule

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

ID No	ITEM	Maximum Reimbursement Rate	Time Period	Estimated No. of Periods	Estimated No. of Units	Total Estimated Cost

NO EQUIPMENT RENTAL CHARGES ARE ALLOWED PER STANDBY CONTRACT

TOTAL EQUIPMENT USAGE

Schedule 2.11(d) - 1.1

Vendor Rented Equipment
Work Assignment # D003493-44

Equipment To Be Rented	Unit Cost ($)	Number of Units	Amount / Time Period	Estimated Periods	Cost ($)
MiniTroll with 50-ft lead	$224.00	1	week	2	$448.00
Pocket PC	$100.00	1	week	2	$200.00
Thermo Environmental 580 B OVM	$860.00	2	month	1	$1,720.00
GasTech GT-402	$200.00	1	week	2	$400.00
MIE DataRam with accessories	$1,460.00	2	month	1	$2,920.00
Hammer Drill	$42.00	1	day	3	$126.00
				Est. Shipping	$619.00
				Tax	$480.00
				Total Equipment Rental Fees:	$6,913.00

Schedule 2.11(d) - 2.1

Site Dedicated Equipment
Work Assignment # D003493-44

Equipment Purchase Items	Number of Units	Unit Cost ($)	Cost ($)
1.5" Double Weighted Polyethylene Bailers (Case)	1	$130.00	$130.00
Teflon-lined polyethylene tubing (per ft)	46	$2.15	$98.90
33-inch stainless steel soil probe	1	$67.50	$67.50
Misc. Supplies	1	$170.00	$170.00
		Tax	$38.48
Total Site Dedicated Equipment/supplies			**$504.88**

Notes:
See attached quotes.

Schedule 2.11 (e)

Cost-Plus-Fixed Fee Subcontractors

Former Bright Outdoors Site, Johnson City, NY

I.	NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	
	Lu Engineers	Surveying and Field Work	$	5,057.86

A.Direct Salary Costs

Professional Responsibility Level	Labor Classification	Avg. Reimbursement Rate	Max. Reimbursement Rate	Est. # Hours	Est. Direct Salary Cost (Avg. Reimb. Rate)
Task 1 - HASP					
Mgt. Engineer	NSPE VIII	$ 47.35	$ 49.17	8	$ 378.80
Sr. Engineer	NSPE III	$ 24.52	$ 26.22	0	$ -
Task 2 - Surveying, Horizontal and Vertical Control w/ Locations					
Mgt. Engineer	NSPE VIII	$ 47.35	$ 47.74	4	$ 189.40
Sr. Engineer	NSPE III	$ 24.52	$ 26.22	28	$ 686.56
Technician	NSPE I	$ 16.33	$ 24.52	28	$ 457.24
Total Direct Salary Costs					$ 1,712.00

B. Indirect Costs

Amount budgeted for indirect costs is:	$	2,174.24

C. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item	Max. Reimb. Rate	Unit	# Units	Total Est. Cost
1 Travel				
Overnight Expenses	$ 80.00	Night	2	$ 160.00
Dinner Only	$ 24.00	Dinner	2	$ 48.00
Breakfast Only	$ 6.00	Breakfast	2	$ 12.00
Mileage	$ 0.34	Mile	400	$ 136.00
Total Travel				$ 356.00
2 Supplies				
Postage	$ 15.00	Lump Sum	2	$ 30.00
Level D Protection	$ 15.00	Day	2	$ 30.00
Level C Protection	$ 50.00	Day	0	$ -
Total Station w/Tripod	$ 146.00	Day	2	$ 292.00
Miscellaneous Expenses	$ 75.00	Lump Sum	1	$ 75.00
Reproduction	$ 0.04	Each Copy	0	$ -
Total Supplies				$ 427.00
Total Travel and Supplies Cost				$ 783.00

D. Fixed Fee

The Fixed Fee is:	$	388.62

Schedule 2.11(f) - 1.1

Unit Price Subcontractors, Work Assignment Number
Work Assignment # D003493-44

Name of Subcontractor	Sevices to be Performed	Subcontract Price ($)	Management Fee ($)
Northstar Drilling	Drilling	$22,874.00	$990.44
Item	Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Total Estimated Cost ($)
SEE ATTACHED BID SHEET WITH UNIT RATES,QUANTITIES AND TOTALS			
		Total Cost	$22,874

SUBTOTAL SUBCONTRACT	$22,874
SUBCONTRACT MANAGEMENT FEE	$990
SUB TOTAL	$23,864
New York State Sales Tax	$1,887
TOTAL	$25,751

See attached quotes.

Schedule 2.11(f) - 2.1

Unit Price Subcontractors, Work Assignment Number
Work Assignment # D003493-44

Name of Subcontractor	Sevices to be Performed		Subcontract Price ($)	Management Fee ($)
Data Validation Services	Data Review		$1,875.00	$0.00

Item	Maximum Reimbursement Rate ($)	Unit Type	Estimated Number of Units	Total Estimated Cost ($)
Data Review and DUSR Preparation	$21.00	Air Sample	23	$483
	$19.00	Soil & Water Sample	81	$1,539
			Subtotal	$2,022

SUBCONTRACT MANAGEMENT FEE	$0
SUBTOTAL	$2,022.00
New York State Sales Tax	$166.82
TOTAL	$2,188.82

See attached quotes.

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

SUMMARY SCHEDULE

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$52,147
2. Indirect Costs (185%)							$96,473
3. Subtotal Direct Salary & Indirect Costs							$148,620
4. Travel							$6,596
5. Other Non-Salary Costs							$24,671
6. Subtotal Direct Non-Salary Costs							$31,267
7a. Subcontractors							$34,042
7b. Subcontract Management Fee							$990
8. Total Work Assignment Cost							$214,918
9. Fixed Fee							$11,147
10. Total Work Assignment Price							$226,065

Section 7
Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

1 Work Plan Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$5,567
2. Indirect Costs (185%)							$10,299
3. Subtotal Direct Salary & Indirect Costs							$15,866
4. Travel							$121
5. Other Non-Salary Costs							$95
6. Subtotal Direct Non-Salary Costs							$216
7a. Subcontractors							$0
7b. Subcontract Management Fee							$0
8. Total Work Assignment Cost							$16,082
9. Fixed Fee							$1,190
10. Total Work Assignment Price							$17,272

Section 7
Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

2.1 RI Fieldwork

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$20,074
2. Indirect Costs (185%)							$37,137
3. Subtotal Direct Salary & Indirect Costs							$57,211
4. Travel							$5,776
5. Other Non-Salary Costs							$23,521
6. Subtotal Direct Non-Salary Costs							$29,297
7a. Subcontractors							$32,020
7b. Subcontract Management Fee							$990
8. Total Work Assignment Cost							$119,517
9. Fixed Fee							$4,291
10. Total Work Assignment Price							$123,808

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

2.2 RI Report

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$14,221
2. Indirect Costs (185%)							$26,309
3. Subtotal Direct Salary & Indirect Costs							$40,530
4. Travel							$0
5. Other Non-Salary Costs							$760
6. Subtotal Direct Non-Salary Costs							$760
7a. Subcontractors							$2,022
7b. Subcontract Management Fee							$0
8. Total Work Assignment Cost							$43,312
9. Fixed Fee							$3,040
10. Total Work Assignment Price							$46,352

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

3 Feasibility Study

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$9,490
2. Indirect Costs (185%)							$17,557
3. Subtotal Direct Salary & Indirect Costs							$27,047
4. Travel							$0
5. Other Non-Salary Costs							$275
6. Subtotal Direct Non-Salary Costs							$275
7a. Subcontractors							$0
7b. Subcontract Management Fee							$0
8. Total Work Assignment Cost							$27,322
9. Fixed Fee							$2,029
10. Total Work Assignment Price							$29,351

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

4 Public Meetings

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget
1. Direct Salary Costs							$2,795
2. Indirect Costs (185%)							$5,171
3. Subtotal Direct Salary & Indirect Costs							$7,966
4. Travel							$699
5. Other Non-Salary Costs							$20
6. Subtotal Direct Non-Salary Costs							$719
7a. Subcontractors							$0
7b. Subcontract Management Fee							$0
8. Total Work Assignment Cost							$8,685
9. Fixed Fee							$597
10. Total Work Assignment Price							$9,282

Section 7
Schedule 2.11(h) Summary of Labor Hours

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # D003493-44
Project Name: Former Bright Outdoors RI/FS

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Rates for Year Ending February 1, 2001

NSPE Grade	IX		VIII		VII		VI		V		IV		III		II		I		TOTAL
Rate/Hour	$73.88		$54.21		$46.87		$39.85		$34.15		$28.14		$25.12		$22.40		$17.49		HOURS
TASK	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.
1 Work Plan	0	0	0	0	0	0	0	64	0	10	0	0	0	2	0	100	0	22	0	198
2.1 RI Fieldwork	0	0	0	0	0	0	0	211	0	0	0	0	0	0	0	463	0	74	0	748
2.2 RI Report	0	0	0	0	0	0	0	138	0	12	0	0	0	26	0	256	0	110	0	542
3 Feasibility Study	0	0	0	0	0	0	0	52	0	40	0	0	0	159	0	70	0	28	0	349
4 Public Meetings	0	0	0	0	0	0	0	40	0	20	0	0	0	0	0	20	0	4	0	84
TOTAL HOURS		0		0		0		505		82		0		187		909		238		1,921
TOTAL COST		$0		$0		$0		$20,124		$2,800		$0		$4,697		$20,362		$4,163		$52,146

8 MBE/WBE Utilization Plan

8.1 Introduction

E & E fully subscribes to the NYS policy that MBE/ WBE firms be afforded the maximum opportunity to participate in contracts offered by NYS agencies. As a prime contractor to NYSDEC, E & E is committed to full compliance with Executive Law Article 15-A and pertinent federal regulations to further MBE/WBE goals and to achieve significant participation by MBE/WBE firms to a level commensurate with their capabilities and responsibilities.

This section describes E & E's general MBE/WBE Utilization Plan, including goals for this work assignment and details regarding the services, firms, and portions of work scheduled to be provided by MBE/WBE firms under this work assignment.

8.2 General MBE/WBE Utilization Strategy

E & E maintains an up-to-date affirmative action plan and MBE/WBE hiring plan to ensure equal opportunity for all job applicants, employees, and subcontractors. For the NYS Superfund standby contract, E & E uses the following procedures and resources to meet the established MBE/WBE goals for each work assignment:

- The E & E program and project managers identify and evaluate work that requires or is appropriate for subcontractor services during work plan development. These subcontracting opportunities are then divided into discrete tasks that may each be completed by MBE or WBE firms.

- When the discrete tasks are identified, E & E's Program or Project Manager - reviews the New York State Directory of Certified Minority and Women-Owned Business Enterprises on the Internet at www.empire.state.ny.us.

- The project manager identifies qualified MBE/WBE contractors and solicits these firms for bids as outlined in Section 8.4 of this plan, Criteria for Selection.

8.3 Typically Subcontracted Services

Typically, E & E has found that opportunities exist for MBE/WBEs in the following work categories:

- Site security fencing;
- Protective services;
- Drilling and monitoring well installation;
- Soil borings;
- Physical soil tests;
- Site and topographical surveys;
- Title searches;
- Engineering services;
- Structural engineering;
- Geophysical engineering;
- Geophysical surveys;
- Photographic services;
- Heavy equipment rental;
- Laboratory data validation;
- Travel services; and
- Photocopying and report reproduction services.

8.4 Criteria for Selection

8.4.1 Subcontractors (Nonprofessional Services)

The criteria described below are used to obtain and evaluate bids for nonprofessional subcontracted services. Following the identification of discrete tasks and potential MBE/WBE firms by the program and project managers, bid solicitations are requested from qualified firms and, to the extent possible, one or more MBE/WBE firms are requested to bid on each task. If the bids exceed $10,000, at least three bids will be obtained. If the bids are less than $10,000, E & E plans to

enlist a sole-source procurement from an MBE/WBE firm as long as the cost is reasonable.

8.4.2 Subconsultants (Professional Services)

Professional services will be subcontracted to MBE/WBE firms pursuant to applicable New York State regulations.

8.4.3 Small Direct Non-Salary Purchase and Rentals

When appropriate, E & E will purchase miscellaneous supplies and services and rent field equipment with New York State Certified MBE/WBE supply vendors and travel agencies. If an item costs less than $1,000, E & E will be satisfied that the price is reasonable. For items costing between $1,000 and $1,500, two bids will be obtained. Three bids will be obtained for items costing between $1,500 and $2,500.

8.5 Work Assignment No. 44 Goals

The established percentage goals on this work are as follows:

	Dollar Amount
Total project amount:	213,600
Total percent of MBE/WBE work goal: 20%	42,700
Total percent of MBE work goal: 15%	32,000
Total percent of WBE work goal: 5%	10,700

8.6 Proposed MBE/WBE Utilization for Work Assignment No. 44

Three main elements within one of the tasks of the former Bright Outdoors RI/FS have been identified as appropriate for subcontracting. The elements to be subcontracted, proposed MBE/WBE subcontractor, and value of work are identified on Table 8-1. The scope of work and price quotes for the subcontracted services are included in Appendix D.

Table 8-1 MBE/WBE Subcontractor Information

Task	Task Description	Subcontract or Scope of Work	MBE/WBE Subcontractor	Value ($)
2.1	RI Fieldwork	Survey services	Lu Engineers (MBE)	5,058
2.1	RI Fieldwork	Well and borehole drilling	Northstar Drilling (WBE)	24,762
2.2	RI Analytical Data Validation	Data validation	Chemworld Environ-mental, Inc. (WBE)	2,022
Total MBE Subcontract				5,058
Total WBE Subcontract				26,784
Total Contract				226,065
Percent Total Contract (MBE)				2.2%
Percent Total Contract (WBE)				11.8%

Consultant/Contractor Detailed MBE/WBE and EEO Utilization Plan
New York State Department of Environmental Conservation

Consultant/Contractor Name: Ecology & Environment Engineering, P.C.		Contract #/Type: D003493 CPFF	
Address 368 Pleasantview Drive	City Lancaster	State NY	Zip Code 14086
Project Owner Name New York State Department of Environmental Conservation		Project/Grant No.: D003493-39	
Address 625 Broadway	City Albany	State NY	Zip Code 12233-7011
Authorized Representative:		Title:	
Authorized Signature:			
Contract Description:			

EEO and MBE/WBE Contract Summary

	%	Amount		%	No./Emp.	Wk./Hrs.
1. Total Dollar Value of the Prime Contract	100%	$213,600	5. Total No. Employees/Work Hours			
2. MBE Goal Applied to the Contract	15%	Goal: $32,000 Actual amnt: $5,028	6. Total Goal for Minority Empoyees			
3. WBE Goal Applied to the Contract	5%	Goal: $10,700 Actual Amount: $24,728	7. Total Goal for Female Employees			
4. MBE/WBE Combined Totals	20%	Goal: $42,700 Actual Amount: $29,756	8. EEO Combined Totals			

Bureau of Minority & Business Programs Use Only

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

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

MBE Firm	Description of Work MBE	Projected MBE Contract Amount and Award Date	Contract Schedule Start Date	Contract Payment Schedule	Project Completion Date
Name: Lu Engineers Address: 2230 Penfield Road City: Penfield State/Zip Code: NY 14526 Telephone No.: 585/377-1450	Conduct surveying and base map.	$5,028 Date: 4/6/04	6/04		
Name: Address: City: State/Zip Code: Telephone No.:		$ Date:			
Name: Address: City: State/Zip Code: Telephone No.:		$ Date:			

Section II – MBE Information: In order to achieve the MBE Goals, New York State Certified WOMEN-OWNED firms are expected to participate in the following manner.

MBE Firm	Description of Work MBE	Projected MBE Contract Amount and Award Date	Contract Schedule Start Date	Contract Payment Schedule	Project Completion Date
Name: Northstar Drilling Address: 4710 NYS Route 41 City: Cortland State/Zip Code: NY 13045 Telephone No.: 607/836-8800	Drilling services; monitoring well installation and Geoprobing	$23,000 Date: 4/6/04	5/04	Invice at project conclusion	
Name: Data Validation Services Address: 120 Cobble Creek Road City: North Creek State/Zip Code: NY 12853 Telephone No.: 716/251-4429	Data Validation	$1,875 Date: 4/6/04	8/04		
Name: Address: City: State/Zip Code: Telephone No.:		$ Date:			

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

		All Employees		Minority Employees			
Job Categories	**Total Work Hours of Contract**	**Males**	**Females**	**Black**	**Asian**	**Native American**	**Hispanic**
Officials/ Managers							
Professional							
Technicians							
Sales Workers							
Office/Clerical							
Craftsmen							
Laborers							
Service/Workers							
Totals							

9 References

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A Site-specific Health and Safety Plan

ecology and environment, inc.

SITE-SPECIFIC
HEALTH AND SAFETY PLAN

Project: Former Bright Outdoors Site (7-04-023)

Project No.: 000699.NV15.01

TDD/PAN No.: _____

Project Location: Johnson City, Broome Co., New York

Proposed Date of Field Activities: Spring – Summer 2004

Contract Manager: David Albers

Project Manager: Rick Watt Date Reviewed: April 2, 2004

Prepared by: Brian Cervi Date Prepared: March 3, 2004

Approved by: Tom Siener Date Approved: _____

1. INTRODUCTION

1.1 POLICY

It is E & E's policy to ensure the health and safety of its employees, the public, and the environment during the performance of work it conducts. This site-specific health and safety plan (SHASP) establishes the procedures and requirements to ensure the health and safety of E & E employees for the above-named project. E & E's overall safety and health program is described in *Corporate Health and Safety Program for Toxic and Hazardous Substances* (CHSP). After reading this plan, applicable E & E employees shall read and sign E & E's Site-Specific Health and Safety Plan Acceptance form.

This SHASP has been developed for the sole use of E & E employees and is not intended for use by firms not participating in E & E's training and health and safety programs. Subcontractors are responsible for developing and providing their own safety plans.

This SHASP has been prepared to meet the following applicable regulatory requirements and guidance:

Applicable Regulation/Guidance
29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER)
Other:

1.2 SCOPE OF WORK

Description of Work: 1. Use a drill rig to obtain soil core samples and construct monitoring wells. 2. Perform a passive soil gas survey inside and surrounding the facility. 3. Collect groundwater samples from existing and new groundwater monitoring wells. 4. Collect indoor air samples with summa canisters.

Equipment/Supplies: Attachment 1 contains a checklist of equipment and supplies that will be needed for this work.

The following is a description of each numbered task:

Task Number	Task Description
1	Drilling, including soil coring, monitoring well installation, and decontamination
2	Indoor sub-slab soil gas sampling
3	Purge and sample new and existing wells
4	Indoor Air Sampling
5	Miscellaneous environmental sampling (drains, sediment, etc.)

1.3 SITE DESCRIPTION

Site Map: A site map is attached at the end of this plan.

Site History/Description (see project work plan for detailed description): The property currently under investigation is commercial/light industrial and is occupied by Samscreen Co, (former Bright Outdoors). The site is bounded by residential property, commercial property (e.g., Wegmans), and NYS Route 17. Johnson City municipal supply wells were found to be contaminated with 1,1,1-trichloroethane (TCA) in 1991 at levels of approximately 10 ppb. Several sites in the vicinity have been investigated and may be possible sources of the TCA contamination. Recent investigation at the subject property was conducted in 1997 and 2001. Near surface soil samples were generally free of contamination. Groundwater samples were found to contain TCA at concentrations up to 260 ppb with lesser concentrations of trichloroethene (TCE) and 1,1-dichloroethane (DCA).

Is the site currently in operation? Yes.

Locations of Contaminants/Wastes: Chlorinated solvent contamination has been detected in shallow groundwater samples at concentrations up to 260 ppb.

Types and Characteristics of Contaminants/Wastes:

☒ Liquid	☐ Solid	☐ Sludge	☐ Gas/Vapor
☐ Flammable/Ignitable	☒ Volatile	☐ Corrosive	☐ Acutely Toxic
☐ Explosive	☐ Reactive	☒ Carcinogenic	☐ Radioactive
☐ Medical/Pathogenic	☐ Other: _____		

2. ORGANIZATION AND RESPONSIBILITIES

E & E team personnel shall have on-site responsibilities as described in E & E's standard operating procedure (SOP) for Site Entry Procedures (GENTECH 2.2). The project team, including qualified alternates, is identified below.

Name	Site Role/Responsibility
Rick Watt	Site Manager
Brian Cervi	Site Safety Officer and Field Team Leader
Others	To be determined

3. TRAINING

Prior to work, E & E team personnel shall have received training as indicated below. As applicable, personnel shall have read the project work plan, sampling and analysis plan, and/or quality assurance project plan prior to project work.

Training	Required
40-Hour OSHA HAZWOPER Initial Training and Annual Refresher (29 CFR 1910.120)	X
Annual First Aid/CPR	X
Hazard Communication (29 CFR 1910.1200)	X
40-Hour Radiation Protection Procedures and Investigative Methods	
8-Hour General Radiation Health and Safety	
Radiation Refresher	
DOT and Biannual Refresher	X
Other:	

4. MEDICAL SURVEILLANCE

4.1 MEDICAL SURVEILLANCE PROGRAM

E & E field personnel shall actively participate in E & E's medical surveillance program as described in the CHSP and shall have received, within the past year, an appropriate physical examination and health rating.

E & E's health and safety record (HSR) form will be maintained on site by each E & E employee for the duration of his or her work. E & E employees should inform the site safety officer (SSO) of any allergies,

medical conditions, or similar situations that are relevant to the safe conduct of the work to which this SHASP applies.

Is there a concern for radiation at the site? Yes ☒ **No**

If no, go to 5.1.

4.2 RADIATION EXPOSURE

4.2.1 External Dosimetry

Thermoluminescent Dosimeter (TLD) Badges:

Pocket Dosimeters:

Other:

4.2.2 Internal Dosimetry

☐ Whole body count ☐ Bioassay ☐ Other

Requirements:

4.2.3 Radiation Dose

Dose Limits: E & E's radiation dose limits are stated in the CHSP. Implementation of these dose limits may be designated on a site-specific basis.

Site-Specific Dose Limits:

ALARA Policy: Radiation doses to E & E personnel shall be maintained as low as reasonably achievable (ALARA), taking into account the work objective, state of technology available, economics of improvements in dose reduction with respect to overall health and safety, and other societal and socioeconomic considerations.

5. SITE CONTROL

5.1 SITE LAYOUT AND WORK ZONES

Site Work Zones: Work zones include areas around and between buildings and may be conducted near active roadways.

Site Access Requirements and Special Considerations: Permission to access the properties must be acquired before conducting work. If locations in the field are moved to active roadways, appropriate authorities must be contacted.

Illumination Requirements: Work during daylight hours only.

Sanitary Facilities (e.g., toilet, shower, potable water): Facilities will be identified in the field. Hotel is adjacent to the site and will be used when possible.

On-Site Communications: Cell phone will be brought on site and maintained with either team member.

Other Site-Control Requirements: None known at this time. To be determined.

5.2 SAFE WORK PRACTICES

Daily Safety Meeting: A daily safety meeting will be conducted for all E & E personnel and documented. The information and data obtained from applicable site characterization and analysis will be addressed in the safety meetings and also used to update this HASP, if necessary.

Work Limitations: Work shall be limited to a maximum of 12 hours per day. If 12 consecutive days are worked, at least one day off shall be provided before work is resumed. Work will be conducted in daylight hours unless prior approval is obtained and the illumination requirements in 29 CFR 1910.120(m) are satisfied.

Weather Limitations: Work shall not be conducted during electrical storms. Work conducted in other inclement weather (e.g. severe rain or snow) will be approved by project management and the regional safety coordinator or designee.

Other Work Limitations: None at this time. To be determined.

Buddy System: Field work will be conducted in pairs of team members according to the buddy system.

Line of Sight: Each field team member shall remain in the line of sight and within verbal communication of at least one other team member.

Eating, Drinking, and Smoking: Eating, drinking, smoking, and the use of tobacco products shall be prohibited in the exclusionand contamination reduction areas, at a minimum, and shall only be permitted in designated areas.

Contamination Avoidance: Field personnel shall avoid unnecessary contamination of themselves, other personnel, equipment, and all materials to the extent practicable.

Sample Handling: Protective gloves of a type designated in Section 7 will be worn when containerized samples are handled for labeling, packaging, transportation, and other purposes.

Vermiculite Handling: Vermiculite will not be used; its use has been replaced with use of bubble wrap.

Other Safe Work Practices: The subject properties are active commercial/light industrial facilities. Care should be taken when working in or near parking lots, roadways, loading docks, etc. High visibility vests should be worn when working in roadways.

6. HAZARD EVALUATION AND CONTROL

6.1 PHYSICAL HAZARD EVALUATION AND CONTROL

Potential physical hazards and their applicable control measures are described in the following table for each task.

Hazard	Task Number	Hazard Control Measures
Biological (flora, fauna, etc.)	1,3,5	Potential hazard: Bee stings, poison ivy, dog bites. Establish site-specific procedures for working around identified hazards. Other:
Cold Stress	None, unless work is performed in winter.	Provide warm break area and adequate breaks. Provide warm noncaffeinated beverages. Promote cold stress awareness. See *Cold Stress Prevention and Treatment* (attached at the end of this plan if cold stress is a potential hazard).
Compressed Gas Cylinders	None	Use caution when moving or storing cylinders. A cylinder is a projectile hazard if it is damaged or its neck is broken. Store cylinders upright and secure them by chains or other means. Other:
Confined Space	None	Ensure compliance with 29 CFR 1910.146. See SOP for Confined Space Entry. Additional documentation is required. Other:
Drilling/Direct Push	1	See SOP for Health and Safety on Drilling Rig Operations. Additional documentation may be required. Other:

Hazard	Task Number	Hazard Control Measures
Drums and Containers	1, 3	Ensure compliance with 29 CFR 1910.120(j). Consider unlabeled drums or containers to contain hazardous substances and handle accordingly until the contents are identified. Inspect drums or containers and assure integrity prior to handling. Move drums or containers only as necessary; use caution and warn nearby personnel of potential hazards. Open, sample, and/or move drums or containers in accordance with established procedures; use approved drum/container-handling equipment. Other:
Electrical	1,2	Ensure compliance with 29 CFR 1910 Subparts J and S. Locate and mark energized lines. De-energize lines as necessary. Ground all electrical circuits. Guard or isolate temporary wiring to prevent accidental contact. Evaluate potential areas of high moisture or standing water and define special electrical needs. Other: _____
Excavation and Trenching	None	Ensure that excavations comply with and personnel are informed of the requirements of 29 CFR 1926 Subpart P. Ensure that any required sloping or shoring systems are approved as per 29 CFR 1926 Subpart P. Identify special personal protective equipment (PPE) (see Section 7) and monitoring (see Section 8) needs if personnel are required to enter approved excavated areas or trenches. Maintain line of sight between equipment operators and personnel in excavations/trenches. Such personnel are prohibited from working in close proximity to operating machinery. Suspend or shut down operations at signs of cave in, excessive water, defective shoring, changing weather, or unacceptable monitoring results. Other: _____

Hazard	Task Number	Hazard Control Measures
Fire and Explosion	None	Inform personnel of the location(s) of potential fire/explosion hazards. Establish site-specific procedures for working around flammables. Ensure that appropriate fire suppression equipment and systems are available and in good working order. Define requirements for intrinsically safe equipment. Identify special monitoring needs (see Section 8). Remove ignition sources from flammable atmospheres. Coordinate with local fire-fighting groups regarding potential fire/explosion situations. Establish contingency plans and review daily with team members. Other: _____
Heat Stress	All	Provide cool break area and adequate breaks. Provide cool noncaffeinated beverages. Promote heat stress awareness. Use active cooling devices (e.g., cooling vests) where specified. See *Heat Stress Prevention and Treatment* (attached at the end of this plan if heat stress is a potential hazard).
Heavy Equipment Operation	1	Define equipment routes, traffic patterns, and site-specific safety measures. Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols. Identify special PPE (Section 7) and monitoring (Section 8) needs. Ensure that field personnel do not work in close proximity to operating equipment. Ensure that lifting capacities, load limits, etc., are not exceeded. Other: _____
Heights (Scaffolding, Ladders, etc.)	None	Ensure compliance with applicable subparts of 29 CFR 1910. Identify special PPE needs (e.g., lanyards, safety nets, etc.) Other: _____

Hazard	Task Number	Hazard Control Measures
Noise	1,2	Establish noise level standards for on-site equipment/operations. Inform personnel of hearing protection requirements (Section 7). Define site-specific requirements for noise monitoring (Section 8). Other: _____
Overhead Obstructions	1	Wear hard hat. Other: _____
Power Tools	2	Ensure compliance with 29 CFR 1910 Subpart P. Other: _____
Sunburn	All	Apply sunscreen. Wear hats/caps and long sleeves. Other: _____
Utility Lines	1	Identify/locate existing utilities prior to work. Ensure that overhead utility lines are at least 25 feet away from project activities. Contact utilities to confirm locations, as necessary. Other: _____
Weather Extremes	All	Establish site-specific contingencies for severe weather situations. Provide for frequent weather broadcasts. Weatherize safety gear, as necessary (e.g., ensure eye wash units cannot freeze, etc.). Identify special PPE (Section 7) needs. Discontinue work during severe weather. Other: _____
Other:	All	Active roadways: wear high visibility clothing and watch for cars. _____ _____ _____

6.2 CHEMICAL HAZARD EVALUATION AND CONTROL

6.2.1 Chemical Hazard Evaluation

Potential chemical hazards are described by task number in Table 6-1. Hazard Evaluation Sheets for major known contaminants are attached to the end of this plan.

Table 6-1

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Routes of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response (%)	Ionization Potential (eV)
All	1,2-Dichloro-ethane	100 ppm	100 ppm	100 ppm	N	Inh, Ing, Eye, Skin	Irritation of eyes/respiratory system, CNS depression	.085 ppm	80	11.12
All	1,1,1-Trichloroethane	350 ppm	350 ppm C	350 ppm	Y	Inh, Ing, Eye, Skin	Irritation of eyes/skin, headache, weakness, exhaustion, CNS depression, poor equilibrium, cardiac arrhythmia	Sweet odor	105	11.3
All	Trichloroethene	100 ppm	25 ppm	50 ppm	Y	Inh, Ing, Eye, Skin	Irritation of eyes/nose/throat, vomiting, difficulty breathing	50 ppm	70	9.45

KEY:

*	Chemical is a known or suspected carcinogen.	Inh	= Inhalation
---	Information not available	PEL	= Permissible exposure limit (OSHA)
C	= Ceiling	ppm	= parts per million
CNS	= Central Nervous System	REL	= Recommended exposure limit (NIOSH)
eV	= electron volts	TLV	= Threshold Limit Value (ACGIH)
Ing	= Ingestion	TWA	= Time weighted average

6.2.2 Chemical Hazard Control

An appropriate combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below published exposure levels (see Section 6.2.1).

Applicable Engineering/Administrative Control Measures: None.

PPE: See Section 7.

6.3 RADIOLOGICAL HAZARD EVALUATION AND CONTROL

6.3.1 Radiological Hazard Evaluation

Potential radiological hazards are described below by task number. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Task Number	Radionuclide	DAC (μCi/ml)	Route(s) of Exposure	Major Radiation(s)	Energy(s) (MeV)	Half-Life

6.3.2 Radiological Hazard Control

Engineering/administrative controls and work practices shall be instituted to reduce and maintain employee exposures to a level at or below the permissible exposure/dose limits (see sections 4.2.3 and 6.3.1). Whenever engineering/administrative controls and work practices are not feasible or effective, any reasonable combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below permissible exposure/dose limits.

Applicable Engineering/Administrative Control Measures:

PPE: See Section 7.

7. LEVEL OF PROTECTION AND PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

The following levels of protection (LOPs) have been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and the performance specifications of the PPE. On-site monitoring results and other information obtained from on-site activities will be used to modify these LOPs and the PPE, as necessary, to ensure sufficient personnel protection. The authorized LOP and PPE shall only be changed with the approval of the regional safety coordinator or designee. Level A is not included below because Level A activities, which are performed infrequently, will require special planning and addenda to this SHASP.

Task Number	B	C	D	Modifications Allowed?
1		(X)	X	Yes
2			X	Yes
3		(X)	X	Yes
4			X	Yes
5		(X)	X	Yes

Note: Use "X" for initial levels of protection. Use "(X)" to indicate levels of protection that may be used as site conditions warrant.

7.2 PERSONAL PROTECTIVE EQUIPMENT

The PPE selected for each task is indicated below. E & E's PPE program complies with 29 CFR 1910.120 and 29 CFR 1910 Subpart I and is described in detail in the CHSP. Refer to 29 CFR 1910 for the minimum PPE required for each LOP.

PPE	Task Number/LOP							
	1	2	3	4	5			
Full-face APR	(X)		(X)		(X)			
Powered APR								
Cartridges:								
H								
GMC-H	(X)		(X)		(X)			
GMA-H								
Other:								
Positive-pressure, full-face SCBA								
Spare air tanks (Grade D air)								
Positive-pressure, full-face, supplied-air system								
Cascade system (Grade D air)								
Manifold system								
5-Minute escape mask								
Safety glasses	X	X	X	X	X			
Monogoggles								
Coveralls/clothing	X	X	X	X	X			
Protective clothing:								

PPE	Task Number/LOP							
	1	**2**	**3**	**4**	**5**			
Tyvek	(X)		(X)		(X)			
Saranex								
Other:								

PPE	Task Number/LOP							
	1	**2**	**3**	**4**				
Splash apron								
Inner gloves:								
Cotton								
Nitrile	X	(X)	X	(X)	X			
Latex								
Other:								
Outer gloves:								
Viton								
Rubber								
Neoprene	(X)	(X)	(X)	(X)	(X)			
Nitrile	(X)	(X)	(X)	(X)	(X)			
Other:								
Work gloves	(X)							
Safety boots (as per ANSI Z41)	X	X	X	X	X			
Neoprene safety boots (as per ANSI Z41)								
Boot covers (type: latex)	(X)		(X)		(X)			
Hearing protection (type: TBD)	(X)	(X)		(X)	(X)			
Hard hat	X	X	(X)	(X)	(X)			
Face shield		(X)						
Other:								
Other:								

8. HEALTH AND SAFETY MONITORING

Health and safety monitoring will be conducted to ensure proper selection of engineering/administrative controls, work practices, and/or PPE so that employees are not exposed to hazardous substances at levels that exceed permissible exposure/dose limits or published exposure levels. Health and safety monitoring will be conducted using the instruments, frequency, and action levels described in Table 8-1. Health and safety monitoring instruments shall have been appropriately calibrated and/or performance-checked prior to use.

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant	Monitoring Location	Monitoring Frequency	Action Levels[a]	
☒ PID (e.g., HNu IS-101) ☐ FID (e.g., OVA 128-GC)	1, 2, 3	Organic vapors	Breathing zone	continuous	**Unknown Vapors** Background to 1 ppm: Level D 1 to 5 ppm above background: Level C 5 to 500 ppm above backgrnd: Level B >500 ppm above background: Level A	**Contaminant-Specific**
Oxygen Meter/Explosimeter	1	Methane and H_2S	At drilling location	continuous	**Oxygen** <19.5% or >22.0%: Evacuate area; eliminate ignition sources; reassess conditions. 19.5 to 22.0%: Continue work in accordance with action levels for other instruments.	**Explosivity** ≤10% LEL: Continue work in accordance with action levels for other instruments; monitor continuously for combustible atmospheres. >10% LEL: Evacuate area; eliminate ignition sources; reassess conditions.
Other:						
Other:						

[a]Unless stated otherwise, airborne contaminant concentrations are measured as a time-weighted average in the worker's breathing zone. Acceptable concentrations for known airborne contaminants will be determined based on OSHA/NIOSH/ACGIH and/or NRC exposure limits. As a guideline, ½ the PEL/REL/TLV, whichever is lower should be used.

9. DECONTAMINATION PROCEDURES

All equipment, materials, and personnel will be evaluated for contamination upon leaving the exclusion area. Equipment and materials will be decontaminated and/or disposed and personnel will be decontaminated, as necessary. Decontamination will be performed in the contamination reduction area or any designated area such that the exposure of uncontaminated employees, equipment, and materials will be minimized. Specific procedures are described below.

Equipment/Material Decontamination Procedures (specified by work plan): Prevent cross-contamination and decon equipment after each use. Dedicated sampling equipment to be used whenever possible. All non-dedicated equipment will be steam cleaned or washed with laboratory-grade detergent and triple rinsed with deionized or distilled water.

Ventilation: All decontamination procedures will be conducted in a well-ventilated area.

Personnel Decontamination Procedures: Protective clothing to be removed in a manner that will minimize the potential of contaminant to skin contact.

PPE Requirements for Personnel Performing Decontamination: Appropriate splash protection to be worn during steam cleaning and/or a wet decon.

Personnel Decontamination in General: Following appropriate decontamination procedures, all field personnel will wash their hands and face with soap and potable water. Personnel should shower at the end of each work shift.

Disposition of Disposable PPE: Disposable PPE must be rendered unusable and disposed as indicated in the work plan.

Disposition of Decontamination Wastes (e.g., dry wastes, decontamination fluids, etc.): Used PPE is to be double bagged if deemed non-hazardous. Potentially hazardous PPE will be drummed. Wastewater is to be containerized and tested. Spent reagents and sample water from Quick Test field analyses shall be drummed. See workplan for further details.

10. EMERGENCY RESPONSE

This section contains additional information pertaining to on-site emergency response and does not duplicate pertinent emergency response information contained in earlier sections of this plan (e.g., site layout, monitoring equipment, etc.). Emergency response procedures will be rehearsed regularly, as applicable, during project activities.

10.1 EMERGENCY RESPONSIBILITIES

All Personnel: All personnel shall be alert to the possibility of an on-site emergency; report potential or actual emergency situations to the team leader and SSO; and notify appropriate emergency resources, as necessary.

Team Leader: The team leader will determine the emergency actions to be performed by E & E personnel and will direct these actions. The team leader also will ensure that applicable incidents are reported to appropriate E & E and client project personnel and government agencies.

SSO: The SSO will recommend health/safety and protective measures appropriate to the emergency. Recommendations will be made with the concurrence of the regional safety coordinator as necessary.

Other:

10.2 LOCAL AND SITE RESOURCES (including phone numbers)

Ambulance: **911**

Hospital: Wilson Memorial Regional Hospital, 57 Harrison St, Johnson City, NY 13790 (607) 763-6000

Directions to Hospital: See map attached at the end of this plan.

Poison Control: 607-737-4357 (Arnot-Ogden Poison Control, Elmira, NY)

Police Department: 911 (607-729-9321) 42 Willow Avenue

Fire Department: 911 (607-797-2311) 270 Floral Avenue

Client Contact: Ralph Keating, NYSDEC, 518-402-9774

Site Contact: None

On-Site Telephone Number: Field crew to be equipped with cellular telephone

Cellular Telephone Number: TBD

Radios Available: None

Other:

10.3 E & E EMERGENCY CONTACTS

E & E Emergency Response Center (24 Hours):	716/684-8940
Corporate Health and Safety Director, Dr. Paul Jonmaire:	716/684-8060 (office) 716/655-1260 (home)
Regional Office Contact, Tom Siener, CIH:	716/684-8060 (office) 716/662-4740 (home)
Other:	

10.4 OTHER EMERGENCY RESPONSE PROCEDURES

On-Site Evacuation Signal/Alarm (must be audible and perceptible above ambient noise and light levels): Sound car horn in continuous mode for 10 seconds.

On-Site Assembly Area: At E & E support vehicle.

Emergency Egress Route to Get Off Site: Exit to Field Street to the south.

Off-Site Assembly Area: Intersection of Field and Marie Streets, west of the site.

Preferred Means of Reporting Emergencies: Telephone, see emergency contact information above.

Site Security and Control: In an emergency situation, personnel will attempt to secure the affected area and control site access.

Emergency Decontamination Procedures: Wash hands and remove contaminated outer wear.

PPE: Personnel will don appropriate PPE when responding to an emergency situation. The SSO and Section 7 of this plan will provide guidance regarding appropriate PPE.

Emergency Equipment: Appropriate emergency equipment is listed in Attachment 1. Adequate supplies of this equipment shall be maintained in the support area or other approved work location.

Incident Reporting Procedures: Report using telephone to appropriate authorities.

ATTACHMENT 1 EQUIPMENT/SUPPLIES CHECKLIST			
INSTRUMENTATION	No.	**EMERGENCY EQUIPMENT**	No.
OVA	1	First aid kit	1
Thermal desorber		Stretcher	
O_2/explosimeter w/cal. kit		Portable eye wash	1
Photovac tip		Blood pressure monitor	
HNu (probe: ___eV)		Fire blanket	
Magnetometer		Fire extinguisher	1
Pipe locator		Thermometer (medical)	
Weather station		Spill kit	
Draeger tube kit (tubes: _____)			
Brunton compass			
Real-time cyanide monitor			
Real-time H_2S monitor			
Heat stress monitor			
Noise equipment		**DECONTAMINATION EQUIPMENT**	
Personal sampling pumps and supplies		Wash tubs	
MiniRam dust monitor		Buckets	X
Mercury monitor		Scrub brushes	X
Spare batteries (type_____)		Pressurized sprayer	
		Spray bottle	X
		Detergent (type: Alconox/Liquinox)	X
RADIATION EQUIPMENT/SUPPLIES		Solvent (type: _____)	
Documentation forms		Plastic sheeting	X
Portable ratemeter		Tarps and poles	
Scaler/ratemeter		Trash bags	X
1" NaI gamma probe		Trash cans	
2" NaI gamma probe		Masking tape	
ZnS alpha probe		Duct tape	X
GM pancake probe		Paper towels	X
Tungsten-shielded GM probe		Face mask	
Micro R meter		Face mask sanitizer	
Ion chamber		Step ladders	
Alert monitor		Distilled water	X
Pocket dosimeter		Deionized water	X
Dosimeter charger		Drums (USDOT)	X
Radiation warning tape			
Radiation decon supplies			
Spare batteries (type:_____)			
SAMPLING EQUIPMENT		**MISCELLANEOUS (Cont.)**	
4-oz. bottles	X	Gatorade or equivalent	X
1-liter amber bottles		Tables	X
VOA bottles	X	Chairs	X
Gauze pads		Weather radio	
Hand bailers	X	Two-way radios	
Spoons	X	Binoculars	
Bottle labels	X	Megaphone	
		Cooling vest	

ATTACHMENT 1 EQUIPMENT/SUPPLIES CHECKLIST			
MISCELLANEOUS	No.	**SHIPPING EQUIPMENT**	No.
Pump		Coolers	X
Surveyor's tape		Paint cans with lids and clips	
100' Fiberglass tape	X	Bubble Wrap	X
300' Nylon rope		Shipping labels	X
Nylon/polyethylene string	X	DOT labels:	
Surveying flags	X	"Up"	
Camera	X	"Danger"	
Film	X	"Inside Container Complies ..."	
Bung wrench/ratchet	X	Hazard Group	
Soil auger		Strapping tape	X
Pick		Baggies	X
Shovel		Custody seals	X
Catalytic heater		Chain-of-custody forms	X
Propane gas		Federal Express forms	X
Banner tape		Clear packing tape	X
Surveying meter stick		Permanent markers	X
Chaining pins and ring			
Logbooks (_X_ large, ___ small)	X		
Required MSDSs	X		
Intrinsically safe flashlight			
Potable water	X		

DRIVING DIRECTIONS TO WILSON MEMORIAL REGIONAL HOSPITAL

Starting from:	Marie and Field Street, Johnson City, NY 13790		
Arriving at:	Wilson Memorial Regional Hosp 57 Harrison St, Johnson City, NY 13790-2143 (607) 763-6000		
Distance:	1.8 miles	**Approximate Travel Time:**	4 mins

Full Route

Destination

	Directions	Miles
1.	Start out going East on **HARRY L DR** towards **OAKDALE RD** by turning right.	0.3
2.	Turn RIGHT onto **NY-201 S**.	0.7
3.	Take the **RT-17C** ramp.	0.2
4.	Turn RIGHT onto **NY-17C**.	0.6

ecology and environment. inc.
JOB NO: PH 9010 HAZARD EVALUATION OF CHEMICALS PREP DATE 5-10-90

CHEMICAL NAME: 1,2-DICHLOROETHANE RQ:
DOT NAME/ID NO.
CAS NUMBER: 107-06-2 RCRA NO PHYSICAL STATE: LIQUID
CHEMICAL AND PHYSICAL PROPERTIES: BOILING POINT: 183 F MOL WEIGHT: 99
CHEMICAL FORMULA: C1CH2CH2C1 VAPOR PRESS: 62 MM SPG/D 1.253
FREEZING POINT: -32.3 F SOLUBILITY (H2O): SLIGHTLY
FLASH POINT: 55 F FLAMMABLE LIMITS: 6.2-16%
SYNONYMS: ETHYLENE DICHLORIDE, GLYCOL DICHLORIDE

ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG OXIDIZERS, CAUSTICS, CHEM ACTIVE METALS

BIOLOGICAL PROPERTIES: IDLH: 1000 PPM TLV-TWA: 10 PPM PEL: 1 PPM
HUMAN (LCLO): TCLO 100 RAT/MOUSE (LC50): ODOR THRESHOLD:
AQUATIC: T/M 96:1000-100 PPM
CARCINOGEN: HUMAN-SUS TERATOGEN: EXP
MUTAGEN: EXPER
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):
ANY DETECTABLE LIMIT-USE SCBA,
EXCEL-VITON;GOOD-BUTYL;POOR-VINYL,NITRILE,NEOPRENE,PREVENT CONTACT W/SKIN SINCE
MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: CONFIRMED CARCINOGEN. POISON BY INGESTION. TOXIC BY INHALATION, SKIN CONTACT AND INTRAPERITONEAL ROUTES. EXPOSURE CAN CAUSE HEADACHE, WEAKNESS, PAIN OR IRRITATION OF EYES AND SKIN, BLUISH DISCOLORATION OF SKIN AND MUCOUS MEMBRANES, NAUSEA, VOMITING, MENTAL CONFUSION, DIZZINESS, INCOORDINATION AND UNCONSCIOUSNESS.

ACUTE SYMPTOMS: NAUSEA,VOMITING,MENTAL CONFUSION, DIZZINESS, HEADACHE, SKIN BURNS, DERMATITIS, CORNEA OF EYE DAMAGE, ACUTE EXPOSURE AT HIGH CONCENTRATIONS CAN RESULT IN DEATH DUE TO CIRCULATORY & RESPIRATORY FAILURE

CHRONIC SYMPTOMS: REPEATED LONG TERM EXPOSURE MAY RESULT IN NERVOUS SYSTEM DISORDERS, LOSS OF APPETITE, STOMACH PROBLEMS, LIVER AND/OR KIDNEY DAMAGE, SUSPECT HUMAN

FIRST AID
INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION IMMEDIATELY

COMMENTS:
CO,CO2, HYDROGEN CHLORIDE & PHOSGENE GAS

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH
[X] NIOSH/OSHA POCKET GUIDE [X] SAX [ ] TOXIC & HAZARDOUS SAFETY MANUAL
[X] CHRIS [ ] OTHER: ALDRICH,RTECS,SITTIG,CHEMICAL DICTIONARY

ecology and environment. inc.

JOB NO: RT6070 HAZARD EVALUATION OF CHEMICALS PREP DATE 5-2

CHEMICAL NAME: 1,1,1-TRICHLOROETHANE
DOT NAME/ID NO. RQ:
CAS NUMBER: 71-55-6 RCRA NO PHYSICAL STATE: LIQUID
CHEMICAL AND PHYSICAL PROPERTIES: BOILING POINT: 165 F MOL WEIGHT: 133
CHEMICAL FORMULA: CH3CC13 VAPOR PRESS: 100 MM SPG/D 131
FREEZING POINT: -36 F SOLUBILITY (H20): INSOULBLE
FLASH POINT: NONE FLAMMABLE LIMITS: 7-16%
SYNONYMS: METHYL CHLOROFORM, CHLOROTHANE

ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG OXIDIZERS, CAUSTICS, CHEM ACTIVE METALS

BIOLOGICAL PROPERTIES: IDLH: 1000ppm TLV-TWA: 350 PPM PEL: 350 PPM
HUMAN (LCLO): 920 PPM/ RAT/MOUSE (LC50): 1000 PPM ODOR THRESHOLD: 100 PPM
AQUATIC: 100-10 PPM
CARCINOGEN: INDEF ANIM TERATOGEN:
MUTAGEN: EXPER
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGEST

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):
500 PPM USE APR; 1000 PPM USE SCBA, EXCEL VITON; GOOD-BUTYL; POOR-NEOPRENE, NITRI
AVOID CONTACT
MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATING TO EYES, SKIN, MUCOUS MEMBRANES, INCOORINDATION, CONFUSION, DROWSINESS, POSSIBLE LOSS OF CONSCIOUSNESS, NAUSEA I INGESTED

CHRONIC SYMPTOMS: DERMATITIS, LIVER AND/OR KIDNEY DAMAGE, CONSUMPTION OF ALCHOL MAY INCREASE THE TOXIC EFFECTS OF EXPOSURE

FIRST AID
INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

COMMENTS:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH
[X] NIOSH/OSHA POCKET GUIDE [X] SAX [ ] TOXIC & HAZARDOUS SAFETY MANUAL
[X] CHRIS [ ] OTHER: ALDRICH, RTECS

ecology and environment. inc.

JOB NO: ZT2051 HAZARD EVALUATION OF CHEMICALS PREP DATE 7-22-87

CHEMICAL NAME: TRICHLOROETHYLENE
DOT NAME/ID NO. RQ:
CAS NUMBER: 79-01-6 RCRA NO PHYSICAL STATE: LIQUID
CHEMICAL AND PHYSICAL PROPERTIES: BOILING POINT: 188 F MOL WEIGHT: 131
CHEMICAL FORMULA: C2HCL3 VAPOR PRESS: 58 MM SPG/D 146
FREEZING POINT: -123 F SOLUBILITY (H20): INSOLUBLE
FLASH POINT: NONE FLAMMABLE LIMITS: 8-10.5%
SYNONYMS: TCE, TRICHLOROETHENE, ETHYLENE TRICHLORIDE

ODOR CHARACTERISTICS:
INCOMPATABILIITIES: STRONG CAUSTICS, CHEMICALLY ACTIVEMETALS

BIOLOGICAL PROPERTIES: IDLH: TLV-TWA: 50 PPM PEL: 100 PPM
HUMAN (LCLO): 160 PPM/ RAT/MOUSE (LC50): 8000 PPM ODOR THRESHOLD: 50 PPM
AQUATIC: 100-10 PPM
CARCINOGEN: POS ANIM TERATOGEN:
MUTAGEN: EXPER
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):
500 PPM APR W/ORGANIC CARTRIDGE; 1000 PPM-SCBA, EXCEL-VITON; GOOD-NEOPRENE/STYRENE; POOR-BUTYL, NEOPRENE, NITRILE
MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATION OF NOSE & THROAT, NAUSEA, BLURRED VISION, IRRITATION TO EYES, DERMATITIS

CHRONIC SYMPTOMS: LIVER AND/OR KIDNEY DAMAGE, CARDIAC DEGENERATION, CENTRAL NERVOUS SYSTEM DEGENERATION

FIRST AID
INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

COMMENTS:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH
[X] NIOSH/OSHA POCKET GUIDE [X] SAX [ ] TOXIC & HAZARDOUS SAFETY MANUAL
[X] CHRIS [ ] OTHER: ALDRICH, RTECS, SITTIG

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all <u>ground intrusive</u> activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

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

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

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

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

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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HEAT STRESS PREVENTION AND TREATMENT

Elevated temperatures are potentially hazardous, especially when work is conducted without appropriate precautions. The following sections describe heat stress prevention and the recognition and treatment of heat emergencies.

Effects of Heat

A predictable amount of heat is generated as a result of normal oxidation processes within the body. If heat is liberated rapidly, the body cools to a point at which the production of heat is accelerated, and the excess heat brings the body temperature back to normal.

Interference with the elimination of heat leads to its accumulation and to the elevation of body temperature. This condition produces a vicious cycle in which certain body processes accelerate and generate additional heat. Afterward, the body must eliminate not only the heat that is normally generated but also the additional quantities of heat.

Most body heat is brought to the surface by the bloodstream and escapes to cooler surroundings by conduction and radiation. If moving air or a breeze strikes the body, additional heat is lost by convection. When the temperature of the surrounding air becomes equal to or rises above the body temperature, all the heat must be lost by vaporization of the moisture or sweat from skin surfaces. As the air becomes more humid (contains more moisture), vaporization from the skin decreases. Weather conditions including high temperatures (90 to 100 degrees F), high humidity, and little or no breeze cause the retention of body heat. Such conditions or a succession of such days (a heat wave) increase the chances of a medical emergency due to heat.

Preventing Emergencies Due to Heat

When working in situations where the ambient temperatures and humidity are high, and especially in situations where protection levels A, B, or C are required, the site safety officer should:

- Ensure that all employees drink plenty of fluids (Gatorade or its equivalent);
- Ensure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 11:00 a.m. and 6:00 p.m. to nightfall).

When protective clothing is required, the suggested guidelines correlating ambient temperature and maximum wearing time per excursion are:

Ambient Temperature	Maximum Wearing Time per Excursion
Above 90 degrees F	15 minutes
85 to 90 degrees F	30 minutes
80 to 85 degrees F	60 minutes
70 to 80 degrees F	90 minutes
60 to 70 degrees F	120 minutes
50 to 60 degrees F	180 minutes

One method of measuring the effectiveness of an employee's rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method and is performed as follows:

- Count the pulse rate for the **last** 30 seconds of the first minute of a 3-minute period, the **last** 30 seconds of the second minute, and the **last** 30 seconds of the third minute; and

- Double each result to yield beats per minute.

If the recovery pulse rate during the last 30 seconds of the first minute is 110 beats/minute or less, and the deceleration between the first, second, and third minutes is **at least** 10 beats/minute, then the work-recovery regime is acceptable. If the employee's rate is above the rate specified, a longer rest period will be required, accompanied by an increased intake of fluids.

Heat Emergencies

Heat Cramps. Heat cramps usually affect people who work in hot environments and perspire a great deal. Loss of salt from the body causes very painful cramps in leg and abdominal muscles. Heat cramps may also result from drinking iced water or other drinks either too quickly or in too large a quantity. The symptoms of heat cramps are:

- Painful muscle cramps in legs and abdomen;

- Faintness; and

- Profuse perspiration.

To provide emergency care for heat cramps, move the patient to a cool place. Give him or her sips of liquids such as Gatorade or its equivalent. Apply manual pressure to the cramped muscle. Move the patient to a hospital if there is any indication of a more serious problem.

Heat Exhaustion. Heat exhaustion also may occur in individuals working in hot environments and may be associated with heat cramps. Heat exhaustion is caused by the pooling of blood in the vessels of the skin. The heat is transported from the interior of the body to the surface by the blood. The skin vessels become dilated and a large amount of blood is pooled in the skin. This condition, plus the blood that is pooled in the lower extremities when in an upright position, may lead to an inadequate return of blood to the heart and eventual physical collapse. The symptoms of heat exhaustion are:

- Weak pulse;

- Rapid and usually shallow breathing;
- Generalized weakness;
- Pale, clammy skin;
- Profuse perspiration;
- Dizziness/faintness; and
- Unconsciousness.

To provide emergency care for heat exhaustion, move the patient to a cool place and remove as much clothing as possible. Have the patient drink cool water, Gatorade, or its equivalent. If possible, fan the patient continually to remove heat by convection, but do not allow chilling or overcooling. Treat the patient for shock and move him or her to a medical facility if there is any indication of a more serious problem.

Heat Stroke. Heat stroke is a profound disturbance of the heat-regulating mechanism and is associated with high fever and collapse. It is a serious threat to life and carries a 20% mortality rate. Sometimes this condition results in convulsions, unconsciousness, and even death. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age (over 40) increase the chance of heat stroke. Alcoholics are extremely susceptible. The symptoms of heat stroke are:

- Sudden onset;
- Dry, hot, and flushed skin;
- Dilated pupils;
- Early loss of consciousness;
- Full and fast pulse;
- Deep breathing at first, followed by shallow or faint breathing;
- Muscle twitching, growing into convulsions; and
- Body temperature reaching 105 to 106 degrees F or higher.

When providing emergency care for heat stroke, remember that it is a life-threatening emergency. Transportation to a medical facility should not be delayed. Move the patient to a cool environment, if possible, and remove as much clothing as possible. Ensure an open airway. Reduce body temperature promptly by dousing the body with water or, preferably, by wrapping the patient in a wet sheet. If cold packs are available, place them under the arms, around the neck, at the ankles, or any place where blood vessels that lie close to the skin can be cooled. Protect the patient from injury during convulsions.

Title:	**HEALTH AND SAFETY ON DRILLING RIG OPERATIONS**
Category:	H&S 5.3
Revised:	April 1998

STANDARD OPERATING PROCEDURE

HEALTH AND SAFETY ON DRILLING RIG OPERATIONS

ecology and environment, inc.
368 Pleasant View Drive / Lancaster, New York 14086 / (716) 684-8060

TITLE:	**HEALTH AND SAFETY ON DRILLING RIG OPERATIONS**
CATEGORY:	H&S 5.3
REVISED:	April 1998

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1. Introduction

This document is meant to be used in conjunction with Ecology and Environment, Inc., (E & E) standard operating procedures (SOPs) for field operations and hazardous waste site operations, and incorporates by reference all safety precautions required therein. It specifically addresses the functions and responsibilities of personnel working on or around drilling operations.

E & E personnel are frequently required to oversee a subcontractor's work in the field using drill rigs to take soil and rock samples, and install piezometers and monitoring wells. This document discusses the supervision of subcontract drillers by E & E.

2. Responsibilities and Authority of Subcontract Driller

The subcontract driller has authority to direct its personnel within the area while drilling operations are in progress. Access to the hazardous area around the auger and borehole is restricted by a "super exclusion zone" delineated by a 4-foot by 8-foot sheet of plywood centered over the borehole before drilling. A large hole cut in the plywood allows penetration of the augers. No E & E personnel are allowed in this "super exclusion zone" at any time while drilling is underway.

Housekeeping around the rig is the responsibility of the driller, but all team members should, when necessary, participate in this effort.

2.1 Responsibility and Authority of E & E Personnel

E & E personnel working at a drilling site must act as support to the subcontract drilling team by providing any necessary support functions; however, it is important that E & E personnel are careful not to interfere with the drilling process. Personnel are restricted from approaching the "super exclusion zone" while drilling is underway. If an E & E crew member recognizes an unsafe condition in the work area or on the rig, he should bring it to the attention of the site safety officer (SSO) and team leader if it is not resolved in a timely manner by the subcontractor driller. If conditions are still deemed to be hazardous, team members have the option of contacting their regional safety coordinator (RSC) or Corporate Health and Safety Group in Buffalo.

It is the responsibility of all E & E personnel to have with them on site their issued non-disposable gear, including hard hat, face shield, respirator, steel-toed boots, eyepiece inserts, safety glasses, and appropriate outerwear for the expected weather. It is the E & E employee's responsibility to ensure that all of his/her equipment is in proper working order.

All personnel should be aware of emergency facilities, egress routes, and special medical conditions of their team members. As with all E & E fieldwork, the buddy system is to be enforced.

3. Training Requirements for Site Personnel

3.1 E & E Site Safety Officer

In addition to basic health and safety training, annual health and safety refresher training, first aid, cardiopulmonary resuscitation (CPR), and necessary training in field monitoring of personnel, an SSO should have previous experience as a team member on field drilling projects in order to have a working knowledge of the drill rig and the extreme hazards that can occur with its operation. Where monitoring instrumentation is to be used, the SSO must be properly trained prior to fieldwork. The SSO must have an understanding of the hazards of heat and cold stress, their associated symptoms, and proper work modifications to protect field staff from potential injury.

3.2 Other E & E Personnel

All E & E personnel present on site shall have taken the basic 40-hour health and safety course and annual 8-hour refresher training course. Field personnel also must meet medical and respiratory fitness test requirements established by E & E and Occupational Safety and Health Agency (OSHA).

3.3 Subcontract Driller and Other Subcontract Drilling Personnel

Subcontract drillers and their support personnel on site must, at a minimum, have passed basic 40-hour health and safety training as prescribed by OSHA 29 Code of Federal Regulations (CFR)1910.120. They shall be medically approved and trained to use the level(s) of respiratory protection required on site. Certification of training by the subcontractor shall be required as a deliverable included in E & E's contractual documentation. This training shall be verbally verified and logged on site by the SSO or team leader before starting work.

4. Supervision of Subcontract Drillers

4.1 Responsibilities and Authority of Site Safety Officer

The responsibilities of the SSO at a drilling site where subcontracted drillers are used include the following: rig inspections, personnel monitoring, and personnel protection.

A rig inspection should begin by verifying the following:

- The mast must be located at least 25 feet from any overhead or underground utility lines;
- The location and operation of operational and unencumbered kill switches must be reiterated to all site personnel;

- Outriggers, stabilizers, or jacks are in place, and the rig is level;
- A geophysical survey (e.g., electromagnetic or ground-penetrating radar) or a reliable site history must be obtained to verify the absence of underground utilities, buried obstacles, tanks, and drums;
- A first aid kit and filled eyewash bottle must be readily available;
- A fire extinguisher should be charged to the proper pressure and placed at the rear of the rig during drilling;
- The condition of ropes, chains, and cables must be checked;
- A lifeline or safety belt must be available if mast climbing is necessary;
- The Site Safety Plan (SSP) must be posted with emergency phone list and map of hospital route; and
- A "super exclusion zone" must be established around the borehole, using traffic cones or a 4-foot by 8-foot sheet of plywood. This defined area will be entered during active drilling only by the subcontract driller and his helper(s), except in emergency situations.

If, upon review, the SSO deems that any material item noted above requires replacement or repair, the SSO must make necessary the arrangements for that repair or replacement, and later verify that repair or replacement is sufficient before actual drilling begins. Similarly, if the conditions listed above are not met, the SSO must request that they be met to his satisfaction before allowing drilling to proceed. Working together, the SSO and the subcontract driller should verify that the rig has been checked against the operator's checklist.

The SSO's monitoring duties include calibration and setup of the appropriate monitoring devices, as specified in the SSP. At a minimum, this generally includes an O_2/explosimeter and real-time organic-vapor monitoring capabilities (e.g., HNU, organic vapor analyzer [OVA]). Noise and heat-stress monitoring are employed where appropriate. If the SSO believes additional monitoring devices beyond the directive of the SSP should be employed (e.g., Rad Mini, Mini Ram), it is his/her responsibility to obtain this equipment from the nearest E & E office through the cooperation of the RSC or the Corporate Health and Safety Group. The SSO is also responsible for ensuring that a trained operator for this additional equipment is on site.

It is the responsibility of the SSO to ensure that all safety equipment is in good working order. Day-to-day operations, as well as calibration data, must be recorded in the equipment log or SSO log. Adequate supplies such as breathing air, drinking liquids, and calibration gas must be maintained.

E & E personnel are forbidden from entering the "super exclusion zone" around the borehole while drilling is underway. The SSO must not attempt to take air readings in or around the auger while it is in use, or from cutting samples while the auger is in motion. If possible, an

O_2/explosimeter should be set up for unmanned (alarmed) operations at the rig, using an extension hose to continuously draw samples from the borehole area during drilling operations.

The SSO has ultimate authority over the subcontractor with regard to whether work practices meet the requirements of the SSP. Shutdown of work or restriction of personnel are options available to the SSO. The SSO should hold informal site safety briefings at the start of both fieldwork and daily work shifts throughout the course of the project. Although E & E contractually requires subcontractors to provide properly trained and outfitted staff, the SSO should verify verbally at the start-up meeting that the field staff has necessary respiratory approval and OSHA-mandated training, especially at hazardous waste sites. Site safety briefing topics, as well as the names of attendees, will be recorded in the site safety log.

If the SSO has reason to believe that either E & E or subcontractor personnel are under the influence of alcohol or drugs, or are otherwise ill before or during work on site, he or she should consider restricting those team members from site work. Personnel who are to perform work that requires Level C protection must be clean-shaven or they may be restricted at the discretion of the SSO.

The following is a list of basic topics to be discussed at site safety meetings:

- Personnel responsibilities;
- Planned investigation and presumed potential hazards;
- Levels of protection, monitoring plan, and equipment;
- Emergency scenario plans, including use of kill switches;
- Location and operation of kill switches, fire extinguisher, and first aid kits;
- Heat and cold stress hazards;
- “Super exclusion zone” around borehole; and
- Warnings to subcontractors about hazards of climbing the mast without proper safety equipment.

Because heat stress is a constant threat during warm weather, the SSO is responsible for determining whether conditions are unsuitable for work. If site conditions require the assistance of work modifications, cooling vests, and other cooling means, the SSO may decide that work should not continue. The need for worker monitoring through blood pressure and oral temperature checks will be determined by the SSO with assistance from the RSC and Corporate Health and Safety Group staff, if necessary.

The SSO will be responsible for shutting down the drilling operation if electrical storms occur in the site area.

No refueling operations will be performed until rig engines are shut down. Motor fuels should be stored and dispensed from spring-loaded, OSHA/Factory Mutual-approved metal or polyethylene gas cans.

The SSO should ensure and document that no boreholes are left open or unfilled after drilling equipment is moved. In instances where a hole must be left open and unattended, suitable barricades or the equivalent will be staged around the hole to prevent personnel and equipment from falling in.

4.2 Responsibilities and Authority of Other E & E Personnel

All E & E personnel on site are required to follow the terms of the SSP and the direction of the SSO. Because the SSO cannot be in all places at all times, the crew should observe the subcontractors and condition of their equipment at all times, and report immediately to the team leader and SSO any safety-related issues that are unresolved. Included are such details as dressout, site functions, and decontamination. It is important that the SSO be involved so that proper log entries can be made.

It is a policy of E & E not to provide safety equipment or monitoring instrumentation to subcontractors. Some projects, however, may be arranged in such a manner that allows E & E personnel and subcontractors to share the same expendable supplies.

E & E personnel are forbidden from approaching augers during drilling. Activities at the borehole, such as sampling, require that the operation of equipment be stopped.

5. Drilling Hazards

5.1 General Drilling Hazards

Drilling operations present numerous health and safety hazards to site personnel, subcontractor drillers, and members of the public who may approach the rigs. Drilling hazards that apply to all drilling methods and possible control methods include:

- Slip/trip/fall hazards;
- Ergonomic hazards;
- Moving objects;
- Unguarded points of operation;
- Heat/cold stress;
- Noise;
- Buried or overhead utilities;

- Radiological hazards;
- Lightning;
- Chemical hazards; and
- Biological hazards.

5.2 Physical Hazards (Slip/Trip/Fall Hazards)

Personnel may be injured if they trip over tools or objects, walk on uneven terrain, fall from heights or into holes, or slip on surfaces.

Controls

- Store all tools and supplies away from the super exclusion zone;
- Personnel should use caution when walking on uneven surfaces so that they do not lose their balance;
- Subcontractor drillers must wear a lifeline or safety belt if mast climbing is necessary;
- Boreholes should be barricaded or marked with flags when drilling has been completed to prevent personnel from stepping in the hole; and
- Soil or sand should be applied to wet or slippery surfaces.

5.3 Ergonomic Hazards

Muscle strains, sprains, and injuries can occur when personnel use improper lifting methods, lift objects that are too heavy, improperly reach for objects, or work in awkward positions.

Controls

- Lift with the back as straight as possible, bend the knees, and keep the object close to the body;
- Use two people to move heavy objects such as augers;
- Avoid excessive stretching of the arms when picking up objects; and
- Avoid sudden twisting of the back or working in awkward positions.

5.4 Moving Objects

Site personnel may be injured if they are struck by debris from the borehole or by drilling machinery or components.

Controls

- Wear the appropriate personal protective equipment such as safety boots, safety glasses, and a hard hat; and
- Adequate inspection and maintenance of the drill rig will reduce the likelihood of worn equipment or parts falling and causing accidents.

5.5 Unguarded Points of Operation

The spinning auger on a drill rig or the V-belt drive on a motor are unguarded points of operation that can pull site personnel into the machinery and cause serious injuries.

Controls

- Mechanical guards cannot be placed around the spinning auger on a drill rig. Site personnel must stay away from the spinning auger and avoid wearing loose clothing that could get caught in the auger; and
- Mechanical guards must be placed over V-belt drives.

5.6 Heat/Cold Stress

Drilling is a strenuous job, and heat stress is a major hazard in hot, humid environments, especially when personnel are wearing protective equipment such as coveralls, gloves, boots, and respirators. Cold injury can occur at low temperatures and when the wind-chill factor is low.

Heat Stress

Controls

- Recognize the signs and symptoms of heat stress;
- Monitor workers who are wearing protective clothing; and
- Provide fluid replacement and schedule rest periods in cool locations.

Cold Stress

Controls

- Recognize the signs and symptoms of cold stress;
- Personnel must wear appropriate clothing during cold weather; and
- A warm rest location and fluid replacement should be provided.

5.7 Noise

Excessive noise can cause hearing damage, distract workers, and interfere with communications.

Controls

- In excessive noise areas, wear the hearing protection recommended by the SSO.

5.8 Buried or Overhead Utilities

Contact of drilling tools with electric, gas, steam, process, or other utility lines can result in fires, explosions, electric shock hazards, burns, etc.

Controls

- The boom on the drill rig must be kept at least 25 feet from overhead and buried utilities;
- After buried utilities have been located using an appropriate geophysical survey, the line locations should be marked with flags. Maps of underground utilities should also be checked, if available, to verify locations; and
- Drilling operations should proceed slowly in areas near buried utilities, as the actual utility location may not exactly correspond to the area identified by a flag or as illustrated on a map.

5.9 Radiological Hazards

5.9.1 Nonionizing Radiation

Nonionizing radiation is radiation that emits photon energy that is not sufficient to produce ionization in biological systems. Radio frequencies (including radar and microwave), infrared, visible light, and ultraviolet regions of the electromagnetic spectrum are considered to be nonionizing. Ultraviolet radiation from the sun is usually the major nonionizing radiation hazard

present during drilling operations. Ultraviolet radiation can damage the skin and eyes. Potential effects include, but are not limited to, sunburn, skin cancer, photosensitization, and cataracts.

Controls

- Wear sunscreen on all exposed skin areas; and
- Wear safety glasses that block ultraviolet radiation (or sunglasses worn over safety glasses).

5.9.2 Ionizing Radiation Hazards

Ionizing radiation is electromagnetic or particulate radiation with sufficient energy to ionize atoms. Ionizing radiation may be present on some drilling sites and includes:

- Electromagnetic radiation
  - Gamma rays
  - X-rays
- Particulate radiation
  - Alpha
  - Beta
  - Neutrons

Controls

Site personnel can minimize their exposure to external radiation hazards by:

- Limiting exposure time;
- Increasing the distance from the radiation source; and
- Shielding the radiation source.

Some radiation sources can enter the body through inhalation, ingestion, and/or skin contact. Exposure can be controlled through the wearing of personal protective equipment and thorough washing of skin surfaces with soap and water.

5.10 Lightning Hazard

The elevated mast on a drill rig is a potential target of lightning.

Controls

- The SSO will halt drilling operations when electrical storms approach the drilling location.

5.11 Chemical Hazards

Chemical contaminants may be present in the form of gases, vapors, aerosols, fumes, liquids, or solids. Site personnel may be exposed to these contaminants through one or more of the following pathways: inhalation, ingestion, skin, and/or eye contact.

Controls

- Become familiar with the specific drilling operation being used to identify and avoid chemical discharge locations;
- Wear appropriate personal protective equipment;
- Practice contamination avoidance; and
- Stay upwind during grout mixing (silica inhalation hazard).

5.12 Biological Hazards

Biological hazards that may be present during drilling operations include poisonous plants, animals, and insects, and infectious agents.

Controls

- Wear insect repellant at sites where biting insects are prevalent;
- Learn to identify poisonous plants that cause dermatitis, such as poison ivy and poison oak;
- Wear impervious personal protective clothing (e.g., saranex coveralls, latex booties, nitrile surgical gloves) if work must be conducted in areas where site personnel will contact poisonous plants; and
- Avoid potential animal nesting areas and animal carcasses.

6. Drilling Methods and Hazards

6.1 Solid Flight and Bucket Augers

Solid-flight augers (also referred to as solid-stem augers, continuous flight augers, and disk augers) use solid-stem auger sections, with the flighting (curved corkscrew-like blades) connected end-to-end to the cutting head (see Figure 1). Soil cuttings are moved upward to the ground surface by the flighting as the auger penetrates into the soil. Samples are typically collected by removing an auger section, attaching a split-spoon or thin-wall sampler to the end of a drill rod, and placing this arrangement into the borehole. Split-spoon samples are collected by using a hammer connected to the drill rod and split-spoon. The hammer is operated by wrapping sections of rope around a rotating cathead hoist (a wide metal cylinder). A disk auger is similar to a solid-flight auger except that it is larger in diameter and the flighting goes around the stem once. Bucket augers have a cutting edge on the bottom. Once the bucket auger fills with soil cuttings, it is brought to the surface to be emptied. Figure 1 shows various types of bucket augers.

Auger drill methods are used in unconsolidated material for sampling subsurface media, installing groundwater monitoring wells, and identifying depth to bedrock.

6.2 Hollow-Stem Auger

A drill rig rotates a hollow-stem auger (see Figure 2) and moves it vertically into the soil. The hollow stem allows use of continuous or intermittent soil sampling techniques. Once the required depth has been reached, screens and casing for monitoring wells can be placed in the hollow-stem gravel pack and grout is added as the auger is pulled out of the borehole. Hollow-stem auger drilling is a common method of monitoring well installation.

6.2.1 Auger Drilling Hazards

Physical Hazards

Spinning Auger. The spinning auger is not equipped with a metal guard; therefore, it is imperative that personnel use extreme caution when working near spinning auger, as contact with the auger can cause personnel to be pulled into the auger and crushed between the auger and the drill rig. Only approved drillers will remain in proximity to the borehole during drilling, and an approximate 4- by 8-foot "super exclusion area" will be established by placing a 4- by 8-foot sheet of plywood over the borehole, or by placing flagging or traffic cones around a 4- by 8-foot perimeter. No personnel, except the driller and the driller's helper, will enter this zone during drilling. The SSO will issue warnings to those personnel not authorized to enter this zone.

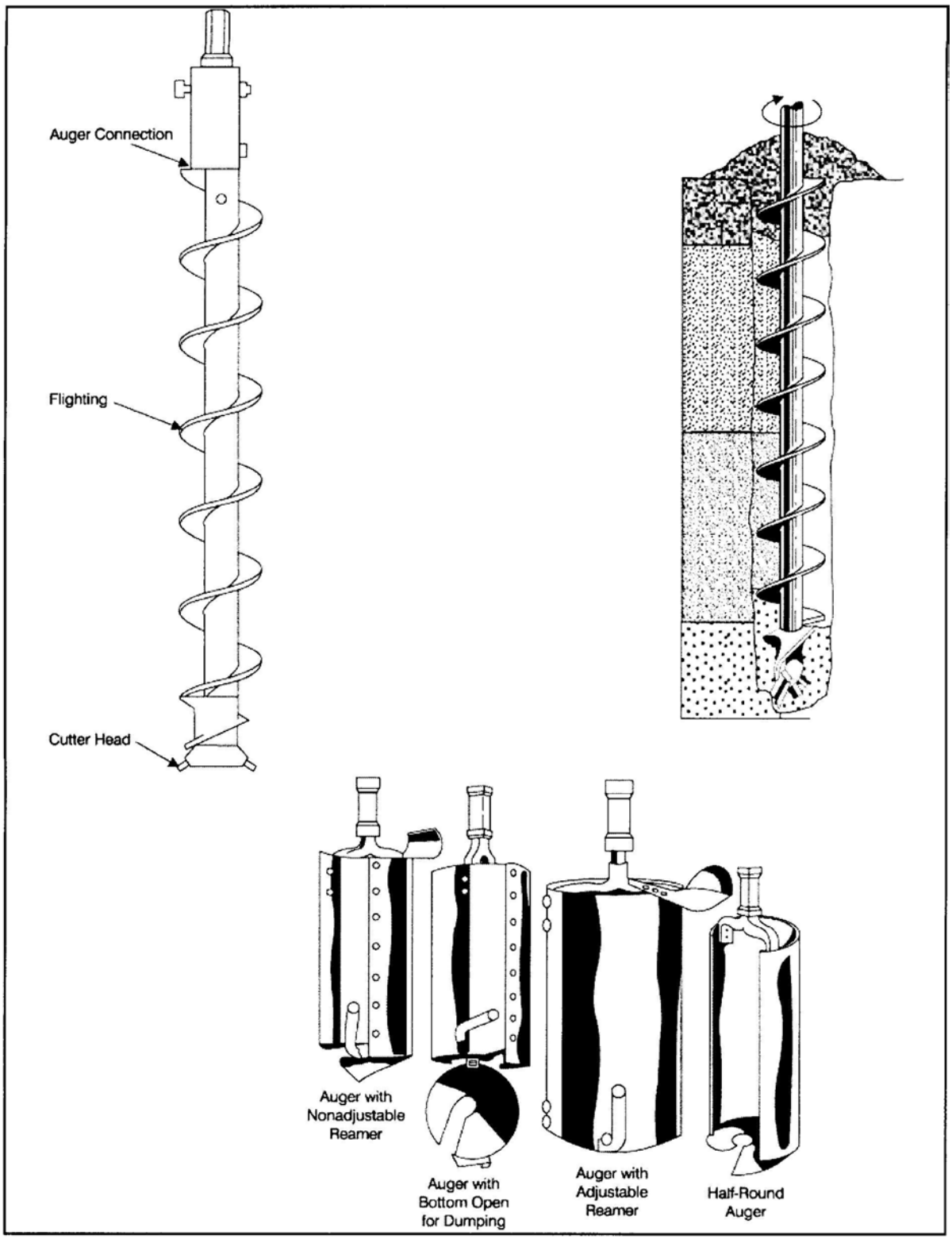

Figure 1 Solid Flight and Bucket Augers

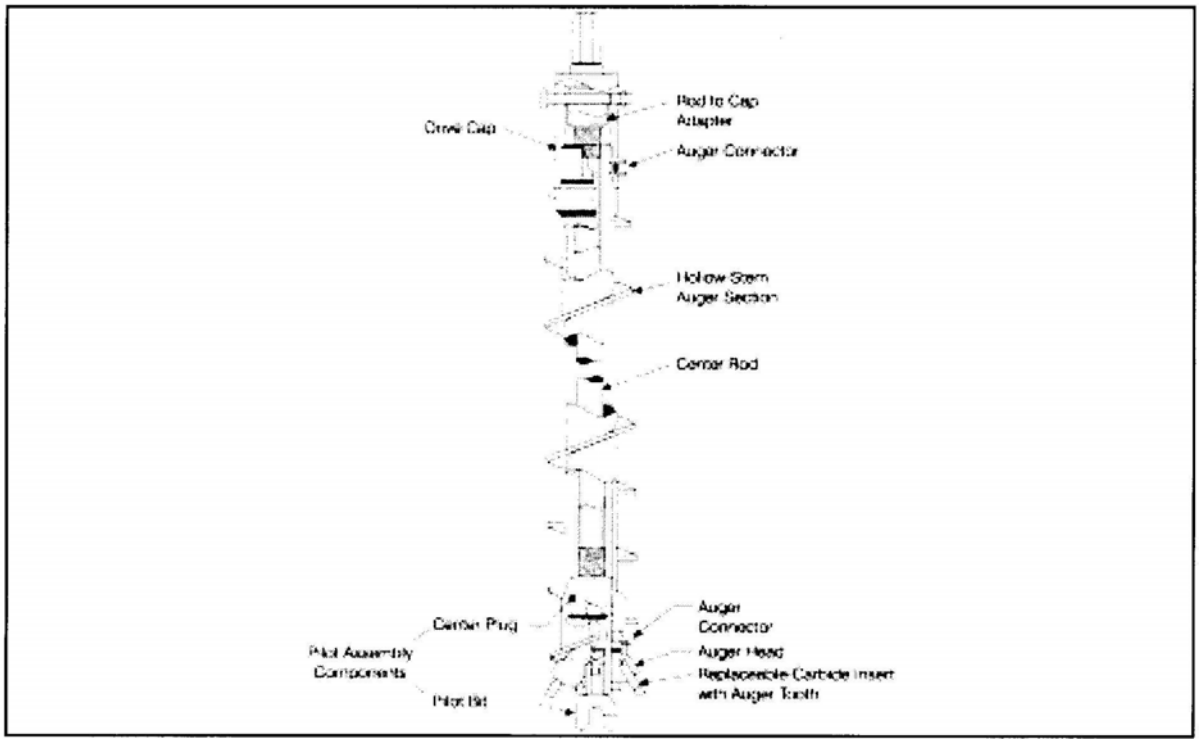

Figure 2 Hollow-Stem Auger

Overhead Equipment. If wire line core sampling is conducted, drill steel and sampling gear will be lifted overhead. Site personnel must conduct the necessary equipment inspections to ensure it is in good condition prior to the start of drilling operations. In addition, drillers must make sure that proper hoisting procedures are used to reduce the likelihood of dropping drill steel or sampling gear.

Drill Rig Lurching. The drill rig has a tendency to lurch and shake when the auger comes into contact with harder materials. This is especially true when hollow-stem auger drilling methods are utilized. The rig can also lurch seriously in hearing sands. Site personnel should be aware of possible drill rig movement and move away from the rig if lurching or shaking occurs.

Noise. If split-spoon sampling is conducted, a hammer is used to drive the spoon into the soil. The hammer generates a loud noise when it contacts a metal surface. Site personnel are required to wear appropriate hearing protection during hammering operations.

6.3 Open-Hole Rotary Methods

A direct mud rotary drilling system (also direct [liquid] rotary, hydraulic rotary, or reverse [circulation] rotary) is shown in Figure 3. Drilling fluid (mud) is pumped through drill

rods to a bit. The mud flows back to the surface through the space between the drill rods and the borehole and is discharged at the surface through a pipe into a tank, tub, pond, or pit. After the cuttings settle, a pump recirculates the liquid back through the drill rods. The mud serves to:

- Cool and lubricate the bit;
- Stabilize the borehole well; and
- Prevent the inflow of fluids from formations.

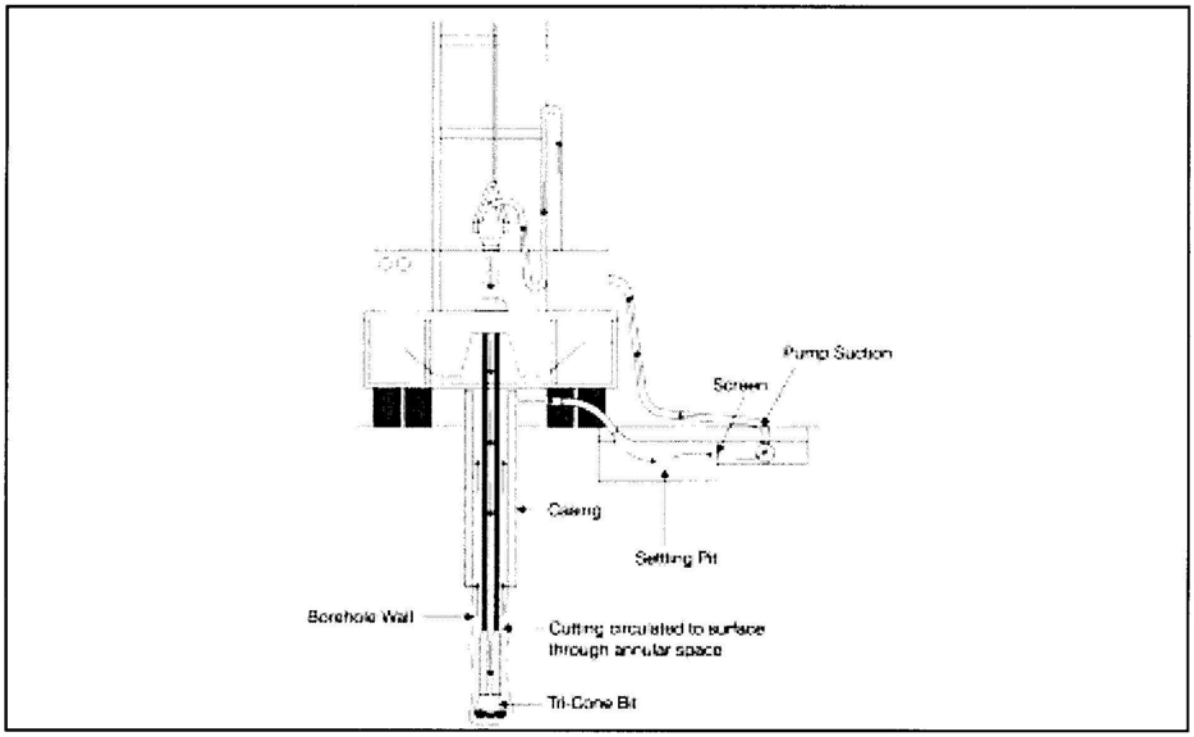

Figure 3 Open-Hole Rotary Method

A shale shaker can collect a sample from the circulated fluid by placing it in the discharge flow before the settling pit. In addition, the drilling fluid flow can be shut off and split-spoon, thing-wall, or consolidated-core samplers can be used to collect a sample by inserting a sampler through the drill rods. Reverse circulation rotary drilling is a variation of mud rotary drilling in that the mud flows from the mud pit down the borehole outside the drill rods, passes up through the bit carrying cuttings into the drill rods, and is then discharged into the mud pit. The equipment used is similar to the direct mud rotary method, except most of the equipment is larger.

Equipment Breaks. A break in support equipment for drill steel could cause equipment to fall and injure site personnel. Equipment inspection is required to ensure it is in good condition prior to the start of drilling operations.

Slippery Conditions. Because the use of drilling mud will create slippery conditions around the drill rig and support area, mud should be contained to the immediate work area. Slippery spots should be dried with sand/dirt to reduce slipping hazards. Gloves should be changed when they become coated with mud.

6.4 Direct Air Rotary with Rotary Bit/Downhole Hammer

Also called an air rotary with roller-cone (tri-cone) bit, down-the-hole hammer, or air percussion rotary, the rig setup for air rotary with a tri-cone or roller-cone bit is similar to direct mud rotary (see Figure 3), except the method uses air instead of water and drilling mud. The main components of a drill string using a tri-cone bit are illustrated in Figure 4. Compressed air is forced down through the drill rods to cool the bit, and cuttings are carried up the open hole to the surface. A cyclone slows down the air velocity, forcing the cuttings into the container. A roller-cone drill bit is used for hard-to-soft consolidated rock and unconsolidated formations. When a downhole hammer is utilized, it replaces the roller-cone bit (see Figure 4). The hammer produces a pounding action as it rotates. Other features are similar to the rotary bit, except small amounts of surfactant and water are used for dust and bit temperature control.

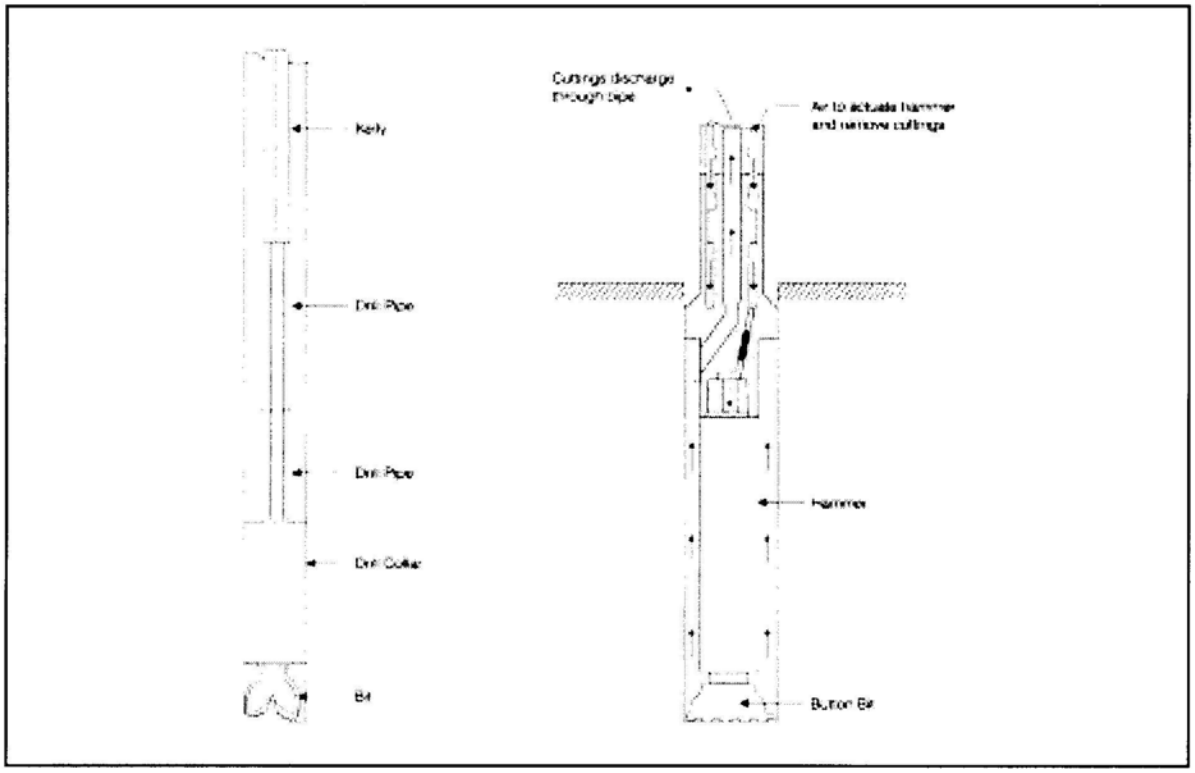

Figure 4 Direct Air Rotary

Physical Hazards

Noise. Excessive noise is generated from the use of air compressors, casing drivers, and downhole hammers. Site personnel are required to wear hearing protection during drilling operations.

Cuttings and Water. Cuttings and water blown from the hole can strike and injure site personnel. Site personnel must stay away from this discharge location and wear appropriate personal protective equipment.

Overhead Equipment. If wire line core sampling is conducted, drill steel and sampling gear will be lifted overhead. Site personnel must conduct the necessary equipment inspections to ensure it is in good condition prior to the start of drilling operations. In addition, drillers must make sure that proper hoisting procedures are followed to reduce the likelihood of falling drill steel or sampling gear.

6.5 Cable Tool

A cable tool drill rig operates by repeatedly lifting and dropping tools attached to a cable into a borehole. Figure 5 shows the components of a cable tool rig. This drilling method crushes rock and a spudding beam mixes the crushed particles with water. The water and debris is removed by a bailer or pump. In unconsolidated formations, a casing is driven into the ground. In consolidated formations, drilling is conducted with the use of a casing.

Physical Hazards

Noise. The spudding beam generates excessive noise. All personnel must wear appropriate hearing protection during drilling operations.

Rig Movement. The drill rig tends to lurch as the drill string is raised and lowered. Site personnel must maintain an adequate distance from the rig during drilling operations.

Overhead Equipment. Drill string and bailers are hoisted during drilling operations and present an overhead hazard to site personnel if a tool falls from a height.

6.6 Casing Advancement: Rotary Drill-Through Methods

6.6.1 Drill-Through Casing Driver and Dual Rotary Method

Casing drivers advancement (also referred to as air [mud] rotary drill or downhole hammer with casing drivers, air rotary casing hammer, and air drilling with casing hammer) involves a driver that moves the casing as drilling occurs (see Figure 6) during the use of conventional direct air (mud) or downhole hammer equipment. Drill cuttings move upward in the space between the drill pipe and the casing. The diameter of the casing is slightly larger than the bit so it can be easily removed.

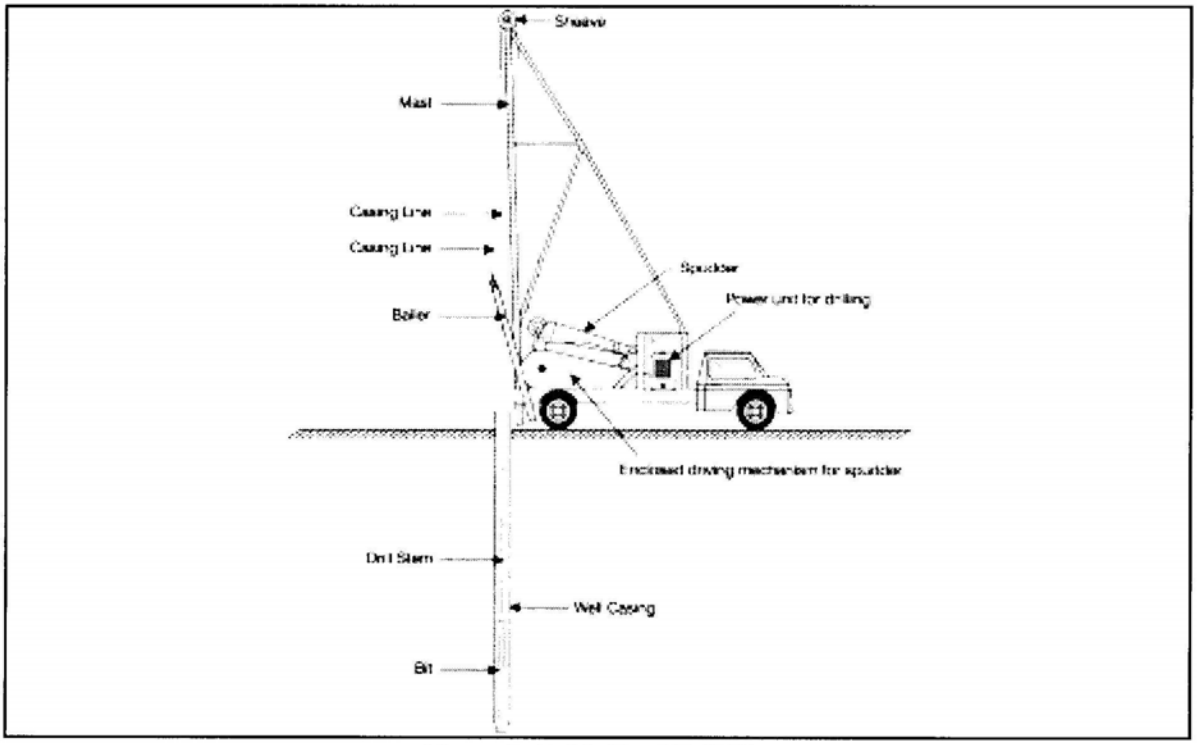

Figure 5 Cable Tool Drill Rig

In dual rotary advancement, the casing is moved by using a rotary steel casing provided with a carbide-studded drive shoe. The carbide ring cuts through the overburden material. Rotary drilling (usually air) takes place at the same time using a downhole hammer or tri-cone bit. Drilling can be conducted either inside or ahead of the casing.

The type of drilling is used to install monitoring wells in unconsolidated formations, where loss of circulation of drilling fluids is a problem, and/or where prevention of cross-contamination of aquifers is important.

6.6.2 Reverse Circulation (Rotary, Percussion Hammer, and Hydraulic Percussion)

The reverse-circulation rotary drilling method can utilize air rotary with a downhole hammer or bit or mud rotary. Two or three casings can be used.

Reverse circulation dual-wall rotary. This method is similar to downhole hammers with a casing driver or air rotary-cone bit, except air is moved down the space between the casing and the drill pipe to the bit, and soil cuttings are pushed to the surface through the drill pipe (see Figure 7).

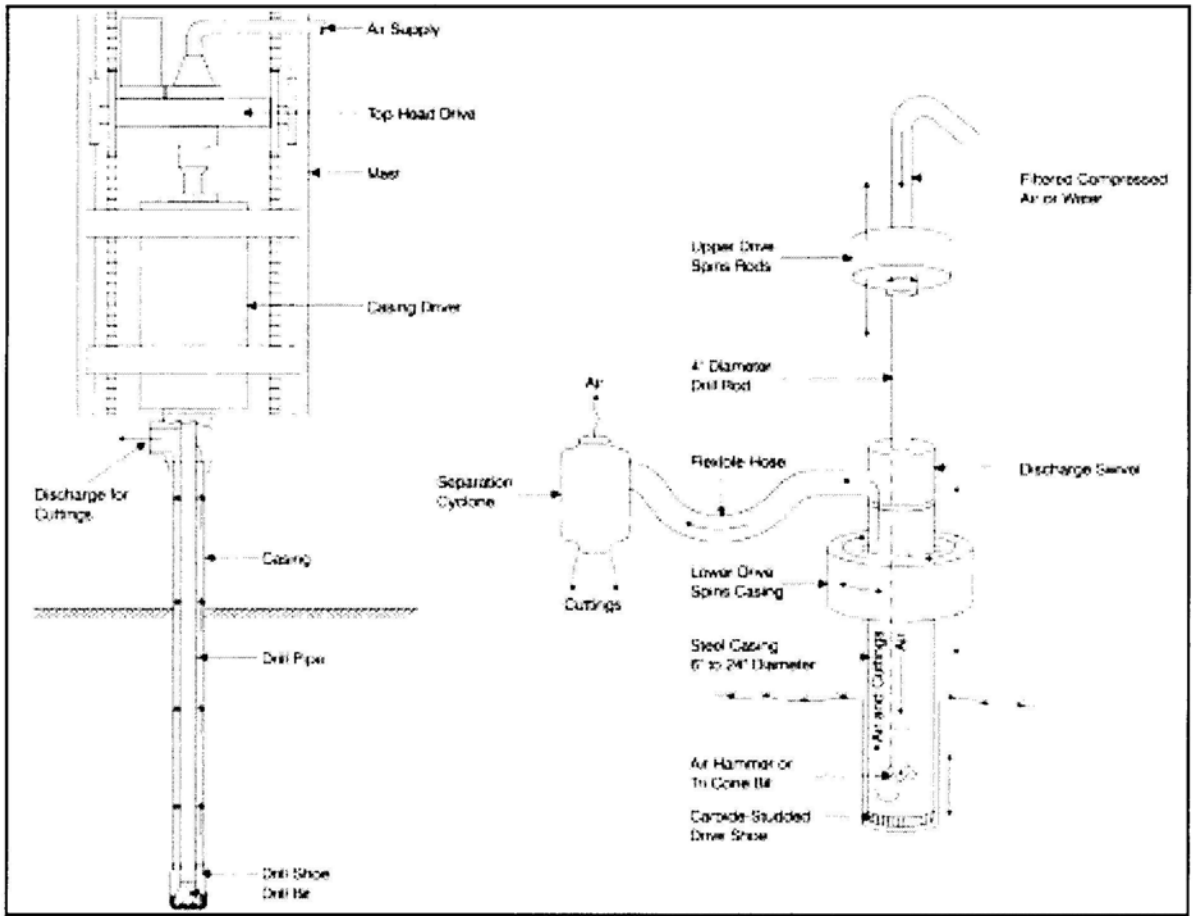

Figure 6 Casings

Reverse circulation dual-wall percussion hammer. The percussion hammer operates in a similar manner of reverse circulation as the dual-wall rotary method, except the drive method is different. Either two or three casings are used. Compressed air is moved into the space between the outer and inner pipes, and soil cuttings are discharged from the inner pipe to a cyclone. A percussion hammer on the most of the drill rig strikes an anvil on the top of the drive assembly. Two or three casings are driven, and the bit does not rotate.

Physical Hazards – Reverse Circulation Dual-Wall Rotary

Noise. Excessive noise is generated from the use of air compressors, casing drivers, and downhole hammers. Site personnel are required to wear hearing protection during drilling operations.

Cuttings. Cuttings and debris discharged from the hole can strike and injure site personnel. Site personnel must stay away from the discharge point and wear appropriate personal protective equipment.

Overhead Equipment. If wire line core sampling is conducted, drill steel and sampling gear will be lifted overhead. Site personnel must conduct the necessary equipment inspections to ensure it is in good condition prior to the start of drilling operations. In addition, drillers must make sure that proper hoisting procedures are followed to reduce the likelihood of dropping drill steel or sampling gear.

Physical Hazards – Hydraulic Percussion

Slips/Falls. Site personnel can slip on wet ground around the drill rig or fall into the water tank. Site personnel must keep the drilling location clear of debris and contain spillage prior to and during drilling operation.

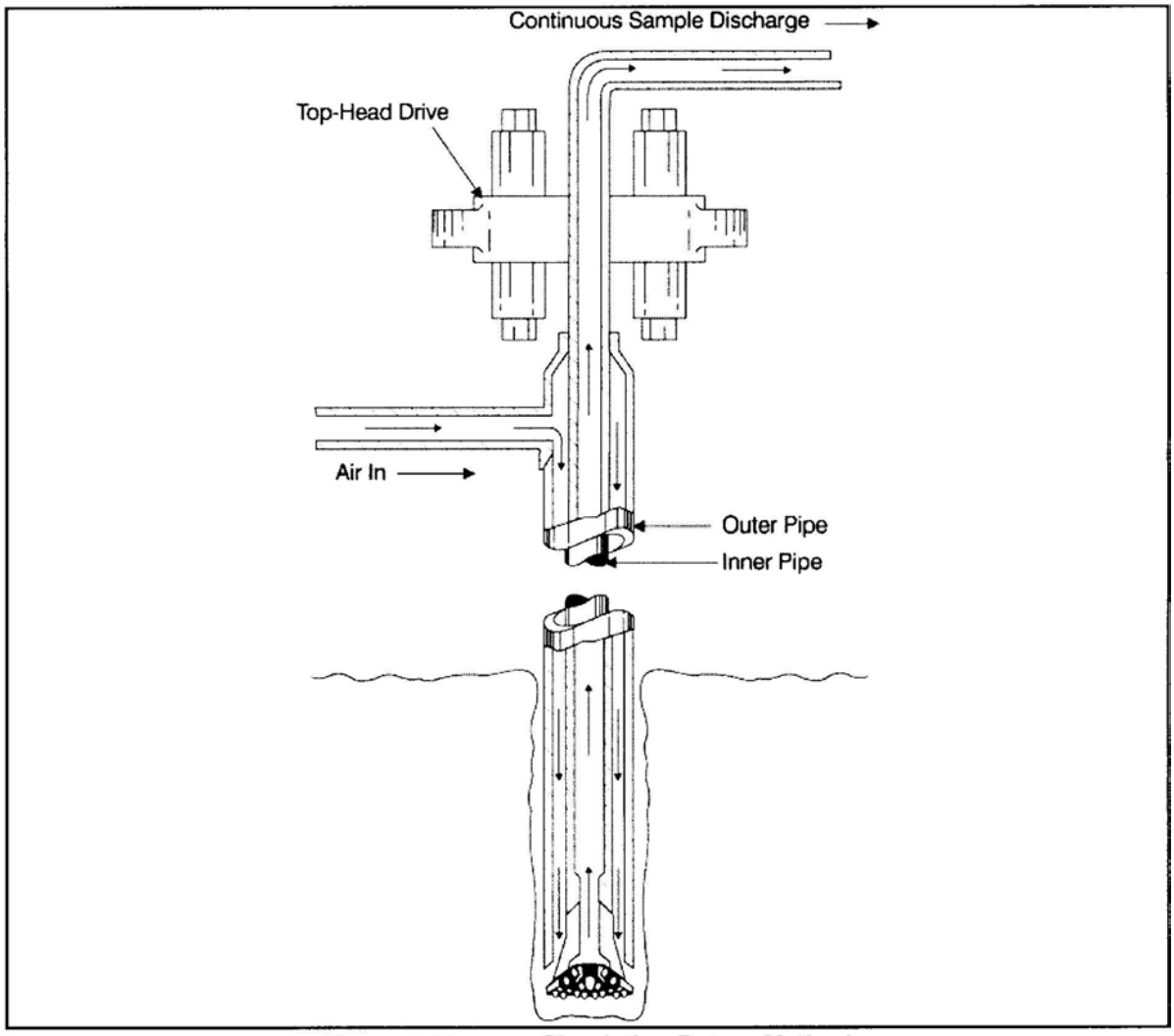

Figure 7 Reverse Circulation Rotary Method

B Site-specific Quality Assurance Project Plan (QAPP)

Site-specific Quality Assurance Project Plan (QAPP) Former Bright Outdoors Site Johnson City, New York Site No. 7-04-023

April 2004

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway
Albany, New York 12233

NYSDEC Project Manager	Date	E & E Project Manager	Date
NYSDEC QA Officer	Date	E & E QA Officer	Date

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List of Acronyms

DUSR	Data Usability Summary Report
E & E	Ecology and Environment Engineering, P.C.
NYSDEC	New York State Department of Environmental Conservation
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
SOW	scope of work

1

Project Management

QAPP
Quality Assurance Project Plan

E & E
Ecology and Environment Engineering, P.C.

NYSDEC
New York State Department of Environmental Conservation

SOW
scope of work

This site-specific Quality Assurance Project Plan (QAPP) has been prepared by Ecology and Environment Engineering, P.C. (E & E) for the New York State Department of Environmental Conservation (NYSDEC), Work Assignment Number D003493-44, accepted February 26, 2004. E & E personnel will implement this site-specific QAPP for all activities conducted for the Former Bright Outdoors site.

This QAPP has been prepared as part of the work plan for the project and is an addendum to the master NYSDEC QAPP (E & E 2004). This addendum documents changes, modifications, or new procedures and practices to be used that are applicable to activities anticipated under this investigation. This site-specific QAPP is formatted to address the four major sections listed in the master QAPP: Project Management, Data Generation and Acquisition, Assessment and Oversight, and Data Validation and Usability. The information provided only covers deviations or new procedures for implementing the project. Any subsection that is not changed is not included in this QAPP. General tables with site-specific information have been added to this QAPP for easier review of site-specific requirements.

1.1 Project Organization

The project team for this site is listed below in Table 1B-1.

1.2 Problem Definition/Background

The problem and background for this work assignment are defined in Section 2 of the work plan.

1.3 Project Description

The specific scope of work (SOW) for the current activities is defined in work plan Section 3 and includes the following areas:

- Problem(s) to be resolved;
- Direct and indirect measurements required;
- Applicable technical or regulatory quality assurance/quality control (QA/QC) standards or criteria;
- Any special resources (e.g., personnel or equipment) needed for the site;
- Scope and schedule of the project deliverables; and
- Any special assessment or oversight procedures necessary to verify site-specific quality objectives are met.

QA/QC
quality assurance/quality control

Table 1B-1 Project Organization, Former Bright Outdoors Site

Key Team Member	Contact Name and Telephone	
NYSDEC Project Manager	Ralph Keating	518-402-9774
NYSDEC QA Officer	Tom Labaren	518-457-9280
E & E Program Manager	David Albers	716-684-8060
E & E Project Manager	Richard Watt	716-684-8060
E & E Field Team Leader	Brian Cervi	716-684-8060
E & E Project Chemist	Heather Pula	716-684-8060
Laboratory	Analytical Services Center	716-685-8080
Data Validator	Data Validation Services	518-251-4429

1.4 Quality Objectives and Criteria

General quality objectives and performance criteria for NYSDEC projects are applicable to this project. These general objectives can be found in the master QAPP.

1.5 Special Training/Certification

There are no site-specific training requirements for this work assignment.

1.6 Documents and Records

Sample identification will be the same as the master QAPP except the three-letter sample prefix is not required and the following matrix codes will be used:

- H = Borehole subsurface soil;
- HP = Hydropunch groundwater;

- MW = Monitoring well groundwater;
- SA = Sub-slab air (soil gas);
- SB = Sub-slab subsurface soil; and
- SD = Sediment (drain lines, drywells, etc.)

Laboratory report requirements are the same as the master QAPP.

The following records and reports will be produced as part of this project.

- Work Plan,
- Site-specific Health and Safety Plan,
- Site-specific QAPP,
- Field Logbook,
- Geotechnical Logs,
- Chain-of-custody Form,
- Laboratory Data Package – Category B,

DUSR
Data Usability Summary Report

- Data Usability Summary Report (DUSR),
- Draft Report, and
- Final Report.

2 Data Generation and Acquisition

The samples and analytical methods planned for this site are provided in Table 3-1 of the work plan. Table 2B-1 lists all analyses that may be performed for this project. Table 2B-2 lists reporting limits for the soil/water analyses listed for this project. Current control limits for the soil/water methods are listed on Table 2B-3. All QC information pertaining to the air method TO-14A is located in Attachments 1 and 2 of this site-specific QAPP.

Table 2B-1 Required Analytical Methods, Former Bright Outdoors Site

Method Number	Description
OLM04.2	CLP TCL VOCs
TO-14A	VOCs in air by GC/MS
6010B	TCLP Metals
8260B	TCLP VOCs
9040B	Water pH
9045C	Soil pH

Key:

CLP = Contract Laboratory Program.
GC/MS = Gas chromatograph/mass spectrometer.
TCL = Target Compound List.
TCLP = Toxicity Characteristic Leaching Procedure.
VOC = Volatile organic compound.

The collection of field and laboratory QC samples follows the master QAPP and can be found on Tables 2-4 and 2-5 in the master QAPP.

Table 2B-2 Method Reporting Limits, Former Bright Outdoors Site

Test Name and Method	Analyte	Matrix	Units	PQL	Guidance Value (1)	Guidance Value (2)	Flag
CLP VOCs by Method OLM04.2	1,1,1-Trichloroethane	Solid	µg/Kg	10	800		
CLP VOCs by Method OLM04.2	1,1,2,2-Tetrachloroethane	Solid	µg/Kg	10	0.6		L
CLP VOCs by Method OLM04.2	1,1,2-Trichloroethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	1,1,2-Trichloro-1,2,2-trifluoroethane	Solid	µg/Kg	10	6,000		
CLP VOCs by Method OLM04.2	1,1-Dichloroethane	Solid	µg/Kg	10	200		
CLP VOCs by Method OLM04.2	1,1-Dichloroethene	Solid	µg/Kg	10	400		
CLP VOCs by Method OLM04.2	1,2,4-Trichlorobenzene	Solid	µg/Kg	10	3,400		
CLP VOCs by Method OLM04.2	1,2-Dibromoethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	1,2-Dichlorobenzene	Solid	µg/Kg	10	7,900		
CLP VOCs by Method OLM04.2	1,2-Dichloroethane	Solid	µg/Kg	10	100		
CLP VOCs by Method OLM04.2	1,2-Dichloropropane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	1,3-Dichlorobenzene	Solid	µg/Kg	10	1,600		
CLP VOCs by Method OLM04.2	1,2-Dibromo-3-chloropropane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	1,4-Dichlorobenzene	Solid	µg/Kg	10	8,500		
CLP VOCs by Method OLM04.2	2-Butanone	Solid	µg/Kg	10	300		
CLP VOCs by Method OLM04.2	2-Hexanone	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	4-Methyl-2-pentanone	Solid	µg/Kg	10	1,000		
CLP VOCs by Method OLM04.2	Acetone	Solid	µg/Kg	10	200		
CLP VOCs by Method OLM04.2	Benzene	Solid	µg/Kg	10	60		
CLP VOCs by Method OLM04.2	Bromodichloromethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Bromoform	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Bromomethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Carbon disulfide	Solid	µg/Kg	10	2,700		
CLP VOCs by Method OLM04.2	Carbon tetrachloride	Solid	µg/Kg	10	600		
CLP VOCs by Method OLM04.2	Chlorobenzene	Solid	µg/Kg	10	1,700		
CLP VOCs by Method OLM04.2	Chloroethane	Solid	µg/Kg	10	1,900		
CLP VOCs by Method OLM04.2	Chloroform	Solid	µg/Kg	10	300		
CLP VOCs by Method OLM04.2	Chloromethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	cis-1,2-Dichloroethene	Solid	µg/Kg	10	300		
CLP VOCs by Method OLM04.2	cis-1,3-Dichloropropene	Solid	µg/Kg	10	300		
CLP VOCs by Method OLM04.2	Dibromochloromethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Dichlorodifluoromethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Ethylbenzene	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Isopropylbenzene	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Methyl acetate	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Methyl tert-butyl ether	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Methylcyclohexane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Methylene chloride	Solid	µg/Kg	10	100		
CLP VOCs by Method OLM04.2	Styrene	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Tetrachloroethene	Solid	µg/Kg	10	1,400		
CLP VOCs by Method OLM04.2	Toluene	Solid	µg/Kg	10	1,500		
CLP VOCs by Method OLM04.2	trans-1,2-Dichloroethene	Solid	µg/Kg	10	300		

Table 2B-2 Method Reporting Limits, Former Bright Outdoors Site

Test Name and Method	Analyte	Matrix	Units	PQL	Guidance Value (1)	Guidance Value (2)	Flag
CLP VOCs by Method OLM04.2	trans-1,3-Dichloropropene	Solid	µg/Kg	10	300		
CLP VOCs by Method OLM04.2	Trichloroethene	Solid	µg/Kg	10	700		
CLP VOCs by Method OLM04.2	Trichlorofluoromethane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	Vinyl chloride	Solid	µg/Kg	10	200		
CLP VOCs by Method OLM04.2	Xylenes, Total	Solid	µg/Kg	10	1,200		
CLP VOCs by Method OLM04.2	Cyclohexane	Solid	µg/Kg	10			
CLP VOCs by Method OLM04.2	1,1,1-Trichloroethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	1,1,2,2-Tetrachloroethane	Water	µg/L	10	5	0.2	L
CLP VOCs by Method OLM04.2	1,1,2-Trichloroethane	Water	µg/L	10	1	1	L
CLP VOCs by Method OLM04.2	1,1,2-Trichloro-1,2,2-trifluoroethane	Water	µg/L	10			
CLP VOCs by Method OLM04.2	1,1-Dichloroethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	1,1-Dichloroethene	Water	µg/L	10	5	0.07	L
CLP VOCs by Method OLM04.2	1,1-Dichloroethene	Water	µg/L	10	5	0.07	L
CLP VOCs by Method OLM04.2	1,2,4-Trichlorobenzene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	1,2-Dibromo-3-chloropropane	Water	µg/L	10	0.04	0.04	L
CLP VOCs by Method OLM04.2	1,2-Dibromoethane	Water	µg/L	10			
CLP VOCs by Method OLM04.2	1,2-Dichlorobenzene	Water	µg/L	10	3	3	L
CLP VOCs by Method OLM04.2	1,2-Dichloroethane	Water	µg/L	10	0.6	0.6	L
CLP VOCs by Method OLM04.2	1,2-Dichloropropane	Water	µg/L	10	1	1	L
CLP VOCs by Method OLM04.2	1,3-Dichlorobenzene	Water	µg/L	10	3	3	L
CLP VOCs by Method OLM04.2	1,4-Dichlorobenzene	Water	µg/L	10	3	3	L
CLP VOCs by Method OLM04.2	2-Butanone	Water	µg/L	10	50	50	
CLP VOCs by Method OLM04.2	2-Hexanone	Water	µg/L	10	50	50	
CLP VOCs by Method OLM04.2	4-Methyl-2-pentanone	Water	µg/L	10			
CLP VOCs by Method OLM04.2	Acetone	Water	µg/L	10		50	
CLP VOCs by Method OLM04.2	Benzene	Water	µg/L	10	1	1	L
CLP VOCs by Method OLM04.2	Bromodichloromethane	Water	µg/L	10	50	50	
CLP VOCs by Method OLM04.2	Bromoform	Water	µg/L	10	50	50	
CLP VOCs by Method OLM04.2	Bromomethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Carbon disulfide	Water	µg/L	10			
CLP VOCs by Method OLM04.2	Carbon tetrachloride	Water	µg/L	10	5	0.4	L
CLP VOCs by Method OLM04.2	Chlorobenzene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Chloroethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Chloroform	Water	µg/L	10	7	7	L
CLP VOCs by Method OLM04.2	Chloromethane	Water	µg/L	10			
CLP VOCs by Method OLM04.2	cis-1,2-Dichloroethene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	cis-1,3-Dichloropropene	Water	µg/L	10	0.4	0.4	L
CLP VOCs by Method OLM04.2	Dibromochloromethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Dichlorodifluoromethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Ethylbenzene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Isopropylbenzene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Methyl acetate	Water	µg/L	10			
CLP VOCs by Method OLM04.2	Methyl tert-butyl ether	Water	µg/L	10			
CLP VOCs by Method OLM04.2	Methylcyclohexane	Water	µg/L	10			

Table 2B-2 Method Reporting Limits, Former Bright Outdoors Site

Test Name and Method	Analyte	Matrix	Units	PQL	Guidance Value (1)	Guidance Value (2)	Flag
CLP VOCs by Method OLM04.2	Methylene chloride	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Styrene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Tetrachloroethene	Water	µg/L	10	5	0.7	L
CLP VOCs by Method OLM04.2	Toluene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	trans-1,2-Dichloroethene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	trans-1,3-Dichloropropene	Water	µg/L	10	0.4	0.4	L
CLP VOCs by Method OLM04.2	Trichloroethene	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Trichlorofluoromethane	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Vinyl chloride	Water	µg/L	10	2	0.3	L
CLP VOCs by Method OLM04.2	Xylenes, Total	Water	µg/L	10	5	5	L
CLP VOCs by Method OLM04.2	Ethylbenzene	Water	µg/L	10			
CLP VOCs by Method OLM04.2	Cyclohexane	Water	µg/L	10			

(1) Criteria shown are Class GA groundwater standards and guidance values (water matrix) from the NYSDEC, Division of Water, Technical and Operational Guidance Series 1.1.1, June 1998 and soil cleanup objectives (solid matrix) from NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum 4046, January 1994.

(2) Criteria shown are Class C fresh water standards and guidance values (water matrix) from the NYSDEC, Division of Water, Technical and Operational Guidance Series 1.1.1, June 1998 and soil sediment criteria (solid matrix) from the NYSDEC Division of Fish, Wildlife, and Marine Resources Technical Guidance for Screening Contaminated Sediments January 1999. Sediment criteria for organic compounds are not shown because they are calculated based on the total organic carbon content and thus they are sample-specific.

(L) Criteria that are below the reporting limit are flagged "L". The reporting limit does not account for values reported below the reporting and above the method detection limit (MDL). In many cases, the MDL will be below the criteria.

Key:

µg/Kg = Micrograms per kilogram.
µg/L = Micrograms per liter.
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
PQL = Practical Quantitation Limit.
VOC = Volatile organic compound.

Table 2B-3 Method Quality Control Limit Summary, Former Bright Outdoors Site

Analyte	Method	Matrix	Sample Type	Analyte Type	Low Limit	High Limit
1,1-Dichloroethene	OLM04.2_VOA	Solid	MS	A	59	172
Benzene	OLM04.2_VOA	Solid	MS	A	66	142
Chlorobenzene	OLM04.2_VOA	Solid	MS	A	60	133
Toluene	OLM04.2_VOA	Solid	MS	A	59	139
Trichloroethene	OLM04.2_VOA	Solid	MS	A	62	137
1,2-Dichloroethane-d4	OLM04.2_VOA	Solid	MS	S	70	121
4-Bromofluorobenzene	OLM04.2_VOA	Solid	MS	S	59	113
Toluene-d8	OLM04.2_VOA	Solid	MS	S	84	138
1,1-Dichloroethene	OLM04.2_VOA	Water	MS	A	61	145
Benzene	OLM04.2_VOA	Water	MS	A	76	127
Chlorobenzene	OLM04.2_VOA	Water	MS	A	75	130
Toluene	OLM04.2_VOA	Water	MS	A	76	125
Trichloroethene	OLM04.2_VOA	Water	MS	A	71	120
1,2-Dichloroethane-d4	OLM04.2_VOA	Water	MS	S	76	114
4-Bromofluorobenzene	OLM04.2_VOA	Water	MS	S	86	115
Toluene-d8	OLM04.2_VOA	Water	MS	S	88	110

Note: All limits are presented in percent recovery.

Key:

A = Target analyte.
MS = Matrix spike.
S = Surrogate.

3 Assessment and Oversight

E & E's assessment and oversight procedures for the project activities are the same as the master QAPP. There are no additional procedures to meet the quality objectives for these work assignment activities.

3.1 Assessment and Response Actions

Planned assessment activities for this work assignment are as follows:

Field Audits

No field audits are planned.

Field Inspections

The E & E project manager will act as field team leader and inspect the work performed by all subcontractors and subconsultants. In the event that an alternative field team leader oversees the field work, the project manager will conduct one site visit for the purpose of inspecting the activities of all personnel.

Laboratory Audits

No laboratory audits are planned.

3.2 Reports to Management

The reports to management are specified the same as master QAPP. No additional reports are required for this project.

4 Data Validation and Usability

E & E will implement the general procedures for data validation and usability described in the master QAPP for these work assignment activities.

4.1 Data Review, Validation, and Verification Requirements

There are no additional data review criteria for this project.

4.2 Verification and Validation Methods

Data validation requirements are the same as specified in the master QAPP.

4.3 Reconciliation with User Requirements

The data assessment procedures listed in the master QAPP are applicable to this project. There are no additional data assessment procedures.

A

Method Detection Reporting Limit for Air Method TO-14

Analytical Services Center

Date: 31-Mar-04

METHOD DETECTION / REPORTING LIMITS

Test Code: 1_TO14_A
Test Number: EPATO14
Test Name: VOCs in Air by GCMS Method TO-14A
Matrix: Air **Units:** ppbv

Type	Analyte	MDL	PQL	UQL	MCL
A	1,1,1-Trichloroethane	0.499	5	50	
A	1,1,2,2-Tetrachloroethane	0.516	5	50	
A	1,1,2-Trichloro-1,2,2-trifluoroethane	0.633	5	50	
A	1,1,2-Trichloroethane	0.583	5	50	
A	1,1-Dichloroethane	0.613	5	50	
A	1,1-Dichloroethene	0.404	5	50	
A	1,2,4-Trichlorobenzene	0.263	5	50	
A	1,2,4-Trimethylbenzene	0.229	5	50	
A	1,2-Dibromoethane	0.256	5	50	
A	1,2-Dichloro-1,1,2,2-tetrafluoroethane	0.623	5	50	
A	1,2-Dichlorobenzene	0.217	5	50	
A	1,2-Dichloroethane	0.302	5	50	
A	1,2-Dichloropropane	0.675	5	50	
A	1,3,5-Trimethylbenzene	0.483	5	50	
A	1,3-Dichlorobenzene	0.602	5	50	
A	1,4-Dichlorobenzene	0.565	5	50	
A	Benzene	0.233	5	50	
A	Benzyl chloride	0.5	5	50	
A	Bromomethane	0.389	5	50	
A	Carbon tetrachloride	1.52	5	50	
A	Chlorobenzene	0.56	5	50	
A	Chloroethane	0.637	5	50	
A	Chloroform	0.805	5	50	
A	Chloromethane	0.547	5	50	
A	cis-1,2-Dichloroethene	0.416	5	50	
A	cis-1,3-Dichloropropene	0.297	5	50	
A	Dichlorodifluoromethane	0.557	5	50	
A	Ethylbenzene	0.225	5	50	
A	Hexachlorobutadiene	0.222	5	50	
A	m,p-Xylene	1.18	10	100	
A	Methylene chloride	0.545	5	50	
A	o-Xylene	0.589	5	50	
A	Styrene	0.544	5	50	
A	Tetrachloroethene	0.571	5	50	
A	Toluene	0.536	5	50	
A	trans-1,2-Dichloroethene	0.203	5	50	
A	trans-1,3-Dichloropropene	0.38	5	50	
A	Trichloroethene	0.534	5	50	
A	Trichlorofluoromethane	0.214	5	50	
A	Vinyl chloride	0.396	5	50	
A	Xylenes, Total	1.67	15	150	
I	1,4-Difluorobenzene	0	0	0	
I	Bromochloromethane	0	0	0	
I	Chlorobenzene-d5	0	0	0	
S	1,2-Dichloroethane-d4	0	0	0	
S	4-Bromofluorobenzene	0	0	0	

Analytical Services Center

Date: 31-Mar-04

METHOD DETECTION / REPORTING LIMITS

Test Code: 1_TO14_A
Test Number: EPATO14
Test Name: VOCs in Air by GCMS Method TO-14A
Matrix: Air **Units:** ppbv

Type	Analyte	MDL	PQL	UQL	MCL
S	Toluene-d8	0	0	0	

B

Test Specifications Limits Report for Air Method TO-14

Analytical Services Center

Date: 31-Mar-04

TEST SPECIFICATIONS LIMITS REPORT

Test Code: 1_TO14_A
Test Number: EPATO14
Test Name: VOCs in Air by GCMS Method TO-14A
Matrix: Air **Units:** ppbv

Created:
Updated: 23-Dec-03 **Updated** Howardw

Type	Analyte	SpkVal	LowLim	HighLim	RPDLimi
SampType: LCS					
A	1,1,1-Trichloroethane	10	70	130	0
A	1,1,2,2-Tetrachloroethane	10	70	130	0
A	1,1,2-Trichloro-1,2,2-trifluoroethane	10	70	130	0
A	1,1,2-Trichloroethane	10	70	130	0
A	1,1-Dichloroethane	10	70	130	0
A	1,1-Dichloroethene	10	70	130	0
A	1,2,4-Trichlorobenzene	10	70	130	0
A	1,2,4-Trimethylbenzene	10	70	130	0
A	1,2-Dibromoethane	10	70	130	0
A	1,2-Dichloro-1,1,2,2-tetrafluoroethane	10	70	130	0
A	1,2-Dichlorobenzene	10	70	130	0
A	1,2-Dichloroethane	10	70	130	0
A	1,2-Dichloropropane	10	70	130	0
A	1,3,5-Trimethylbenzene	10	70	130	0
A	1,3-Dichlorobenzene	10	70	130	0
A	1,4-Dichlorobenzene	10	70	130	0
A	Benzene	10	70	130	0
A	Benzyl chloride	10	70	130	0
A	Bromomethane	10	70	130	0
A	Carbon tetrachloride	10	70	130	0
A	Chlorobenzene	10	70	130	0
A	Chloroethane	10	70	130	0
A	Chloroform	10	70	130	0
A	Chloromethane	10	70	130	0
A	cis-1,2-Dichloroethene	10	70	130	0
A	cis-1,3-Dichloropropene	10	70	130	0
A	Dichlorodifluoromethane	10	70	130	0
A	Ethylbenzene	10	70	130	0
A	Hexachlorobutadiene	10	70	130	0
A	m,p-Xylene	20	70	130	0
A	Methylene chloride	10	70	130	0
A	o-Xylene	10	70	130	0
A	Styrene	10	70	130	0
A	Tetrachloroethene	10	70	130	0
A	Toluene	10	70	130	0
A	trans-1,2-Dichloroethene	10	70	130	0
A	trans-1,3-Dichloropropene	10	70	130	0
A	Trichloroethene	10	70	130	0
A	Trichlorofluoromethane	10	70	130	0

Analytical Services Center

Date: 31-Mar-04

TEST SPECIFICATIONS LIMITS REPORT

Test Code: 1_TO14_A
Test Number: EPATO14
Test Name: VOCs in Air by GCMS Method TO-14A
Matrix: Air **Units:** ppbv

Created:
Updated: 23-Dec-03 **Updated** Howardw

Type	Analyte				
A	Vinyl chloride	10	70	130	0
A	Xylenes, Total	30	70	130	0
I	1,4-Difluorobenzene	0	0	0	0
I	Bromochloromethane	0	0	0	0
I	Chlorobenzene-d5	0	0	0	0
S	1,2-Dichloroethane-d4	10	80	120	0
S	4-Bromofluorobenzene	10	80	120	0
S	Toluene-d8	10	80	120	0

C Indoor Air Quality Sampling Information

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH ASSESSMENT
BUREAU OF TOXIC SUBSTANCE ASSESSMENT

INDOOR AIR SAMPLING & ANALYSIS GUIDANCE
August 8, 2001

SCOPE:

Air testing for specific chemical compounds can be performed to determine whether petroleum spills or other contaminant sources affect indoor air quality. This document provides guidance for preparing sites and collecting samples for laboratory analysis to ensure the integrity of the test results and allow for meaningful interpretation of the data.

Forms (attached) - Indoor Air Quality Questionnaire and Building Inventory Form
- Product Inventory Form

OBJECTIVE:

The purpose of this document is to outline the recommended procedure for testing indoor air for volatile organic chemicals (VOCs). The procedure includes pre-sampling inspection and preparation of homes, product inventories, collection of samples, analytical method selection.

1. Pre-sampling inspection and preparation of homes:

A pre-sampling inspection should be performed 2 or 3 days prior to testing (if possible) to evaluate the type of structure, floor layout and physical conditions of the building(s) being studied and to identify and minimize conditions that may affect or interfere with the proposed testing. This information along with information on sources of potential indoor contamination should be identified on the building inventory form. Portable organic vapor monitoring equipment (i.e. photoionization detectors (PIDs)) can be used to help evaluate potential interferences. Items to be included in the building inventory include use or storage of petroleum products including gasoline operated equipment, unvented kerosene heaters, recent use of petroleum based finishes or products containing petroleum distillates. Potential interferences should be corrected during the pre-sampling inspection. Removing the source from the indoor environment prior to testing is the most effective means of reducing the interference. Ensuring that containers are tightly sealed may be acceptable, but should be tested with a PID to demonstrate that the seal is tight. The inability to eliminate potential interference may be justification for not testing. Once these interfering conditions are corrected, aggressive ventilation may be needed prior to testing to eliminate residual contamination.

Any ventilation should be done twenty-four hours or more prior to the scheduled sampling time. If ventilation is deemed necessary, ventilate the house by opening windows and doors for at least 10 to 15 minutes. House ventilation should be avoided 24 hours prior to and during testing. During colder months, heating systems should be operating for at least twenty-four hours prior to the scheduled sampling time to maintain normal indoor temperatures above 65^0 F before and during sampling.

FOR 24 HOURS PRIOR TO SAMPLING, DO NOT

- open any windows, fireplace dampers, openings or vents,
- operate ventilation fans unless special arrangements are made,
- smoke in the house,
- paint,

- use wood stove, fireplace or other auxiliary heating equipment, (e.g. kerosene heater),
- operate or store automobile in attached garage,
- allow containers of gasoline or oil to remain within the house or garage area, except for fuel oil tanks,
- clean, wax or polish furniture or floors with petroleum or oil-based products,
- use air fresheners or odor eliminators,
- engage in any hobbies which use materials containing volatile organic chemicals,
- use cosmetics: including hairspray, nail polish, nail polish removers, etc.
- apply pesticides.

2 . Product Inventories:

Some household products contain volatile organic chemicals (VOCs) which can contribute to levels of VOCs in air. Products in buildings should be inventoried every time air is tested to provide an accurate assessment of the potential contribution of VOCs. Each room in the building should be inspected and products that contain VOCs should be listed on the Products Inventory Form along with PID readings obtained near the container. If available, the volatile ingredients should be recorded for each product. If the ingredients are not listed on the label, record the manufacturer's name and address or phone number if available.

3. Collection of Samples

To characterize contaminant concentration trends and potential exposures, air samples should be collected from the basement, first floor living space, and from outdoors. In settings with diurnal occupancy patterns such as schools and office buildings, samples should be collected during normally occupied periods to be representative of typical exposure. Sample collection intakes should be approximately three feet above the floor level to represent breathing zones. To ensure that air is representative of the locations sampled and to avoid undue influence from sampling personnel, samples should be collected for 2 to 8 hours, but at least a one-hour period and personnel should avoid lingering in the immediate area of the sampling device while samples are being collected. Sample collection techniques vary depending on the analytical method(s) being used and sample flow rates must conform to the specifications in the sample collection method. Some methods require collecting samples in duplicate. Sampling personnel should be completely familiar with the sampling protocol for the particular method being used.

a. Quality Assurance/Quality Control

Extreme care should be taken during all aspects of sample collection to ensure that high quality data are obtained. The laboratory should use only certified clean sample collection devices. The sampling team members should avoid actions which cause sample interference such as pumping gas prior to testing or using permanent marking pens in the field. Once samples are collected, they should be stored according to the method protocol and delivered to the analytical laboratory as soon as possible. Samples should not exceed recommended holding times prior to being processed by the laboratory. Blanks should be submitted and analyzed with the samples to provide a quality check. Laboratory procedures for sample accession and chain of custody should be followed.

b. Sampling Information

Detailed information must be gathered at the time of sampling to document conditions during sampling to aid in interpretation of the test results. The information should be recorded on the building inventory form. Floor plan sketches should be drawn for each floor and should include the floor layout with sample locations, any chemical storage areas, garages, doorways, stairways, location of basement sumps and any other pertinent information including compass orientation (north). Outdoor plot

sketches should include the building site, area streets, outdoor sample location, the location of potential interferences (such as gas stations, factories, lawn mowers), wind direction and magnetic orientation (north). In addition, any pertinent observations such as odors and PID readings should be recorded on the building inventory form and on associated sample accession forms.

The products inventory shall include those items discussed in Section 2.

c. Sample Analysis

New York State Law requires laboratories analyzing environmental samples from New York State to have current Environmental Laboratory Approval Program (ELAP) certification for certain contaminant categories and media (air, water, solid waste).

The goal of indoor air sampling is to evaluate exposure to VOCs by measuring levels low enough to compare to background indoor air levels. Therefore, the samples must be analyzed by methods that can achieve minimum detection limits of at least one part per billion (ppb) (1 to 7 micrograms per cubic meter (mcg/m^3) depending on the molecular weight for each compound). Several analytical methods for VOCs in air are capable of achieving these detection limits including Environmental Protection Agency (EPA) Method TO-14A/TO-15 and EPA Method TO-1/TO-2. Prior to choosing an analytical method, the laboratory should verify they are capable of detecting target compounds.

Petroleum is a mixture of many individual compounds. Various petroleum products (i.e. gasoline, diesel, fuel oil) have different chemical constituents and specific aromatic and aliphatic compounds can be good indicators for individual petroleum products. Analytical methods using a mass spectrometer detector allow for the identification of aromatic and aliphatic hydrocarbons, and oxygenated compounds such as ethanol, acetone and methyl tertiary butyl ether (MTBE).

Target compounds for gasoline may include the aromatics: benzene, toluene, ethylbenzene and xylenes; C-4 to C-8 straight and branched aliphatics; and the oxygenate additive MTBE.

Target compounds for fuel oil may include the aromatics: benzene, toluene, ethylbenzene, xylenes, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-butylbenzene, sec-butylbenzene and tert-butylbenzene; and C-9 to C-12 straight and branched aliphatic hydrocarbons.

Sampling for other potential contaminants may involve different target compound(s) and different analytical methodology.

For additional information contact Mr. Gerry McDonald or Mr. Michael Hughes of the Bureau of Toxic Substance Assessment (518) 402-7810.

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH ASSESSMENT
BUREAU OF TOXIC SUBSTANCE ASSESSMENT

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date Prepared _____

Preparer's Affiliation _____ Phone No._____

1. **OCCUPANT** Name: _____

Address: _____

_____

County: _____

Home Phone No. _____Office Phone No _____

2. **OWNER OR LANDLORD**: (If different than occupant) Name: _____

Address: _____

_____

Phone No. _____

A. Building Construction Characteristics

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

Ranch	2-Family
Raised Ranch	Duplex
Split Level	Apartment House _____ Units
Colonial	Number of floors _____
Mobile Home	Other specify _____

Residence Age _____ General Description of Building Construction Materials _____

_____

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

OSR-3 (continued)

B. <u>Basement construction characteristics (circle all that apply)</u>:

1. Full basement, crawlspace, slab on grade, other _____
2. Basement floor: concrete, dirt, other _____
3. Concrete floor: unsealed, painted, covered; with _____
4. Foundation walls: poured concrete, block, laid up stone, other _____
5. The basement is: wet, damp, dry _____Sump present? y / n _____Water in sump? y / n ____
6. The basement is: finished, unfinished _____
7. Identify potential soil vapor entry points (e.g., cracks, utility ports etc.)

   _____

8. Describe how air tight the basement is _____

   _____

C. <u>HVAC (circle all that apply)</u>:

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

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

2. The type(s) of fuel(s) used is/are: Natural Gas, Fuel Oil, Electric, Wood Coal Solar

   Other (specify) _____.

3. Is the heating system's power plant located in the basement or another area: _____.
4. Is there air-conditioning? Yes / No Central Air or Window Units?

   Specify the location _____

5. Are there air distribution ducts present? Yes / No
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return, the tightness of duct joints

   _____

   _____

OSR-3 (continued)

D. Potential Indoor Sources of Pollution

1. Has the house ever had a fire? Yes / No
2. Is there an attached garage? Yes / No
3. Is a vehicle normally parked in the garage? Yes / No
4. Is there a kerosene heater present? Yes / No
5. Is there a workshop, hobby or craft area in the residence? Yes / No
6. An inventory of all products used or stored in the home should be performed. Any products that contain volatile organic compounds or chemicals similar to the target compounds should be listed. The attached product inventory form should be used for this purpose.
7. Is there a kitchen exhaust fan? Yes / No Where is it vented? _____
8. Has the house ever been fumigated? If yes describe date, type and location of treatment. _____

E. Water and Sewage (Circle the appropriate response)

Source of Water

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

Water Well Specifications:

Well Diameter _____ Grouted or Ungrouted _____

Well Depth _____ Type of Storage Tank _____

Depth to Bedrock _____ Size of Storage Tank _____

Feet of Casing _____ Describe type(s) of Treatment _____

_____

Water Quality:

Taste and/or odor problems? y / n If so, describe _____

How long has the taste and/or odor been present? _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Other (Specify) _____

Distance from well to septic system _____ Type of septic tank additive _____

F. Plan View

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

G. Potential Outdoor Sources of Pollution

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

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

Household Products Inventory

Occupant / residence _____

Investigator: _____ Date: _____

Product description (dispenser, size, manufacturer …)	VOC Ingredients	PID Reading

D Subcontracted Service Scopes and Quotes

Data Validation Services

EXHIBIT 1
SCOPE OF WORK
FOR DATA VALIDATION SERVICES
FORMER BRIGHT OUTDOORS SITE REMEDIAL INVESTIGATION
March 24, 2003

Introduction

Ecology and Environment Engineering, P.C. (E & E), under contract with the New York State Department of Environmental Conservation (NYSDEC) is conducting a remedial investigation at the former Bright Outdoors Site located in Johnson City, New York. E & E's assignment involves collection and analysis of environmental media samples. Following analysis, samples are to be reviewed by a third party and data usability summary reports (DUSRs) are to be prepared.

Scope of Work

E & E will provide analytical data packages and supporting sample information pertaining to duplicate samples, trip blanks, rinsate blanks, matrix spike/matrix spike duplicates (MS/MSDs), etc. The subcontractor is to review the data and prepare DUSRs for all data generated from the analysis of environmental media samples. Environmental media will include soil, water, sediment, and/or air. The analyses will include those listed in the table in Exhibit 2. DUSRs will be prepared per NYSDEC protocol and consistent with the procedures outlined in E & E's Master Quality Assurance Project Plan for NYSDEC projects (see Attachment 1). DUSR preparation will be performed at the unit rates listed in Exhibit 2 of this agreement.

Schedule

E & E is to receive a written DUSR within 30 days following the subcontractor's receipt of data from E & E. Project fieldwork is tentatively scheduled to begin in June 2004. Data are expected to be submitted for DUSR preparation in July and August 2004. The subcontractor will be informed of the firm project schedule when it is established.

ATTACHMENT 1

4 Data Validation and Usability

For NYSDEC activities, E & E will implement general procedures for data validation and usability described below. These procedures will be adapted, if necessary, to meet project-specific requirements. In addition, data validation procedures will vary depending on the type of analytical laboratory used for the project.

4.1 Data Review, Validation, and Verification Requirements

All data generated will be reviewed by comparing calibration, accuracy, and precision to QC criteria listed in the method, laboratory SOP, and QAPP. The following types of data will be reviewed:

- Analytical laboratory summary reports including QC summary data for surrogates, method blanks, LCS, and MS/MSD samples. Acceptance and performance criteria will be developed from the current laboratory control limits even if those limits differ from the limits listed in the QAPP.
- Calibration summary data will be checked by the laboratory to verify that all positive results for target compounds were generated under an acceptable calibration as defined by the analytical method. Any deviations will be noted in the case narrative and reviewed by the Data Validation Chemist.
- Field QC results for duplicates and blanks will be compared to criteria listed in Section 2.5.1.
- Field data such as sample identifications and sample dates will be checked against the laboratory report; and
- Any field analytical data to be included in the final report will be checked for completeness and compliance with the QAPP.

Raw data files from the field and laboratory will not be reviewed unless there is a significant problem noted with the summary information.

4.2 Validation and Verification Methods

The data review scheme for analytical results from the receipt of the analytical

data through the validated report is described below. The laboratory is responsible for performing internal data review. The laboratory data review must include 100% analyst review, 100% peer review, and 100% review by the laboratory project manager to verify that all project-specific requirements are met. The laboratory QA officer must perform review on 10% of the data packages. All levels of laboratory review must be fully documented and available for review if requested or if a laboratory audit is performed.

After receipt from the laboratory, project data will be validated using the following steps:

Evaluation of Completeness

The Data Validation Chemist verifies that the laboratory information matches the field information and that the following items are included in the data package:

- Chain-of-custody forms and NYSDEC Sample Summary forms;
- Case narrative describing any out-of-control events and summarizing analytical procedures;
- Data report forms (i.e., Form I);
- QA/QC summary forms; and
- Chromatograms documenting any QC problems as defined in Section 1.6.2.

If the data package is incomplete, the Data Validation Chemist contacts the laboratory, which must provide all missing information within one day.

Evaluation of Compliance

The actual data validation procedures are briefly outlined below:

- Review the data to check field and laboratory QC data, to verify that holding times and acceptance and performance criteria were met, and to note any anomalous values;
- Review chromatograms, mass spectra, and other raw data if provided as backup information for any apparent QC anomalies;
- Ensure that all analytical problems and corrections are reported in the case narrative and that appropriate laboratory qualifiers are added;
- For any problems identified, review concerns with the laboratory, obtain additional information if necessary, and check all related data to determine the extent of the error; and

- Apply data qualifiers to the analytical results to indicate potential limitations on data usability.

Project chemists will follow qualification guidelines in *USEPA CLP National Functional Guidelines for Organic Data Review, EPA 540/R-99-008* (October 1999) or *USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540/R-94/013* (July 2002). The DUSR will be completed as specified in NYSDEC *Guidance of the Development of DUSRs* (July 1999).

Data Validation Reporting

The Data Validation Chemist will perform the following reporting functions:

- Alert the Project Manager to any QC problems, obvious anomalous values, or discrepancies between the field and laboratory data, and resolve any issues; and

- Discuss QC problems in a DUSR for each laboratory report;

The QA Officer or designee will perform the following reporting functions:

- Review the laboratory EDD and electronic field data, enter data qualifiers into the database, and prepare analytical data summary tables. Tables will summarize those samples and analytes for which detectable concentrations were exhibited and will include field QC samples;

- The final QA/QC technical review of the DUSRs and any field QC documents; and

- At the completion of all field and laboratory efforts, summarize planned versus actual field and laboratory activities and data usability concerns in the technical report.

4.3 Reconciliation with User Requirements

For routine assessments of data quality, E & E will implement the data validation procedures described in Section 4.2 and assign appropriate data qualifiers to indicate limitations on the data. The Data Validation Chemist will be responsible for evaluating precision, accuracy, representativeness, comparability, and completeness of data using procedures described in Section 2.5 of this QAPP. Any deviations from analytical performance criteria or quality objectives for the project will be documented in the DUSR provided to the data users for the project.

The QA Officer or Data Validation Chemist will work with the final users of the data in performing data quality assessments. The data quality assessment may include some or all of the following steps:

- Data that are determined to be incomplete or not usable for the project will be

discussed with the project team. If critical data points are involved which impact the ability to complete project objectives, data users will report immediately to the Project Manager. The Project Manager will discuss resolution of the issue with NYSDEC technical staff and implement necessary corrective actions (for example re-sampling);

- Data that are non-detect but have elevated reporting limits due to blank contamination or matrix interference will be compared to screening values. If reporting limits exceed the screening values, then results will be handled as incomplete data as described above;

- Data that are qualified as estimated will be used for all project decision making. If an estimated result is close to a screening value, then there is uncertainty in any conclusions as to whether the result exceeds the screening value. The data user must evaluate the potential uncertainty in developing recommendations for the site. If estimated results become critical data points in making final decisions on the site, the Project Manager and NYSDEC technical staff should evaluate the use of the results and may consider the data point incomplete.

The assessment process involves comparing analytical results to screening values and background concentrations to determine if the contamination present is site-related (i.e., above background levels) or significant (i.e., above screening values).

Additional data assessment may be performed on a site-by-site basis.

EXHIBIT 2

Subcontractor's Price Schedule For
Data Usability Summary Report (DUSR) Preparation
Former Bright Outdoors Site
Johnson City, New York
March 24, 2004

Matrix	Analysis	Method	Estimated Analysis Quantity	DUSR Preparation Unit Cost	Total Expected Cost
Solid	TCL Volatile Organics	OLM04.2	43		$ -
Water	TCL Volatile Organics	OLM04.2	28		$ -
Air	TCL Volatile Organics	TO-15	12		$ -

Total Not-To-Exceed Contract Price: $ $0

Data Validation Services

120 Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone (518) 251-4429
Facsimile (518) 251-4428

March 30, 2004

Richard Watt
Ecology & Environment, Inc.
368 Pleasant View Dr.
Lancaster, NY 14086

RE: Proposal for DUSR data validation for the Former Bright Outdoors site

Dear Mr. Watt:

Thank you for your request for a cost estimate for the generation of a Data Usability Summary Report (DUSR) for data pertaining to the Former Bright Outdoors site. I have reviewed the information faxed to me, and your voice mail discussion regarding laboratory deliverables and turnaround time, and have prepared the following cost proposal.

Data Validation Services (DVS) has been performing validation of laboratory data since 1989, and is certified by New York State as a WBE. My experience has included projects originating at the federal, state, and municipal levels, and includes validation according to USEPA (National, Region I, Region II, Region III, Region IV), NYSDEC, and NJDEP procedures.

The full deliverables data packages provided will be reviewed for quality control parameters (including, but not limited to, custody documentation, holding times, surrogate and matrix spike recoveries, LCS recoveries, duplicate correlation, calibration standard/blank performance, instrument performance, blank contamination, matrix interferences, method compliance, etc). This review will be performed from the summary forms available in the data package. In addition, critical elements of the sample raw data (i.e. chromatograms, integrations, etc) will be reviewed. Full validation to verify some of the QC summary page values and QC sample reported results from the raw data will not be performed at this time. However, most of the validation qualifiers that would be apparent by full validation review will be recommended within the DUSR.

For this project, data packages will be provided to this firm as they are submitted by the laboratory. Review will be ongoing, and a final DUSR will be generated, incorporating all sampling activities at the site, and submitted within 14 days of my receipt of the final data package. At a minimum, all issues discussed in the NYSDEC DUSR description (Rev. 9/97) and in your RFB will be discussed in the DUSR. Please note that any discussion indicating steps to be taken to fill in data gaps must be generated with coordination with your firm. Sample result qualifiers indicated by the review will be applied to hardcopy sample results forms provided by your firm.

The unit costs below review of data packages (as noted above), generation of the DUSR, and associated communications. These costs apply to field samples and associated QC (field duplicates, field blanks, trip blanks, and sample matrix spikes). They have been applied to the number of units indicated in Exhibit 2, to arrive at a project total:

Est. No. of Units	Analytical Fraction	Unit Cost	Subtotal
71	TCL VOA by OLM04.2-soil or water	$ 19	$ 1349
12	VOA by TO-15	21	252
		TOTAL COST	$ 1601

Actual costs will reflect actual units reviewed. Please note that for DUSR review, if the analyses are not generated in compliance with protocol requirements, or packages are significantly incomplete, additional costs may be incurred. Costs do not include return shipment of the data. Payment terms are net 30 unless otherwise arranged.

Please review my attached resume, and call if you have questions or comments regarding this proposal. I look forward to possibly working with your firm on this project.

Very truly yours,

Judy Harry

Drilling Services

Drilling Subcontractor Quotations

Vendor	Task 1 Mobe & HASP	Task 2 Borehole Sampling	Task 3 Well Installation	TOTAL COST	Est. Duration
American Auger & Ditching Co.	Declined To Bid				
Northstar Drilling	$ 500.00	$ 16,200.00	$ 6,300.00	$ 23,000.00	12.5 days
B&S Technical Services	$ 850.00	$ 15,475.00	$ 5,550.00	$ 21,875.00	15 days

Note:

Although B&S Technical Services bid the lowest total cost, Northrstar Drilling was awarded the work because B&S estimated a longer project duration. Since the subcontractor will be held to these time estimates, B&S will have a higher total drilling cost created by the additional oversight required.

Exhibit 1
Scope of Work For Borehole Sampling and Monitoring Well Installation
Former Bright Outdoors Site
Johnson City, New York
E & E Project Number 000699.NV15

Site Description
Ecology and Environment Engineering, P.C. (E & E) has been assigned the project of performing a Remedial Investigation/Feasability Study at the above-referenced site for the New York State Department of Environmental Conservation (NYSDEC). The former Bright Outdoors business manufactured PVC pipe and sewer vinyl polyester for the manufacture of outdoor upholstery. The focus of this study is to identify the source and characterize the full extent of 1,1,1-trichloroethane (1,1,1-TCA) and trichloroethene (TCE) contamination that has been identified in this area from previous investigations. Contamination has adversely impacted the groundwater quality in the underlying EPA-designated sole source aquifer.

A 2002 Preliminary Site Assessment attempted to identify and further delineated potential sources of contamination in the Field Street area. The highest 1,1,1-TCA contamination were in the central portion of Field Street, on the east and west sides of SamScreen (formerly Bright Outdoors) building. The site is relatively flat lying and is covered mostly by buildings and asphalt, with less than 10% of the ground surface covered by grass. E & E will be installing up to 15 boreholes at the site, up to 8 of which will become monitoring wells.

The site is bordered by Field Street and New York State (NYS) Route 17 to the south, a commercial facility (The Storage Mall) to the east, another commercial facility (Wegman's grocery store) to the north, and residential properties along Marie Street to the west. Several other industries exist in the vicinity, primarily south of Route 17. The Camden Street Municipal Well Field is located approximately 0.6 mile south-southwest of the site.

The subsurface consists primarily of glaciofluvial and glaciolacustrine valley fill deposits. The basic stratigraphic sequence consists of shale bedrock overlain by relatively impermeable lodgment till, in turn overlain by extensive deposits of highly permeable glacial kame and outwash deposits. Occasional occurrences of interbedded fine-grained ice-contact deposits are also present. The water-bearing outwash and kame deposits generally consist of fine-grained sand through gravel. Interbedded ice-contact deposits generally consist of clay and silt. Thickness of the overburden deposits has been found to range from approximately 60 to over 100 feet in the vicinity. Groundwater generally flows south toward the Susquehanna River.

Scope of Work
This scope of work is divided into three tasks for costing purposes: Mobilization and Health and Safety Plan development, subsurface soil investigation, and monitoring well installation. The subcontractor is responsible for performing all tasks as described below.

1. Mobilization and Health and Safety Plan (HASP) Development
The contractor will prepare a site-specific HASP as described in the Health and Safety Requirements section of this Exhibit. Costs associated with mobilization to the site, including travel, per diem, etc., if any, are to be included in this task.

2. Subsurface Soil Sampling
It is currently estimated that 15 boreholes will be drilled at and near the site for the purposes of determining the horizontal and vertical extent as well as the source of subsurface soil contamination. Boreholes will be installed using a drill rig to turn 4 1/4-inch inner diameter (ID)

hollow stem augers. Continuous split-spoon samples will be collected at each location until the water table is encountered (estimated to be 15 feet). Below the water table, split-spoon samples will be collected every 5 feet to an estimated depth of 50 feet below ground surface (BGS). E & E's field geologist will record physical observations for all split-spoon soil cores and select intervals for sub-sampling and laboratory analysis by E & E (up to two samples per location). During this task, E & E will conduct air monitoring for organic vapors and explosive conditions.

Upon completion, boreholes that are not being converted into monitoring wells (see below) will be backfilled with non-contaminated soil cuttings and then a cement/bentonite grout by tremie pipe from the bottom up to the surface.

3. Monitoring Well Installation

Once borehole drilling is completed, up to eight of the 15 boreholes will be converted into monitoring wells. The wells will be installed through the 4 1/4-inch inner diameter (ID) hollow-stem augers to depths determined in the field (estimated to be 50 feet BGS). Each well will be constructed using a 10-foot segment of 2-inch ID polyvinyl chloride (PVC) screen having 0.10-inch slot size, followed by 2-inch ID Schedule 40 PVC riser to a height of 2.5 feet above grade. A threaded PVC cap will be placed on the bottom of the screen. All PVC connections will be flush-threaded. A sand pack of Morie No. 0 sand (or equivalent size) will extend from the bottom of the screen to a height of 2 feet above the screen. The sand pack will be capped with a 2-foot-thick pelletized bentonite seal. A 5% bentonite/cement grout mix will then be installed to grade. A minimum one-half hour respite is required between hydration of the bentonite and installation of the grout mix. Each well will be fitted with a flush-mount locking steel protective casing keyed alike.

Decontamination and Waste Management

The rig and all appurtenances must be decontaminated with high-pressure steam prior to arrival to the site. Standard operating procedures will be employed to minimize the degree of possible cross-contamination and investigation-derived waste (IDW) production. Non-dedicated equipment will be decontaminated in accordance with NYSDEC-approved procedures. Special attention will be given to all downhole tooling, which will be decontaminated prior to and following each use. Decontamination of large equipment will consist of:

- Removal of foreign matter; and
- High-pressure steam cleaning.

The following alternative procedure will be used for smaller equipment and may also be employed for downhole tooling:

- Initially remove all foreign matter;
- Scrub with brushes in trisodium phosphate (TSP) solution;
- Rinse with deionized or distilled water; and
- Allow to air dry.

A temporary decontamination area shall be established on site using heavy plastic sheeting or equivalent to capture decontamination wastes. The pad will consist, at a minimum, of double-

lined plastic sheeting, bermed on all sides, with a sump for water collection and pumping. Investigation-derived soils and water will be field screened to determine initially whether these wastes are contaminated. If no contamination or contamination less than 5 ppm on a FID or PID is detected in the soils at a particular location, the decontamination water will be discharged to the ground surface and the soil cuttings will be spread on the ground or used to backfill the borehole. If contamination is detected above 5 ppm, or other visual evidence of contamination or strong odors are noted, the decon water and soil cuttings will be placed in 55-gallon drums and labeled accordingly. All drums will be temporarily staged on site by the subcontractor within a secondary containment unit constructed of bermed plastic sheeting or equivalent. For costing purposes, assume that six drums of soil and other solid wastes and one drum of decontamination fluid will be generated. E & E will be responsible for coordinating sampling and analysis in order to meet disposal requirements. However, the subcontractor will be responsible for providing and staging the drums.

Other Project Considerations

1. All necessary equipment and supplies shall be mobilized to the job site at the beginning of the project. The majority of the site is level and access is not considered to be a problem. However, it is the driller's responsibility to assess the accessibility of the site and provide the appropriate drilling rigs and vehicles for this SOW.

2. The subcontractor shall arrange for use of a water source near the site, including obtaining any necessary permission and paying any necessary usage or related fees, or otherwise provide a source of potable water for decontamination.

3. The subcontractor shall provide all necessary tools, expendable supplies, and labor to complete the scope of work.

4. The subcontractor shall remove all non-contaminated solid waste (i.e., plastic sheeting, etc.) generated during operations.

5. The subcontractor shall provide unit prices for each activity necessary to complete this SOW. The subcontractor is expected to provide the information requested in Exhibit 2 and add appropriate line items in the spaces provided for additional equipment or supplies to complete the task. If the subcontractor has any suggestions or changes to the requested methods the subcontractor may make the changes accordingly.

6. The subcontractor will be held to the total cost as shown in Exhibit 2, especially hourly line items and number of days to complete the project, unless there is a change in the project SOW. Any changes in the SOW (such as increased number of borings or upgrading personal protection levels) will not be performed without the prior approval of E & E and its client. The subcontractor is subject to liquidated damages in the amount of $1200/day for each work day over the proposed total number of days indicated in Exhibit 2 by the subcontractor, assuming no changes in the SOW.

7. Line items not included in Exhibit 2 will not be paid without prior approval by E & E. The subcontractor shall only invoice E & E for items in this subcontract that are actually used to complete the tasks described in Exhibits 1 and 2.

8. All work will be performed during 10-hour workdays on a 5-day workweek schedule.

9. The subcontractor is to work under the direction of the E & E Field Team Leader. E & E will perform air monitoring throughout all subsurface investigation activities. The subcontractor is required to provide all necessary respiratory protection for its crews. E & E will not provide respiratory protection equipment or supplies to the subcontractor.

Health and Safety Requirements

The subcontractor must comply with the following health and safety stipulations:

- The subcontractor will submit to E & E a completed, signed site-specific Health and Safety Plan (HASP) per federal OSHA laws (29 CFR 1910.120) prior to E & E signing the subcontract agreement. Subcontractors are responsible for writing their own HASP, which shall contain procedures appropriate for the site conditions based on the information provided. A HASP fact sheet containing site-specific information pertaining to chemical and physical hazards and emergency contact information will be provided to the winning bidder. E & E will review the plan for completeness and may ask for modifications if deemed necessary.

- The subcontractor will designate a responsible person for compliance of their HASP.

- The subcontractor will provide all personal protective equipment (PPE) and upgrades of PPE as specified in the HASP including costs, and the proper disposal of all spent PPE and contaminated debris.

- The subcontractor should assume that all work will be performed using a minimum of level "D" personal protection (including at a minimum hard hat, safety glasses, nitrile/latex gloves, and steel-toed boots and may also include tyvek and saranex if conditions warrant). Upgrades may be necessary; therefore, level "C" personal protective equipment must be available on site. If upgrades are required, costs will be implemented as indicated under contingent costs in Exhibit 2.

Utility Clearance

Prior to initiating intrusive subsurface activities, E & E will coordinate with the Underground Facilities Protection Organization for the purpose of identifying and locating underground utilities in accordance with New York State Code Rule 753.

Exhibit 2
Subcontractor Price Schedule
Former Bright Outdoors Site
Johnson City, New York

E & E Project Number 000699.NV15
March 26, 2004

Subcontractor Name: _____

1. MOBILIZATION & HEALTH AND SAFETY PLAN

	Unit Price	Est. # Units	Extended Cost
Site-Specific Health and Safety Plan for all subcontractor activities			$
Mobilize drill rig, steam cleaner, equipment, and crew to site (including all setup procedures, decon pad assembly, etc.)			$
Travel costs			$
Level D Personal Protective Equipment			$
Other:			$
Subtotal:			$

2. SUBSURFACE SOIL SAMPLING

	Unit Price	Est. # Units	Extended Cost
Cost per day for rig, equipment, and crew for up to 15 boreholes using continuous split spoon sampling to the water table, then standard sampling to 50 feet bgs.	/day		$

OR

Cost per foot for 4-¼ ID auger drilling with continuous split-spoon sampling	/ft	225	$
Cost per foot for 4-¼ ID auger drilling with split-spoon sampling at 5-foot intervals	/ft	525	$

Decontamination and waste handling	/hr		$

Open-top 55-gallon drums	/ea.	7	$
Other:			$

Subtotal: $

3. Monitoring Well Installation

	Unit Price	Est. # Units	Extended Cost
2-inch ID schedule 40 PVC 0.10-inch slot-screen (10 ft/well)	/ft	80	$
2-inch ID Schedule 40 PVC riser (40 ft/well)	/ft	320	$
Threaded 2-inch end caps	/ea.	8	$
2-inch J-plug	/ea.	8	$
Flush-mount protective casings, installed	/ea.	8	$
Other:			$

Subtotal: $

OTHER COSTS

(Please specify any additional items that you feel may be required)

	Unit Cost
Standby time	$ /crew-hr
Rate for upgrading to Level C respiratory protection	$ /crew-hr
Other:	
Other:	

TOTAL NOT TO EXCEED PRICE: $

Number of days to complete all tasks: _____

NORTH STAR DRILLING

P.O. Box 67, Cortland, NY 13045
Phone: 607-836-8800
Fax: 607-836-6468

DRILLING QUOTATION

Date: March 29, 2004

To: Richard M. Watt, PG
Ecology and Environment Engineering, Inc.
368 Pleasantview Drive
Lancaster, NY 14086

Fax: 716-684-0844

Project: Former Bright Outdoors Site
Johnson City, New York

Scope of Work:

North Star Drilling proposes to provide all labor, equipment and material to perform subsurface investigation in connection with the referenced project as per your request of March 24, 2004.

Ecology & Environment will be responsible for obtaining access to the site, selecting the sample locations and depths, have the boring locations staked and utilities marked prior to the start of work.

Costs:

See attached Unit Price and Estimated Cost Proposal.

This quotation is valid for 60 days. If this proposal is acceptable, please sign below and return a copy for our records. If you have any questions, please do not hesitate to call.

North Star Drilling.

Forrest C. Earl, Vice President

File: proposal\drill\E & E & E – Johnson City

ACCEPTED BY: _____ DATE: _____
(Signature)

_____
(Print Name)

Updated Exhibit 2
Subcontractor Price Schedule
Former Bright Outdoors Site
Johnson City, New York

E & E Project Number 000699.NV15
March 26, 2004

Subcontractor Name: GeoLogic NY, Inc. d/b/a North Star Drilling

1. MOBILIZATION & HEALTH AND SAFETY PLAN

	Unit Price	Est. # Units	Extended Cost
Site-Specific Health and Safety Plan for all subcontractor activities	100.00	1	$ 100.00
Mobilize drill rig, steam cleaner, equipment, and crew to site (including all setup procedures, decon pad assembly, etc.)	400.00	1	$ 400.00
Travel costs	N/C	-	$ 0.00
Level D Personal Protective Equipment	N/C	-	$ 0.00
Other:			$
Subtotal:			$ 500.00

2. SUBSURFACE SOIL SAMPLING

	Unit Price	Est. # Units	Extended Cost
Cost per day for rig, equipment, and crew for up to 13 boreholes using continuous split spoon sampling to the water table, then standard sampling to 50 feet bgs.	/day		$

OR

Cost per foot for 4-¼ ID auger drilling with continuous split-spoon sampling	21 /ft	225	$4725.00
Cost per foot for 4-¼ ID auger drilling with split-spoon sampling at 5-foot intervals	17 /ft	525	$8925.00

Cost to drive a hydropunch sampler at let the unit sit for 1/2 before the sample is collected	100/ea	7	$ 700.00

Updated Exhibit 2
Former Bright Outdoors Site
March 26, 2004

Decontamination and waste handling	150/hr	10	$1500.00
Open-top 55-gallon drums	50/ea.	7	$ 350.00
Other: Grout abandoned boring	5/ft		$

Subtotal: $16,200.00

3. Monitoring Well Installation

	Unit Price	Est. # Units	Extended Cost
2-inch ID schedule 40 PVC 0.10-inch slot-screen (10 ft/well)	18/ft	60	$1080.00
2-inch ID Schedule 40 PVC riser (40 ft/well)	18/ft	240	$4320.00
Threaded 2-inch end caps	0 /ea.	6	$ 0.00
2-inch J-plug	0 /ea.	6	$ 0.00
Flush-mount protective casings, installed	150/ea.	6	$ 900.00
Other:			$

Subtotal: $ 6,300.00

OTHER COSTS
(Please specify any additional items that you feel may be required)

	Unit Cost
Standby time	$ 150.00/crew-hr
Rate for upgrading to Level C respiratory protection	$ 20.00/crew-hr
Site restoration (assume it will be necessary at a minimum of 5 locations)	$ 100.00/Loc.
Other:	
Other:	

TOTAL NOT TO EXCEED PRICE: $ 23,000.00

Number of days to complete all tasks: 12.5

SUBCONTRACTOR'S BID RESPONSE FORM

TO: Northstar Drilling
P.O. Box 67
4710 NYS Route 41
Cortland, NY 13045

DATE: March 24, 2004

Re:
Site Name:	Former Bright Outdoors Site
Site Location:	Johnson City, New York
Services:	Subsurface Exploration and Monitoring Well Installation
Client:	NYS Dept. of Environmental Conservation
E & E Project No.:	000699.NV15

IN ORDER FOR US TO MAINTAIN AN ACCURATE AND CURRENT BIDDER'S LIST, PLEASE COMPLETE THE FOLLOWING AND RETURN TO:

Ecology and Environment Engineering, P.C.
368 Pleasantview Drive
Lancaster, NY 14086
Attn: Richard Watt

_x_ Bid enclosed.

____ No bid due to the following:

_x_ Please maintain our company on your bidder's list.

Signature: Forrest C Earl

Printed name: Forrest C. Earl

Title: Vice President

Date: 03/29/04

Updated Exhibit 2
Subcontractor Price Schedule
Former Bright Outdoors Site
Johnson City, New York

E & E Project Number 000699.NY15
March 26, 2004

Subcontractor Name: B+S Technical Services, LLC

1. MOBILIZATION & HEALTH AND SAFETY PLAN

	Unit Price	Est. # Units	Extended Cost
Site-Specific Health and Safety Plan for all subcontractor activities	150	LS	$ 150.
Mobilize drill rig, steam cleaner, equipment, and crew to site (including all setup procedures, decon pad assembly, etc.)	700	LS	$ 700.
Travel costs			$
Level D Personal Protective Equipment			$
Other:			$
Subtotal:			$ 850

2. SUBSURFACE SOIL SAMPLING

	Unit Price	Est. # Units	Extended Cost
Cost per day for rig, equipment, and crew for up to 13 boreholes using continuous split spoon sampling to the water table, then standard sampling to 50 feet bgs.	/day		$

OR

Cost per foot for 4-¼ ID auger drilling with continuous split-spoon sampling	17 /ft	225	$ 3825
Cost per foot for 4-¼ ID auger drilling with split-spoon sampling at 5-foot intervals	15 /ft	525	$ 7875

Cost to drive a hydropunch sampler at let the unit sit for 1/2 before the sample is collected	275 /ea	7	$ 1925.

Updated Exhibit 2
Former Bright Outdoors Site
March 26, 2004

Decontamination and waste handling	150 /hr	10	$ 1500
Open-top 55-gallon drums	50 ea.	7	$ 350
Other:			$

Subtotal: $ 15475

3. Monitoring Well Installation

	Unit Price	Est. # Units	Extended Cost
2-inch ID schedule 40 PVC 0.10-inch slot-screen (10 ft/well)	15 /ft	60	$ 900
2-inch ID Schedule 40 PVC riser (40 ft/well)	15 /ft	240	$ 3600
Threaded 2-inch end caps	5 /ea.	6	$ 30
2-inch J-plug	20 /ea.	6	$ 120
Flush-mount protective casings, installed	150 ea.	6	$ 900
Other:			$

Subtotal: $ 5550

OTHER COSTS
(Please specify any additional items that you feel may be required)

	Unit Cost
Standby time	$ 150 /crew-hr
Rate for upgrading to Level C respiratory protection	$ 20 /crew-hr
Site restoration (assume it will be necessary at a minimum of 5 locations)	700.
Other:	
Other:	

TOTAL NOT TO EXCEED PRICE: $ 21,875.00

Number of days to complete all tasks: 15 +/- 13½

Surveying Services

March 24, 2004

EXHIBIT 1
Scope of Work for Surveying Services
Former Bright Outdoors Site
Johnson City, New York
E & E Project Number 000699.NV15

Project Description
Ecology and Environment Engineering, Inc. (E & E) has been assigned the project of performing a Remedial Investigation/Feasability Study at the above-referenced site for the New York State Department of Environmental Conservation (NYSDEC). The former Bright Outdoors business manufactured PVC pipe and sewer vinyl polyester for the manufacture of outdoor upholstery. The focus of this study is to identify the source and characterize the full extent of 1,1,1-trichloroethane (1,1,1-TCA) and trichloroethene (TCE) contamination that has been identified in this area from previous investigations.

The site is relatively flat lying and is covered mostly by buildings and asphalt, with less than 10% of the ground surface covered by grass. E & E will be installing approximately 15 boreholes and eight monitoring wells at the site. Other on- and off-site environmental sampling will be conducted.

Scope of Work (SOW):
The SOW for this project includes:

- Surveying of horizontal locations and vertical elevations of approximately 15 boreholes, eight on-site monitoring wells, and eight off-site monitoring wells; and

- The establishment of the horizontal location of key site features such as roadways, buildings, and other above ground appurtenances (like manholes covers) identified at the site.

Surveying will be undertaken to establish the following:

- Vertical Control - Elevations, to the nearest ±0.1 feet, will be established for all ground shots. Monitoring well inner casing elevations require a control accuracy of ±0.05 foot and will be reported to the nearest 0.01 foot. Elevations will be determined relative to a National Geodetic Survey (NGS) station monument or New York State (NYS) approved monument. A reference to an existing NGS or NYS monument likely exists from previous efforts conducted at the site. If a monument does not exist within close proximity to the site such that it cannot be referenced within one day's effort, a reference elevation will be assigned based on off-site monitoring well elevations reported in earlier studies.

- Horizontal Control – Coordinates are to be given in the State Plane Central Zone (feet) NAD83 coordinate system to an accuracy of ±0.5 feet. If horizontal control is not available, local control shall be established using building corner coordinates derived from georeferenced aerial images available from the NYS GIS Clearinghouse and a site benchmark installed at the site by the subcontractor.

The subcontractor will record all fieldwork in a clear, legible, and complete manner. The field record will contain a complete description of the nature and location of both new and any existing control points used. The record will include a sketch of the point locations and the monument witness points. The

subcontractor will provide to E & E a copy of the field survey book at the completion of all survey work. The book will contain all field notes, notations, and descriptions, used and compiled during the field survey. Legible photocopies will be accepted. Electronic notebook data is also acceptable as a supplement.

The surveyor's data will be provided in spreadsheet or ASCII text file format identifying the survey point label and it's associated final coordinates and/or elevations. Alternatively, a CAD drawing prepared using AutoCAD 2002 or later version may be provided depicting the relative location of all survey points and their associated elevations.

Provision of these services is to be inclusive of all necessary labor, travel, per diem, equipment, expendables, and other direct charges to complete this SOW as described herein.

Health and Safety Requirements
The subcontractor must comply with the following health and safety stipulations:

- Basic level D personal protective equipment (hard hat, safety glasses, nitrile/latex gloves, and steel-toed boots, etc., as needed) is required. No additional respiratory protection is anticipated.
- The subcontractor will submit to E & E a completed, signed site-specific Health and Safety Plan (HASP) per federal OSHA laws (29 CFR 1910.120) prior to E & E signing the subcontract agreement. Subcontractors are responsible for writing their own HASP and shall contain procedures appropriate for the site conditions based on the information provided. E & E will provide a HASP fact sheet containing site-specific information pertaining to chemical and physical hazards, emergency and site contacts, etc. to assist the subcontractor with preparation of their HASP. E & E will review the subcontractor's HASP for completeness and may ask for modifications if deemed necessary.
- The subcontractor will designate a responsible person for compliance of their HASP.
- The subcontractor will identify potential hazards and provide all personal protective equipment (PPE) and upgrades of PPE as specified in the HASP, and the proper disposal of all spent PPE and contaminated debris.
- Personnel performing site work shall be properly trained, and participating in a medical surveillance program, according to OSHA requirements for performing work at a non-active hazardous waste site.
- No confined space entry will be necessary to complete this work.

Project Schedule:
It is anticipated that fieldwork and surveying will begin in June 2004. E & E will confirm the schedule after receipt of NYSDEC's notice to proceed and will notify the subcontractor. The subcontractor will provide the following deliverables within 15 business days following the fieldwork:

- Electronic file of all final surveyed locations and elevations; and
- One copy of detailed survey field notes.

EXHIBIT 2
Cost Schedule For
Professional Surveying Services
Former Bright Outdoors Site
Johnson City, New York

Costing compliant with NYSDEC Form 2.11(e).

A.Direct Salary Costs

Professional Responsibility Level	Labor Classification	Avg. Reimbursement Rate	Max. Reimbursement Rate	Est. # Hours	Est. Direct Salary Cost (Avg. Reimb. Rate)
Mgt. Engineer	NSPE VIII		$54.21		$0.00
Sr. Engineer	NSPE III		$25.12		$0.00
Engr. Tech.	NSPE I		$17.49		$0.00
Total Direct Salary Costs					$0.00

B. Indirect Costs

Amount budgeted for indirect costs is:

C. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item	Maximum Reimbursement	Unit	Number of Units	Total Estimated Cost
1 Travel				
Overnight Expenses	$ 80.00	Night		$ -
Dinner Only	$ 24.00	Dinner		$ -
Breakfast Only	$ 6.00	Breakfast		$ -
Mileage	$ 0.36	Mile		$ -
Total Travel				$ -
2 Supplies				
Postage	$ 17.00	Lump Sum		$ -
Level D Protection	$ 15.00	Day		$ -
Total Station w/Tripod	$ 146.00	Day		$ -
Miscellaneous Expenses	$ 50.00	Lump Sum		$ -
Reproduction	$ 0.05	Each Copy		$ -
Total Supplies				$ -
Total Travel and Supplies Cost				$ -

D. Fixed Fee

The Fixed Fee is:

LU ENGINEERS
Civil and Environmental

FAX MEMORANDUM

TO: **Richard M. Watt, P.G.**
Ecology and Environment Engineering
Fax No. 716-684-0844

FROM: **James L. Mueller, L.S.**
2230 Penfield Road
Penfield, NY 14526
(P) 585-377-1450 ext. 218 (F) 585-377-1266
(e-mail) jmueller@luengineers.com

SUBJECT: **Surveying Services - Former Bright Outdoors Site**
Johnson City, New York

DATE: **March 31, 2004**

PAGES: **2** (Including Cover)

The attached revised fee schedule is in response to your clarification regarding the HASP.

If you have any questions or need additional information, please contact me at (585) 377-1450, or by e-mail at jmueller@luengineers.com.

Thank you.

Schedule 2.11 (e)

Cost-Plus-Fixed Fee Subcontractors

Former Bright Outdoors Site, Johnson City, NY

I.	NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
	Lu Engineers	Surveying and Field Work	$ 5,057.86

A.Direct Salary Costs

Professional Responsibility Level	Labor Classification	Avg. Reimbursement Rate	Max. Reimbursement Rate	Est. # Hours	Est. Direct Salary Cost (Avg. Reimb. Rate)
Task 1 - HASP					
Mgt. Engineer	NSPE VIII	$ 47.35	$ 49.17	8	$ 378.80
Sr. Engineer	NSPE III	$ 24.52	$ 26.22	0	$ -
Task 2 - Surveying, Horizontal and Vertical Control w/ Locations					
Mgt. Engineer	NSPE VIII	$ 47.35	$ 47.74	4	$ 189.40
Sr. Engineer	NSPE III	$ 24.52	$ 26.22	28	$ 686.56
Technician	NSPE I	$ 16.33	$ 24.52	28	$ 457.24
Total Direct Salary Costs					$ 1,712.00

B. Indirect Costs

Amount budgeted for indirect costs is:	$ 2,174.24

C. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item	Max. Reimb. Rate	Unit	# Units	Total Est. Cost
1 Travel				
Overnight Expenses	$ 80.00	Night	2	$ 160.00
Dinner Only	$ 24.00	Dinner	2	$ 48.00
Breakfast Only	$ 6.00	Breakfast	2	$ 12.00
Mileage	$ 0.34	Mile	400	$ 136.00
Total Travel				$ 356.00
2 Supplies				
Postage	$ 15.00	Lump Sum	2	$ 30.00
Level D Protection	$ 15.00	Day	2	$ 30.00
Level C Protection	$ 50.00	Day	0	$ -
Total Station w/Tripod	$ 146.00	Day	2	$ 292.00
Miscellaneous Expenses	$ 75.00	Lump Sum	1	$ 75.00
Reproduction	$ 0.04	Each Copy	0	$ -
Total Supplies				$ 427.00
Total Travel and Supplies Cost				$ 783.00

D. Fixed Fee

The Fixed Fee is:	$ 388.62

E

Product Quotes

Watt, Richard

From: Chris Fisher [chris.fisher@ashtead-

Sent: Tuesday, March 30, 2004 4:56 PM

To: Watt, Richard

Subject: RE: Rental Quote

Hello again Rick,
The MiniRae would not be the 1st, 2nd, or even 3rd choice PID if the lamp is going to be 11.8eV. The lamps in the Rae units burn out very quickly. We rent the Thermo 580B with that lamp. If you want the FID we have the PhotoVac MicroFID. You can check both units out from our website at www.ashtead-technology.com go into Env. Monitoring, then to Hazardous Waste Investigation.

The Thermo Environmental Model 580 B Organic Vapor Meter. This photoionization detector (PID) can be equipped with either a 10.6 or 11.8 eV lamp. The OVM has dual ranges of (0 to 200 ppm) and (200 to 2,000 ppm). The integral datalogger stores up to 700 data points and records the locations, date, time, and alarm status of each. This data can be sent to a PC for hard-copy reporting via the RS-232 port. Each rental unit includes the 580B OVM meter with your choice of a (10.6 or 11.8 eV) lamp, sample probe, shoulder strap, battery charger, carrying case & manual.

The 580B OVM belongs in the category of an oldie but a goodie. Extremely rugged, the instrument is sensitive and accurate in detecting soil contaminants and industrial leaks, in locating spills and leaking underground storage tanks and in other applications that require on-site detection of organic and inorganic vapors. The 580B holds a signal at maximum concentration in order to isolate a chemical leak or perform headspace analysis.

The optional 11.8 eV lamp is available for detecting compounds with ionization potentials greater than 10.6 eV, including methylene chloride, carbon tetrachloride and others.

TECHNICAL SPECIFICATIONS

Range	Autoranging 0 to 200 ppm with resolution to 0.1 ppm, 200 to 2000 ppm with resolution to 1.0 ppm
Minimum Detectable Limit	0.1 ppm benzene in air matrix
Sensitivity	0.1 ppm benzene on 0 to 200 ppm scale
Detector	Photoionization detector
Sampling Rate	Nominal flow 400 ml/min
Battery	Internally rechargeable with 8 hours operation
Approvals	UL for Class I, Division 1, Groups A, B, C and D
Dimensions (HWD)	6.75" x 5.75" x 10.0"
Weight	6 lbs

The THERMO Model 580B Organic Vapor Meter rents with a sample probe, shoulder strap, battery charger, case and operating manual.

***The rental rates per unit are:**
Thermo Environmental 580 B OVM with a 10.6 eV lamp: $ 296.00/week & $ 740.00/four week rental. Additional days are at $ 74.00/day. A single day of rental is $ 100.00. The two-day rental period is $ 148.00.

Thermo Environmental 580 B OVM with a 11.8 eV lamp: *$ 344.00/week & $ 860.00/four week rental. Additional days are at $ 86.00/day. A single day of rental is $ 100.00. The two-day rental period is $ 172.00.*

Calibration Kit for 580 B OVM with (1) 100 L cylinder of 100 ppm Isobutylene, (1) 6 LPM regulator, & (1) 3 L tedlar bag with tubing. (Purchase Item): $ 240.00 each.

Calibration Kit for 580B OVM with (1) 17 L cylinder of 100 ppm Isobutylene, & (1) matching flow regulator with

tubing. (Purchase Item): $ 100.00.

The PhotoVac MicroFid Flame Ionization Detector (0.1 to 50,000 ppm). Each MicroFid is equipped the rechargeable battery pack, 115 VAC charger, fuel refill hose, membrane filters, multi-tool, sample probe, manual and carrying case. The MicroFid is charged with fuel for approximately 8-10 hours of operation.

A small and lightweight FID with built-in datalogging, the Photovac MicroFID allows trouble-free measurement of soil gases when the response-factor consistency of a FID is mandatory, or when methane must be included in the total reading. The MicroFID is also an appropriate instrument for leak testing, remediation efficiency checks and emergency spill response. UHP hydrogen fuel is available for purchase.

TECHNICAL SPECIFICATIONS

Range	0.1 to 50,000 ppm methane equivalent (two ranges)
Accuracy	Within ± 0.5 ppm or ± 10% actual methane concentration (0.1 to 2000 ppm range)
Detection Limit	0.5 ppm methane
Response Time	Less than 3 seconds, to 90% full scale
Hydrogen Cylinder Discharge Time	Greater than 11 hours
Approvals	Class I, Division 1, Groups A, B, C and D
Analog Output	0 to 1V, full scale
Serial Output	RS-232
Power	Sealed lead-acid battery pack, 15 hours operation
Dimensions (HWD)	7.4" x 3.85" x 17.1"
Weight	8.1 lbs

The PHOTOVAC MicroFID rents with a rechargeable battery pack, 115V AC battery charger, fuel refill hose membrane filters, multi-tool, sample probe, carry strap, download cable, 9-25 pin adapter, case and operating manual.

***The rental rates per unit are:**
PhotoVac MicroFid: $ 368.00/week & $ 920.00/four week rental period.
Additional days are at $ 92.00/day. A single day of rental is $ 125.00. The two-day rental period is $ 184.00.

Optional Purchase items:
Charcoal Filter: $15.00 each

UHP Hydrogen Fuel, 550 L: $ 155.00 each.

Calibration Kit for PhotoVac MicroFid, with 100 L cylinders of, choice of either:
(1) 100 ppm Methane for calibration on the low range or (1) 1% Methane, for calibration on the high range,
(1) Zero Air, (1) 6 LPM Regulator, and (2) 5L Tedlar Bags. (Purchase Item): $ 375.00 each.

100 L cylinders of Methane sell for $125.00 each

Saturday is a rental day.
Shipping and all applicable taxes are additional.
*Availability is subject to prior rental.

If Ashtead Technology Rentals may be of any further assistance please feel free to call.

-----Original Message-----
From: Watt, Richard [mailto:RWatt@ene.com]
Sent: 30 March 2004 22:35
To: Chris Fisher
Subject: RE: Rental Quote

Thanks for the info. I just remembered to check the ionization potential for my contaminants and 1,1,1-TCA has an IP of 11.3 eV. Can I get a larger lamp (>11.3) for the MiniRAE 2000 or do I need to go to a MicroFID or equivalent? Please provide a price for your recommended alternative. Thanks.

Richard M. Watt, P.G.
ecology and environment, inc.
368 Pleasantview Drive
Lancaster, New York 14086
716-684-8060
rwatt@ene.com
www.ene.com

> -----Original Message-----
> **From:** Chris Fisher [mailto:chris.fisher@ashtead-technology.com]
> **Sent:** Tuesday, March 30, 2004 2:56 PM
> **To:** rwatt@ene.com
> **Subject:** Rental Quote
>
> Hi Rick,
>
> Thank you for contacting Ashtead Technology. The RAE MiniRAE 2000 Portable VOC Monitor. This photo ionization detector (PID) is equipped with a 10.6 eV lamp and has a range of 0 to 10,000 ppm. Each rental unit includes the software, download cable, zero filter, probe tip, hydrophobic filter, charger, alkaline battery holder with (4) batteries, manual & case.
>
> ***The rental rates per unit:**
>
> **RAE MiniRAE 2000 with a 10.6 eV lamp (0 to 10,000 ppm):** $ 272.00/week & $ 680.00/four week rental.
>
> Additional days are at $ 68.00/day. The two-day rental period is $ 136.00.
>
> A single day of rental is $ 100.00.
>
> **RAE MiniRAE Calibration Kit** with (1) 100 L cylinder of 100 ppm Isobutylene, (1) 6 LPM regulator, & (1) 3 L Tedlar Bag with tubing. (Purchase Item): $ 240.00 each.
>
> **RAE MiniRAE Calibration Kit** with (1) 17 L cylinder of 100 ppm Isobutylene & (1) matching flow regulator with tubing. (Purchase Item): $ 100.00 each.

The Myron 6P Ultrameter. This unit measures six parameters including pH, ORP, Conductivity, TDS, Resistivity, and Temperature. Each rental unit is equipped with (3) pH buffers, conductivity standard, quick reference card and manual.

***The rental rates per unit are:**

Myron 6P Ultrameter: $ 80.00/week & $ 200.00/four week rental period.

Additional days are at $ 20.00/day. The two-day minimum rental period is $ 40.00.

The GasTech GT-Series for Confined Space Entry. These units, with their built-in sample pump, help ensure worker safety in a variety of applications including the pre-testing of confined spaces, area monitoring of work sites, and testing around manufacturing processes. The GasTech GT-201 Two Gas Monitor for Combustibles (0 to 100% LEL), & Oxygen (0 to 30%). The GT-402 Four Gas Monitor for Combustibles (0 to 100% LEL), Oxygen (0 to 30%), Carbon Monoxide (0 to 300 ppm), and Hydrogen Sulfide (0 to 200 ppm). Concentrations are simultaneously displayed on the LCD. Date/time, alarm setpoints, battery capacity, diagnostic information, and remaining hours of datalogging are automatically displayed and one can easily recall TWA, STEL, and min/max values. Stored data can be viewed on the LCD and later downloaded to a PC or printer (optional data-retrieval kit required). These units will operate 10 hours on a full charge. Both units are equipped with a 10 inch probe with hydrophobic filter, five foot hose, battery charger, carrying strap, manual & carrying case.

***The rental rates per unit are:**

GasTech GT-201 Two Gas Monitor (LEL & O_2): $ 136.00/week & $ 340.00/four week rental period.

Additional days are at $ 34.00/day.

GasTech GT-402 Four Gas Monitor (LEL, O_2, CO & H_2S): $ 200.00/week & $ 500.00/four week rental.

Additional days are at $ 50.00/day.

GasTech Data Retrieval Kit: No Charge. You must request this when placing your order.

Calibration Kit for GT-201 with 100 L cylinders (1) 2.5% Methane, (1) UHP Nitrogen, (2) 3L Tedlar Bags, &

(1) 6 LPM Regulator. (Purchase Item): $ 350.00 each.

Calibration Kit for GT-402 with 100 L cylinders of (1) 1.5% Methane / 18.5% Oxygen / 35 ppm Carbon Monoxide, (1) UHP Nitrogen, (1) 58 L cylinder of 25 ppm Hydrogen Sulfide, (3) 3 L Tedlar Bags, &

(1) 6 LPM Regulator. (Purchase Item): $ 425.00 each.

Saturday is a rental day.

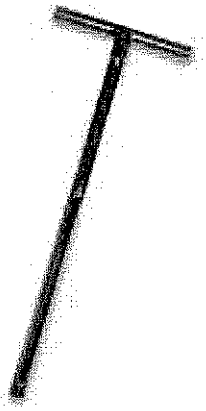
Shipping and all applicable taxes are additional.

* Subject to availability.

If Ashtead Technology Rentals may be of any further assistance please feel free to call. 800-242-3910

Best regards,
Chris Fisher

Forestry Suppliers, Inc.



AMS Soil Probes

Three styles to choose from – regular chrome molybdenum steel, chrome-plated chrome molybdenum steel, or stainless steel. Chrome-plated chrome molybdenum probes are more rust-resistant than regular probes. Stainless steel probes are the most durable, rust-resistant, and are easily decontaminated. All probes have 7/8" outside diameter and heat-treated, wear-resistant bit. Swedged on the bit end and bored to 11/16" diameter – providing ideal clearance for easy sample removal. Nine inch cross handle threads onto each probe. 21" Soil probes retrieve 10"L core sample; 33" soil probes retrieve 13"L core sample. May be used with AMS extensions or hammer attachment.

Item #	Description	Specs	Weight	Price
77450	21" Regular Soil Probe		1.5 lb	**$36.50**
77454	AMS Thread-On Slide Hammer		10.3 lb	**$144.00**
77451	21" Chrome-plated Soil Probe		1.5 lb	**$40.50**
77653	21" Stainless Steel Soil Probe		1.8 lb	**$61.50**
77452	33" Regular Soil Probe		2.0 lb	**$42.50**
77453	33" Chrome-plated Soil Probe		2.0 lb	**$47.00**
77654	33" Stainless Steel Soil Probe		2.0 lb	**$67.50**

Soil Probe Accessories

Item #	Description	Specs	Weight	Price
77581	Optional Soil Ejector for 21" Soil Probes		4.0 oz	**$28.00**
77421	Optional Soil Ejector for 33" Soil Probes		6.0 oz	**$29.00**

CONTACT REPORT

Meeting ☐ Telephone ☒ Other ☐

AGENCY/CO.: In-Situ, Inc.

ADDRESS: Laramie, WY

PHONE NO.: 1-800-446-7488

PERSON CONTACTED: Jason Evans

TO: NV15 File

CC:

FROM: Rick Watt

DATE: 3/30/2004

SUBJECT: Equipment Rental Rates
Bright Outdoors Site

SUMMARY:

Equipment rental rates for slug testing task are as follows:

MiniTroll with 50-ft lead:	$224/wk
Rugged Reader (Pocket PC):	$100/wk

Prices do not include tax and freight.

CONTACT REPORT

Meeting ☐ Telephone ☒ Other ☐

AGENCY/CO.: Geotech Environmental

ADDRESS: Denver, CO

PHONE NO.: 1-800-833-7958

PERSON CONTACTED:

TO: NV15 File

CC:

FROM: Rick Watt

DATE: 3/30/2004

SUBJECT: Equipment Purchase Price
Bright Outdoors Site

SUMMARY:

The following prices were provided for the indoor air and groundwater sampling tasks:

Teflon-lined polyethylene tubing	
1/4" x 3/8"	$1.75/foot
3/8" x 1/2"	$2.15/foot
1.5" double-weighted polyethylene bailers	$130/case of 24
Clear PVC bailers	$71.68/each

Prices do not include tax or freight.

THE STORAGE MALL

Two Locations:

262 Front St., Binghamton, NY
(607) 722-1500

Off 17E Exit 72
Right on Front Street

Off 81N Exit 3
Left (south) on Front Street (Hwy 11)

Minutes from
- Downtown Binghamton
- Routes 81 and 17
- Major Shopping Areas
- SUNY Binghamton

---

621 Field St., Johnson City, NY
(607) 770-1111

Main Street, JC, to Oakdale Road.
Right on Field Street

Minutes from
- Broome County Airport
- Downtown Binghamton
- Routes 81 and 17
- Major Shopping Areas

Rate Card

THE STORAGE MALL

262 Front St., Binghamton, NY 13905
621 Field St., Johnson City, NY 13790

Sizes & Monthly Rates

ALL NEW RENTALS
are charged $10.00 Lock Fee
and $15.00 Lock Deposit

	RATE
5 x 5	$33.00
– 5 x 10	$56.00
5 x 15	$78.00
10 x 10	$92.00
✗ 10 x 15	$115.00
10 x 20	$135.00
10 x 30	$165.00

Heated Units, Larger Units and Annual Rates Available on Request

These rates are effective January 1, 2002

ASHTEAD Technology
RENTALS

FAX MESSAGE			
To:	Mr. Rick Watt Ecology & Environment Lancaster, NY	Fax:	716-684-0844
From:	John Nelson	Phone:	716-684-8060
Date:	5/6/04	Pages:	1 of 5
Subject:			

Thank you for contacting Ashtead Technology Rentals. Attached are the product bulletins for the MIE DataRam Portable Real-Time Aerosol Monitor & DataRam Accessories. The MIE DataRam is designed for monitoring real-time daily work-shift applications for TSP or PM-10 Sampling. The DataRam is not designed to run 24/7 in all-weather applications. The DataRam requires the optional Omnidirectional Sampling Inlet for outdoor ambient monitoring under a variety of wind speeds and directions. The DataRam requires the optional Omnidirectional Sampling Inlet and the PM-10 / PM-2.5 Head for real-time PM-10 Sampling. The optional Temperature Conditioning Heater is used in high humidity environments (typically above 70%) with the Omnidirectional Sampling Inlet and the PM-10 / PM-2.5 Head. The accessories that allow the DataRam to be customized for a particular application are rented in addition to the DataRam. Each DataRam is equipped with the AC adapter/charger, serial download cable, software, filter cassette, manual & carrying case.

***The rental rates per unit are:**

MIE DataRam: $ 520.00/week & $ 1300.00/four week rental period.
Additional days are at $ 130.00/day. The two-day minimum rental is $ 260.00.

MIE Omnidirectional Sampling Inlet: $ 32.00/week & $ 80.00/four week rental period.
Additional days are at $ 8.00/day.

MIE PM-10 / PM-2.5 Head: $ 32.00/week & $ 80.00/four week rental period.
Additional days are at $ 8.00/day.

MIE Temperature Conditioning Heater (requires 115 VAC power): $ 56.00/week & $ 140.00/four week rental.
Additional days are at $ 14.00/day.

Saturday is a rental day.
Shipping and all applicable taxes are additional.
*Subject to availability.

If Ashtead Technology Rentals may be of any further assistance, please feel free to call.

Sincerely,

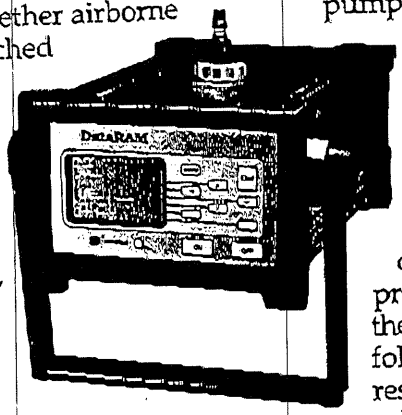
John Nelson

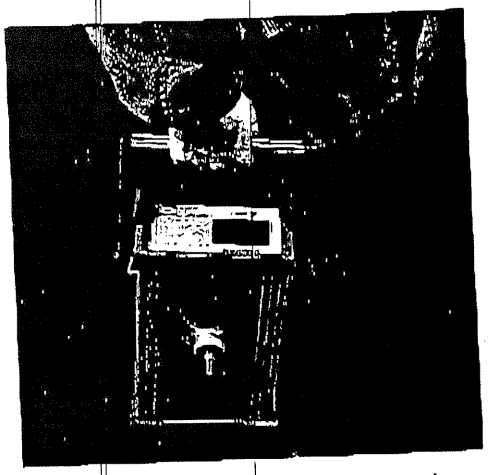
Ashtead Technology, Inc.
1057 East Henrietta Road, Rochester, NY 14623
800-242-3910 ▾ 585-424-2140 ▾ 585-424-2166 (fax)
environmental@ashtead-technology.com
www.ashtead-technology.com
Member of the Ashtead Group plc

The World's Most Precise and Ver

Real-Time Measurement of Airborne Particulate Concentrations

With the DataRAM™, you'll never again have to wait for laboratory results to assess whether airborne pollutants have reached dangerous levels. The DataRAM Real-Time Aerosol Monitor measures mass concentrations of airborne dust, smoke, mists, haze, and fumes and provides continuous real-time readouts. Large-capacity onboard data logging capability lets you save concentration data for future analysis. With optional accessories, the DataRAM can also provide respirable, PM-2.5, or PM-10 correlated measurements.





For exposure sampling or continuous unattended indoor air, ambient, duct, or process monitoring, no other aerosol monitor is as fast, accurate, and easy to use as the DataRAM.

Designed for High Sensitivity

A high-sensitivity nephelometric monitor, the DataRAM samples the air at a constant, regulated flow rate by means of a built-in diaphragm pump. The DataRAM's light scattering configuration is optimized for the measurement of airborne particle concentrations, maximizing the unit's sensitivity. The detected signal is processed by state-of-the-art lock-in circuitry followed by high-resolution digitization, achieving ultimate detectability of atmospheric Rayleigh scattering fluctuations.

The Widest Measurement Range of Any Real-Time Particulate Monitor

In addition to its high sensitivity, the DataRAM has the widest measurement range of any real-time aerosol monitor – from 0.0001 mg/m^3 (0.1µg/m^3) to 400 mg/m^3. With a total span of almost 7 decades, the DataRAM is capable of effectively measuring mass concentrations of airborne particles in industrial and ambient environments ranging from exceptionally pristine to extremely polluted. The instrument can also be used for atmospheric visibility measurements over a wide range of scattering coefficients (0.00015 to 600 km^{-1}). The DataRAM's auto-ranging digital display provides both real-time and time-averaged concentrations.

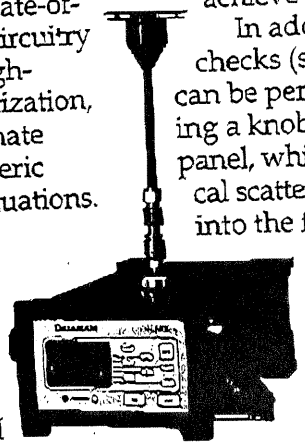
Exceptional Long-Term Stability

The DataRAM incorporates several technological advances which guarantee exceptional long-term stability. Near infrared source output feedback control provides drift-free operation and excellent temperature stability.

For either manual or preprogrammed/automatic zeroing of the monitor, an electronically controlled latching solenoid valve diverts the entire filtered air stream through the optical sensing stage in order to achieve a "zero" air reference.

In addition, instrument span checks (secondary calibration) can be performed simply by turning a knob on the DataRAM's back panel, which inserts a built-in optical scattering/diffusing element into the filtered air stream.

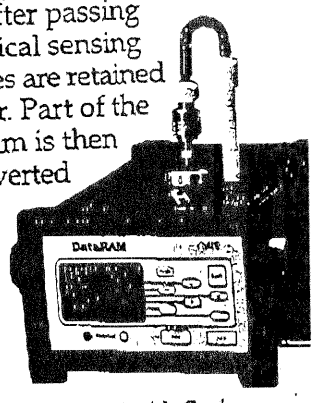
On-screen diagnostic indicators and automatic shut-off for low battery conditions also help ensure the monitor's correct operation and data storage.



DataRAM with Omnidirectional Sampling Inlet for ambient monitoring

Maintenance-Free Operation

After passing through the optical sensing stage, all particles are retained on a HEPA filter. Part of the filtered air stream is then continuously diverted through and

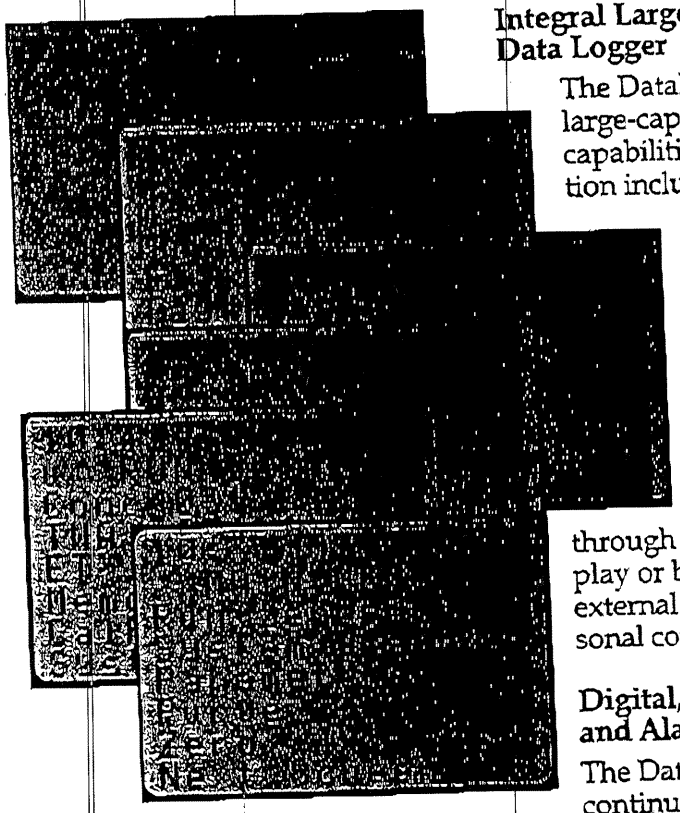


DataRAM with Cyclone Precollector for respirable particle measurements

tile Real-Time Aerosol Monitor

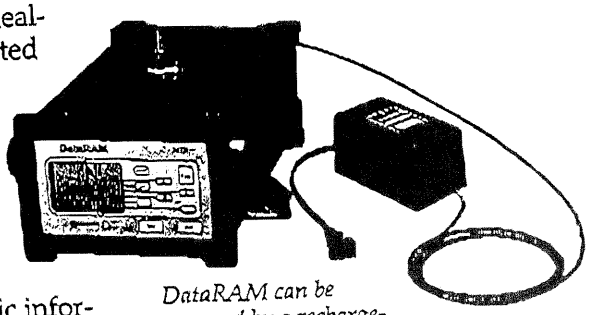
over all optically-sensitive areas (lenses, light traps, etc.) to form a continuous air curtain which protects against particle deposition. This design, in conjunction with a highly reliable diaphragm pump, ensures long-term maintenance-free operation.

A membrane filter (with special holder included) can be substituted for the HEPA cartridge for gravimetric and/or chemical analysis of the particles collected downstream of the sensing stage.



Menu-Driven Information Displays

In addition to the auto-ranging real-time concentration readout, the DataRAM provides users with a variety of informational displays on its 8-line LCD screen. Real-time and date, time-weighted average concentrations, elapsed run times, and other information are easily viewed by selecting the appropriate screen using a scroll-through menu. Operating parameters and diagnostic information displays can also be easily accessed through the menu using only 6 keys on the front of the instrument.



DataRAM can be powered by a rechargeable internal battery or an external power source

Integral Large-Capacity Data Logger

The DataRAM has built-in large-capacity data logging capabilities. Stored information includes time and date, average concentrations, maximum and minimum values over selected periods, STEL concentration, and tagging codes.

Logged information can be retrieved either by scrolling through the DataRAM's display or by down-loading to an external device such as a personal computer or printer.

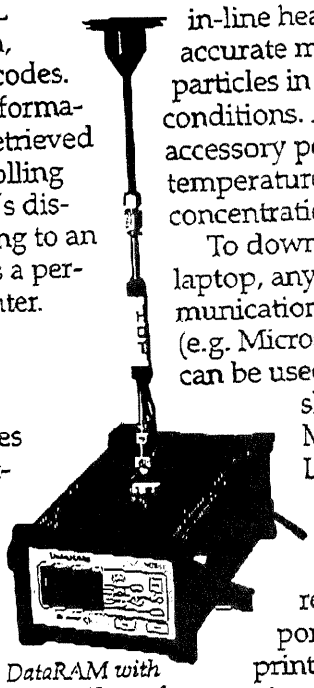
Digital, Analog, and Alarm Outputs

The DataRAM provides continuous digital output (by means of an RS232C data port) as well as analog output, and a switched output for selectable high-level alarm with a built-in audible signal.

Accessories Expand Versatility and Enhance Accuracy

Several optional accessories are available for use with the DataRAM for a wide range of sampling applications. A cyclone precollector allows respirable particle measurements. An omnidirectional air sampling inlet (with or without a PM-10/2.5 head) is available for ambient monitoring. Isokinetic inlet nozzles are available for duct sampling. An in-line heater module allows accurate monitoring of solid particles in high humidity/fog conditions. A sample dilution accessory permits elevated temperature and/or very high concentration monitoring.

To down-load data to a PC or laptop, any standard serial communications software package (e.g. Microsoft Windows™ 3.1) can be used. Standard spreadsheet packages (such as Microsoft Excel™, Lotus™, and others) can easily access and analyze data log files transmitted to a PC for review and archiving. A portable battery-powered printer and cabling accessories are also available.



DataRAM with In-Line Heater for monitoring in high humidity or fog

Specifications

Concentration measurement ranges (auto-ranging)[1]:
0.1 to 999.9 µg/m³ (resolution: 0.1 µg/m³)
1.00 to 39.99 mg/m³ (resolution: 0.01 mg/m³)
40.0 to 399.9 mg/m³ (resolution: 0.1 mg/m³)

Scattering coefficient range: 1.5×10^{-7} to $6 \times 10^{-3} m^{-1}$ (approximate) at λ= 880 nm

Concentration display averaging/updating interval[2]:
1 or 10 seconds

Precision/repeatability over 1 hour (2-sigma)[3]:
± 0.3 µg/m³ for 10 second averaging
± 1.0 µg/m³ for 1 second averaging

Accuracy[1]: ± 5% of reading ± precision

Particle size range of maximum response: 0.1 to 10 µm

Sampling flow rate[2]: 1.7 to 2.3 liters/minute

Sampling flow rate stability (long term)[4]: ± 5% (up to maximum pump loading)

Purge/clean air filter replacement time (typical):
>5 years (@ constant 1 mg/m³)

Alarm level adjustment range[2]: 0.1 µg/m³ to 399.9 mg/m³

Alarm averaging time[2]: real-time (1 or 10 seconds), or STEL (15 minutes)

Data logging averaging periods[2]: 1 second to 4 hours

Total number of data points in memory: 10,000 (each point: average, minimum, and maximum concentrations)

Logged data:

- For each data point: average, minimum, and maximum concentrations; time/date; and data point number
- Run summary: tag number of logged points; start time/date; total elapsed run time; averaging time; data logging averaging period; calibration factor; STEL concentration; STEL occurrence time after start; overall average concentration; overall maximum and minimum concentrations with data point number

Number of data tags: 10

Real time and date data: seconds; minutes; hours; day of month; month and year (with leap year compensation)

Clock accuracy: ± 1 minute/month, or better

Elapsed time range: 1 second to 99 days

Time keeping and data storage duration: >10 years

Readout display: LCD 120 x 64 dots, 15 characters x 8 lines, 57.6 x 38.4 mm active area

Internal battery: rechargeable sealed lead-acid; 6.5 Ahr; 6 V nominal

Operating time with new battery and initial full battery charge[4]:
>24 hours

Operating time with DataRAM charger: continuous and unlimited

Charging input power: 115/230 VAC, 50/60 Hz, 50 VA

External DC power (optional): 6 V @ 3 A

Analog output (auto-ranging)[5]:
0 to 5 V, for 0 to 4 mg/m³
0.5 to 5 V, for 4 to 40 mg/m³
0.5 to 5 V, for 40 to 400 mg/m³

Digital output: RS232C, 9600 baud; 8 data bits, 1 stop bit; parity: none

Alarm output: switched, 1 A @ 10 V maximum, resistance <0.1 Ω

Alarm sound intensity: 90 dB @ 1 m

Fuse: 1 A, fast

Operating environment: 0° to 40°C (32° to 104°F), 0 to 95% RH, noncondensing

Storage environment: -20° to 60°C (-4° to 140°F)

Dimensions: 134 mm (5.28 in) H x 184 mm (7.25 in) W x 346 mm (13.63 in) D

Weight: 5.3 kg (11.7 lbs)

Standard accessories included: universal voltage battery charger, standard HEPA filter cartridge, analytical filter holder, PC communications software disk, digital output cable, carrying case, and instruction manual

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[1] Referred to gravimetric calibration with AC Fine test dust (mmd = 2 to 3 µm, σg = 2.5)
[2] User selectable
[3] At constant temperature
[4] At 25°C
[5] Range identified on LCD screen

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MIE

DataRAM Accessories

A complete line of accessories designed to extend and complement the capabilities and applications of the MIE DataRAM™, the most advanced and powerful real-time particulate monitor available. These modular accessories permit ambient air monitoring over a wide range of wind, temperature and humidity conditions, dilution sampling of high temperature/high concentration streams, respirable particle monitoring, data printout in the field, PC interfacing, etc.

NAME (MODEL NUMBER)	DESCRIPTION	APPLICATIONS
Omnidirectional Sampling Inlet (DR-OSI)*	Annular type sampling inlet designed, for a flowrate of 2 lpm, to provide a smooth transition between horizontal wind borne particle motion and vertical flow into DataRAM monitor.	Ambient monitoring under a variety of wind speeds and directions to ensure representative sampling especially for particles smaller than 10µm.
Temperature Conditioning Heater (DR-TCH)*	An in-line tubular heater without flow obstructions, designed to raise the temperature and reduce the relative humidity of the sampled air stream.	Ambient monitoring at high humidity conditions (typically above 70% RH) in order to evaporate liquid water from airborne particles and/or eliminate fog droplets. Normally used in combination with DR-OSI and DR-PM10/2.5.
PM-10/PM-2.5 Inlet Head (DR-PM10/2.5)*	A modular impactor for 10µm or 2.5µm cutpoint (at 2 lpm) with easily interchangeable nozzles. The DR-PM10/2.5 is designed to be used in combination with the DR-OSI and/or the DR-TCH.	Specifically intended for PM-10 or PM-2.5 ambient particulate monitoring. Typically used in line with the Omnidirectional Sampling Inlet (DR-OSI) which plugs into the DR-PM10/2.5.
Isokinetic Sampling Nozzle Set (RAM-ISN)	Made of stainless steel, it consists of a two-section sampling probe, four (4) interchangeable nozzles covering the range of 750 and 5000 ft/min., tubing, fittings, and carrying case.	To be used to sample isokinetically within ducts and stacks with the DataRAM monitor. Can be used in combination with the DR-TCH to remove water aerosols.
Respirable Cyclone Precollector (DR-RCP10)	Consists of a Dorr-Oliver 10-mm nylon cyclone and fittings for quick connect to DataRAM inlet.	For respirable particle monitoring. Flowrate on DataRAM can be adjusted to provide either "old" 3.5µm or "new" 4.0µm particle cut points.

*Included in Ambient Sampling Inlet Set (model DR-AMB).