New York State Department of Environmental Conservation
Division of Environmental Remediation, Room 260B
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-5861 FAX: (518) 435-8404

bcc: w/ enclosure
D. Tromp
K. Bologna
D. Steenberge, Reg. 5
D. Norvik (2)
bcc: w/o enclosure
M. O'Toole (2)
W. Daigle
W. Demick
D. Weigel
W. Lavigne, Reg. 5
B. Moulhem
Dayfile
KB/mkz
c:\section\ntp.let - 4/24/98

JUL 20 1999

Mr. Matt Wawrowski
Ecology and Environment, Inc.
368 Pleasantview Drive
Lancaster, New York 14086

Dear Mr. Wawrowski:

Re: State Superfund Standby Contract
Work Plan Approval
Work Assignment #D003493-16
Luzerne Road, Site #5-57-010

This is to acknowledge receipt of the work plan dated June 1999 for the above-referenced project. The subject work plan is for the RI/FS at the above-mentioned site. The Department hereby approves the work plan and authorizes Ecology and Environment to proceed with the project.

The following constitutes the budget for this work assignment:

Prior approved work plan budget	$ 0
Approved increase in budget for this work plan	$568,346
Total approved work plan budget	$568,346
Unapproved budget items	$ 0
Total work assignment budget	$568,346

You are authorized to expend only approved budget funds. These funds will not be available for payment until the Office of the State Comptroller (OSC) approves the work plan. This process takes approximately four weeks. Unapproved budget items must be included in a revised work plan budget and receive written Department approval before expenditure.

Your firm is hereby given notice to proceed with the work described in this work assignment. All work described shall be completed according to the schedule in the approved work plan.

If you have any questions or comments, please contact Mr. David Tromp, Project Manager, at (518) 457-5637.

Sincerely,

Michael J. O'Toole, Jr.
Director
Division of Environmental Remediation

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

John P. Cahill
Commissioner

MEMORANDUM

To: Michael J. O'Toole, Jr., Director, Division of Environmental Remediation
From: William Daigle, Acting Director, Bureau of Central Remedial Action
Subject: Luzerne Road Site, Site No. 557010: Remedial Investigation/Feasibility Study (Standby Contract Work Assignment No. D003496-16 with E&E)

Date: July 13, 1999

The attached Work Plan has been reviewed by Bureau of Central Remedial Action staff and revised in accordance with our comments. Over half the budget of $568,346 is devoted to field investigation of the 53 Luzerne Road property and the adjacent PCB containment cell.

The Luzerne Road site is comprised of two contiguous properties. The first parcel, of approximately nine acres, is a level field where transformers were salvaged and their oils spilled upon the grounds. The second parcel is state owned and covers approximately 3 acres. During 1979-1980, the State, acting to reduce exposure pathways from the 53 Luzerne Road site, created a containment cell on the adjoining parcel. All transformer salvage wastes from 53 Luzerne Road and other local properties where transformers were salvaged as well as some 13,000 cubic yards of contaminated soils were emplaced in the clay lined and capped cell. An unknown volume of contaminated soil was left on the 53 Luzerne Road site. No effort was made to remediate site contaminated groundwater at that time.

It is important to note that the USEPA issued a TSCA approval for the construction of the cell and an emergency declaration was issued by the Commissioner of the State Department of Health. The purpose of this action was to limit human exposure from the contaminated PCB soils of the residential properties, as well as the 53 Luzerne Road property. The cell was considered a temporary measure (to stop PCB volatilization and prevent direct contact) and not a permanent disposal site.

Based on water level measurements completed by our O&M Section, the containment cell is believed to be leaking and may be contributing to the groundwater plume along with the oils not previously addressed in the soil cleanup.

The Scope of the RI/FS will address the area to the rear of 53 Luzerne Road including the PCB disposal cell and the off-site residential properties where salvaging occurred. The Remedial Investigation / Feasibility Study will determine current nature and extent of contamination at the site and evaluate remedial alternatives.

A Record of Decision is targeted for June 2000.

We recommend you approve the work plan and issue the Notice to Proceed.

cc: T. Quinn
W. Demick/file
D. Tromp

Work Plan for Remedial Investigations and Feasibility Studies at the Luzerne Road Site, Queensbury, New York

Work Assignment No.: D003493-16

June 1999

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road
Albany, New York 12233

ecology and environment engineering, p.c.
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

Table of Contents

Section **Page**

1 **Introduction** **1-1**

2 **Background Information** **2-1**
- 2.1 Site Location and Description 2-1
- 2.2 Site History 2-5
- 2.3 Work Plan Scope 2-10

3 **Major Tasks and Subtasks** **3-1**
- 3.1 Task 1: Project Work Plan 3-1
  - 3.1.1 Site Visit and Scoping Session 3-1
  - 3.1.2 Detailed Work Plan Development 3-1
- 3.2 Task 2: Remedial Investigations 3-2
  - 3.2.1 Task 2.1: Field Remedial Investigation 3-2
    - 3.2.1.1 Record Search and Contaminant Receptor Identification 3-2
    - 3.2.1.2 On-Site Soil Investigation 3-9
    - 3.2.1.3 Off-Site Residential Soil Investigation 3-13
    - 3.2.1.4 Groundwater Investigation 3-14
    - 3.2.1.5 Surface Water and Sediment Evaluation 3-15
    - 3.2.1.6 PCB Screening Analysis 3-16
    - 3.2.1.7 Investigation-Derived Waste (IDW) 3-16
    - 3.2.1.8 Base Map Development and Site Survey 3-16
    - 3.2.1.9 Post Investigation Survey 3-17
  - 3.2.2 Field Methodology 3-17
    - 3.2.2.1 Base Map Development/Site Survey Procedures 3-18
    - 3.2.2.2 Air Monitoring 3-18
    - 3.2.2.3 Subsurface Soil Sampling by DPT 3-19
    - 3.2.2.4 Containment Cell Investigation 3-19
    - 3.2.2.5 Subsurface Soil Sampling During Monitoring Well Installation 3-19
    - 3.2.2.6 Residential Property Investigation 3-20
    - 3.2.2.7 Monitoring Well Installation, Development, Sampling, and Aquifer Testing 3-20
    - 3.2.2.8 Surface Water/Sediment Sampling 3-26
    - 3.2.2.9 Sample Containers and Preservation 3-29

Section **Page**

3.2.2.10 Sample Labeling, Packaging and Shipping, and Custody 3-30
3.2.2.11 Analytical Program 3-32
3.2.2.12 Decontamination Procedures 3-32
3.2.2.13 Disposal of Investigation-Derived Waste 3-33
3.3 Task 3: RI Report 3-34
3.3.1 Task 3.1: Luzerne RI Report 3-34
3.4 Task 4: Risk Assessment 3-34
3.4.1 Task 4.1: Human Health Risk Assessment 3-34
3.4.2 Task 4.2: Ecological Risk Assessment 3-34
3.5 Task 5: Feasibility Studies 3-36
3.5.1 Development of Remedial Action Objectives 3-37
3.5.2 Development of Remedial Alternatives 3-37
3.5.3 Detailed Analysis of Remedial Alternatives 3-38
3.5.4 Selection of Remedy 3-38
3.6 Task 6: Support Activities 3-39

4 Schedule 4-1

5 Staffing Plan 5-1

6 Subcontracting Requirements 6-1

7 Budget 7-1

8 MBE/WBE Utilization Plan 8-1
8.1 Introduction 8-1
8.2 General MBE/WBE Utilization Strategy 8-1
8.3 Typically Subcontracted Services 8-2
8.4 Criteria for Selection 8-2
8.5 Work Assignment No. 16 Goals 8-3
8.6 Proposed MBE/WBE Utilization-Work Assignment No. 16 8-3

Appendix

A Bids and Quotes A-1

B Quality Assurance Project Plan B-1

C Health and Safety Plan C-1

List of Tables

Table		Page
3-1	Sampling and Chemical Analysis Cost Summary, Luzerne Road Site	3-7
3-2	Soil Boring and Subsurface Soil Sample Summary	3-11
3-3	Geotechnical Soil Analysis Summary	3-12
3-4	Sample Containers, Volumes, Preservation, and Holding Times for Liquid Samples	3-27
3-5	Sample Containers, Volumes, Preservation, and Holding Times for Soil, Sediment, and Solid Waste Samples	3-28
8-1	MBE/WBE Subcontractor Information	8-4

3 Major Tasks and Subtasks

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

3.1 Task 1: Project Work Plan

This task involves the development of this work plan for the Luzerne Road RI/FS. Work plan development is divided into two subtasks: 3.1.1 Site Visit and Scoping Session, and 3.1.2 Detailed Work Plan Development. The work plan is predicated on the Work Assignment No. D003493-16 issued by NYSDEC on February 9, 1999, and subsequent scoping discussions held with NYSDEC representatives.

3.1.1 Site Visit and Scoping Session

E & E met with Dave Tromp, Walt Demick, Eric Hausamann, and James Ludlam in Albany, New York, on February 25, 1999, to discuss site background information and visit the site. Subsequently, E & E visited the Glens Falls Department of Public Works (DPW) and the Town of Queensbury Planning Office to obtain additional background information. Based on a review of the site background information and discussions with NYSDEC, E & E developed a draft Scope of Work (SOW), which was submitted to NYSDEC on March 12, 1999. E & E and NYSDEC held a scoping conference call on March 30, 1999, during which NYSDEC approved the proposed SOW and E & E commenced preparation of this work plan.

DPW
Department of Public Works

SOW
Scope of Work

3.1.2 Detailed Work Plan Development

E & E is submitting this work plan for NYSDEC's review and approval. This work plan addresses the issues discussed during scoping sessions and includes a description and purpose of the major tasks and subtasks, a project schedule identifying milestones and deliverables, a staffing plan, budget with 2-11 forms and supporting documentation, M/WBE utilization plan, subcontractor identification, subcontractor SOW, a Quality Assurance/Quality Control (QA/QC) Plan, and a Health and Safety Plan (HASP).

QA/QC
Quality Assurance/
Quality Control

HASP
Health and Safety Plan

VOC
volatile organic compound

TCL
Target Compound List

TAL
Target Analyte list

PPE
personal protective
equipment

3.2 Task 2: Remedial Investigations

The RI proposed for the Luzerne Road Site will investigate site soils, surface water/sediment, and groundwater to determine whether site contaminants are present in environmental site media and the extent of these contaminants. Investigation subtasks are listed below, along with the corresponding proposed analyses. Figures 3-1 and 3-2 show the proposed subsurface soil sampling grid and the proposed groundwater monitoring well locations at the Luzerne Road Site, respectively.

PCB is the primary site contaminant; therefore, PCB analysis will be included in all environmental evaluations. Also, because background data indicates a volatile organic compound (VOC) was detected during previous remediation activities, VOC analysis will be included on a limited basis. Additional analyses include those needed to provide data necessary for the FS. Due to the unknown contaminants in site groundwater, groundwater from selected existing and all new groundwater monitoring wells installed as part of this RI will be submitted for analysis for the full Target Compound List (TCL)/Target Analyte List (TAL) suite of analyses. Table 3-1 summarizes the proposed sampling and analysis at the Luzerne Road Site.

Note that all field activities are expected to be conducted by personnel wearing Level D personal protective equipment (PPE). Due to the potential presence of PCB in dust, upgrades to Level C may be necessary. In addition, VOC concentrations in the breathing zone will be continuously monitored.

3.2.1 Task 2.1: Field Remedial Investigation

3.2.1.1 Record Search and Contaminant Receptor Identification

Previous environmental site assessments of the site and adjacent areas have been conducted; however, background data presented on the site is not thorough. Therefore, E & E will begin the project by conducting background research to determine useful details concerning site history. Aerial photographs of the site from the 1960s, 1970s, and 1980s will be obtained, if possible, to determine which parts of the site or surrounding area may have been affected, but have not yet been explored. Contact with, and possibly visits to, local and state agencies will be made to obtain historical records on site activities and violations, if any. Interviews with

Table 3-1 Sampling and Chemical Analysis Cost Summary Luzerne Road Site, Glens Falls, NY

			QA/QC Samples						
Analysis	Method	Number of Field Samples	Field Duplicates	Trip Blanks	Rinsate Blank	MS	MSD	MSB	Total Number of Samples
Groundwater - Existing Wells									
TCL Volatiles (VOCs)	CLP 95-1	10	1	2	0	1	1	1	16
TCL Semivolatiles (BNAs)	CLP 95-2	10	1	0	0	1	1	1	14
TCL PCB	8082	10	1	0	0	1	1	1	14
TCL Pesticides	8081B	10	1	0	0	1	1	1	14
TAL Metals (+Mercury)	CLP-M	10	1	0	0	1	1	1	14
Cyanide	CLP-M	10	1	0	0	1	1	1	14
Groundwater - New Wells (6 shallow & 3 deep)									
TCL Volatiles (VOCs)	CLP 95-1	9	1	1	0	0	0	0	11
TCL Semivolatiles (BNAs)	CLP 95-2	9	1	0	0	0	0	0	10
TCL PCB	8082	9	1	0	0	0	0	0	10
TCL Pesticides	8081B	9	1	0	0	0	0	0	10
TAL Metals (+Mercury)	CLP-M	9	1	0	0	0	0	0	10
Cyanide	CLP-M	9	1	0	0	0	0	0	10
Surface Water									
TCL PCBs	CLP 95-3	4	1	0	0	1	1	1	8
Sediment									
TOC	415.1M	12	1	0	0	1	1	1	16
Subsurface Soil - Containment Cell									
TCL Volatiles (VOCs)	CLP 95-1	4	1	1	1	1	1	1	10
TCL PCBs	8082	4	1	0	1	1	1	1	9
pH	9045C	4	1	0	1	0	0	0	6

Table 3-1 Sampling and Chemical Analysis Cost Summary Luzerne Road Site, Glens Falls, NY

Analysis	Method	Number of Field Samples	QA/QC Samples						Total Number of Samples
			Field Duplicates	Trip Blanks	Rinsate Blank	MS	MSD	MSB	
TOC	415.1	4	1	0	1	1	1	1	9
Oil and Grease	9071A	4	1	0	1	1	1	1	9
COD	410	4	1	0	1	0	0	0	6
Subsurface Soil - Geoprobe Confirmation									
TCL PCBs	8082	160	8	0	0	8	8	8	192
Subsurface Soil - Residential Soils									
TCL Volatiles (VOCs)	CLP 95-1	27	2	4	0	1	1	1	36
TCL PCBs	8082	27	2	0	0	1	1	1	32
TOC	415.1M	9	1	0	0	1	1	1	13
Subsurface Soil - Monitoring Wells									
TCL Volatiles (VOCs)	CLP 95-1	9	1	9	1	1	1	1	23
Subsurface Soil - Grid Sampling									
TOC	415.1M	22	1	0	0	1	1	1	26

Key:

ASC = E & E's Analytical Services Center
MS = matrix spike
MSD = matrix spike duplicate
MSB = matix spike blank
PCB = polychlorinated biphenyl
QA = Quality Assurance
QC = Quality Control
SVOCs = semivolatile organic compounds
TAL = Target Analyte List
TC = Target Compound List
TOC = total organic carbon
VOCs = volatile organic compounds

surrounding business owners, the local town historian, and relevant City of Glens Falls employees will also be conducted to obtain additional background information. A search for uses of private drinking water wells will be made. E & E will attempt to identify whether the wells are used as either a primary drinking water source or as a supplemental source for watering lawns or gardens. In addition, uses of nearby surface water will be researched to determine if surface water is used for drinking water downgradient of the site. The search for private wells and surface water usage will be limited to downgradient or downstream locations only.

As a component of the record search, E & E will collect names and addresses of officials and residents who wish to be kept informed of the findings of the RI/FS. This list will be forwarded to, and maintained by, NYSDEC. Some investigation has already been conducted at the Glens Falls Landfill west of the site. Any additional information that may be available from site characterization activities conducted at that site (such as groundwater and soil data) will be pursued. Based on these data, potential receptors of contaminants will be identified. The data may also be used to modify sample quantities and analyses, and will be evaluated with respect to selection of sample locations. All collected data will be summarized and included in the RI report.

To assist in learning about past activities at the site, E & E proposes creating and distributing a questionnaire to local residents. The purpose of this questionnaire is to determine any important facts about the site that previous studies may have overlooked. Data from this questionnaire may be used to select groundwater monitoring well positions, or to identify other areas of sampling which should be included during Phase I activities.

3.2.1.2 On-Site Soil Investigation

To fully characterize the extent of soil contamination that may exist in the area of the secure cell, subsurface soil will be investigated in three efforts: shallow borings on a grid system, soil sampling during installation of groundwater monitoring wells, and soil sampling at the PCB landfill cell. Each effort is described below.

NYSDEC will first establish access permission to conduct the field investigation on all areas of this site to be studied. Site investigation activities will commence following establishment of entry permission.

Shallow Subsurface Soil Sampling by DPT on Grid

PCB presence in soils surrounding the PCB cell will be sampled through a series of shallow soil borings installed according to a grid established over the study area. The grid will extend approximately 300 feet to the east and west of the secure landfill area, 100 feet wide to the north of the cell property, and 300 feet wide to the east of the cell property. Internodal spacing between core holes is planned to be 50 feet. In addition, two east-west positioned lines of coreholes will be installed south of the landfill cell; one adjacent to the fence and one at approximately the midpoint between the cell and Luzerne Road. Internodal spacing along these two lines of coreholes will also be 50 feet. Based on site conditions noted during a site walkover, clearing/grubbing likely will be necessary to facilitate access to this southern area, as well as some monitoring well locations. The proposed grid sampling area is indicated on Figure 3-1.

DPT
direct push technology

Soil borings will be installed into the water table using direct push technology (DPT). A Geoprobe or equivalent unit is expected to be used for the soil boring activity. Each soil boring will be continuously sampled in 3-foot increments from grade to a depth of approximately 2 feet into the water table, if possible, to identify the presence of an LNAPL layer or a smear zone, if either exists. Based on existing local geologic data gathered during subsurface investigations at the Glens Falls Landfill west of the Luzerne Road Site, the average DPT borehole depth is anticipated to be 20 feet.

A composite sample collected over each 3-foot soil interval will be analyzed for PCBs. Most analyses will be performed using a PCB screening testing system. The screening procedure will involve a modified form of the USEPA SW846 Method 8082. Appendix B includes a more detailed description of the screening procedure as well as the laboratory Standard Operating Procedure for completing the screening procedure. Screening data will be supported by submitting 10% of the samples to a NYSDOH-certified laboratory for verification by USEPA Method 8082.

Initially, soil borings will be installed on a 100-foot grid pattern. In those parts of the grid where PCB contamination is identified, nodes on 50-foot intervals will be installed. This will minimize the exploring areas where PCB does not exist.

Based on the size of the exploration area, E & E estimates soil cores will be installed at 202 grid nodes. On average, five soil samples will be collected from coreholes on the north and east sides of the site, as well as from coreholes on one of the southern two rows. E & E estimates seven samples will be collected from grid points positioned on the west side of the cell, and on the second of the two southern rows. Not including a contingency value for unplanned samples and quality assurance/quality control samples, E & E estimated 1,234 soil samples will be collected from the sampling grid and submitted for PCB analysis using a screening test system. Table 3-2 summarizes the borehole and sample quantities.

Table 3-2 Soil Boring and Subsurface Soil Sample Summary

Source	Holes	Lines	Total Nodes	Samples per Hole	Total Number of Samples
Geoprobe					
West Lines	16	2	32	7	224
	14	5	70	7	490
North Lines	8	2	16	5	80
South Lines	11	1	11	5	55
	10	1	10	7	70
East Lines	9	7	63	5	315
Grid Totals			**202**		**1234**
Residential Properties	3	9	27	7	189
Cell Landfill	4	1	4	3	12
Geoprobe Totals			**233**		**1435**
Hand Auger (Drainage Ways)					
Ditches	3	3	9	1	9
Wetland Area	3	1	3	1	3
Hand Auger Totals			**12**		**12**
Drill Rig					
Shallow Wells			6	13	78
Deep Wells			3	20	60
Drill Rig Totals			**63**		**138**
Grand Total					**1585**

Site records indicate VOCs were occasionally emitted from the soil during site excavation and cell construction activities. Therefore, organic vapor presence in soil cores and at the top of the soil borehole will be monitored during boring installation. Soil samples yielding detectable organic vapor readings (which are determined not to result from methane) will be submitted for volatile organic analysis.

All soil cuttings will be containerized on site. These containerized soil cuttings will be placed within the fence of the PCB cell for temporary storage. All coreholes will be backfilled with bentonite chips to a depth of 2 feet from ground surface. Following bentonite hydration, the top 2 feet will be backfilled with bentonite/cement grout.

Containment Cell Subsurface Soil Sampling

Subsurface soil sampling will be accomplished using two methods: DPT borehole installation and soil borings for Shelby tube collection, as explained below.

- **DPT Boring Installation**
  Two DPT soil borings will be installed in the soil containment cell at locations to be determined in the field based on observations and data from surrounding core samples. Three soil samples from each corehole will be obtained for PCB and geotechnical characterization to provide data necessary for evaluating remedial technologies. Table 3-2 summarizes the boring and sample analysis quantities. Geotechnical analyses are listed in Table 3-3. These probe holes will penetrate the existing cap; thus, each will require backfilling with a sealing/plugging material such as cement/bentonite grout and/or bentonite pellets followed by hydration.

Table 3-3 Geotechnical Analytical Summary, Luzerne Road RI, Glens Falls, NY

Analysis	Method Number	Estimated Number of Field Samples
Geotechnical Analysis of Site Soils		
Moisture Content	D2216	5
Humic Content	D2794-87	5
Atterberg Limit	D4318	5
Particle Size: Sieve Analysis	D422	5
Particle Size: Hydrometer	D422	5
Dry Density	D2937-94	5
Specific Gravity	D854	5

- **Soil Boring and Shelby Tube Collection**
  At locations to be determined in the field, soil samples will be collected by use of a Shelby tube sample collection system. At each of three boreholes, the drill rig on site used to install the shallow monitoring wells will be used to bore through soil to the desired depth. The drill rig crew will then collect one Shelby tube sample. Shelby tubes will be submitted to a geotechnical analytical laboratory for dry density analysis. This information will be useful in evaluating remedial alternatives. Sample location depths will be determined based on PCB analysis data of soil collected by DPT, and based on soil type encountered.

Two other Shelby tube samples may be collected at other locations around the site at the discretion of the field team based on soil type and contaminant concentrations.

Soil Sampling During Monitoring Well Installation

During shallow groundwater monitoring well installation, soils will be continuously split-spoon sampled from grade to the desired depth, which is expected to be between 20 and 25 feet below ground surface (BGS). Soil from each of the split-spoon samples from each of six wells will be submitted for PCB analysis using the immunoassay system. If organic vapors are detected during borehole installation, one sample from the depth interval yielding these OVA readings will be collected and submitted for VOC analysis.

BGS
below ground surface

Split spoon samples will also be collected during deep monitoring well installation. However, due to site geologic conditions, split-spoon sampling can be conducted only until the depth at which the first large boulder is encountered.

3.2.1.3 Off-Site Residential Soil Investigation

Background records indicate that possible PCB presence at seven residential properties was remediated through soil excavation in 1979. However, post-excavation sampling was not conducted to verify the completeness of the remediation. In addition, questions remained regarding potential PCB contamination at two additional properties. During this RI field program, subsurface soil at remediation areas at each of these nine residences will be evaluated to more thoroughly determine if the previous remedial efforts were complete.

The field team leader, accompanied by a NYSDEC representative or designee, will visit each of the nine residences at which PCB contamination was previously found or is suspected due to past activities, to learn the approximate location where previous remedial activities occurred. The locations will be flagged using pin flags or wooden stakes. Following marking of all eight residences, DPT will be used at each residence to install three boreholes. Boreholes will be installed from grade to a depth of approximately 20 feet BGS, depending on the depth at which PCB-containing soils may have previously been in place. Soil from each 3-foot depth interval will be submitted for PCB analysis using the PCB screening system. For planning purposes, E & E proposes analyzing seven of the samples from each of three holes installed at each of the nine residences. If organic vapors are detected during borehole installation, one sample from the depth interval yielding these OVA readings will be collected and submitted for VOC analysis. Table 3-2 summarizes the boring and sample analysis quantities.

While intrusive activities are performed on residential properties, work zones will be clearly taped- or roped-off to keep the public at a safe distance during these activities. Air monitoring will also be performed. This will include monitoring for organic vapors, particulates, and explosivity both within the workers' breathing zone and within the work zone. The air monitoring program is described in more detail in Section 3.2.2.2 and Appendix C, Health and Safety Plan.

3.2.1.4 Groundwater Investigation

The groundwater investigation will consist of several facets to evaluate chemical characteristics, flow rate, and existence of contaminant plumes. The discussion below describes the approach for addressing these factors.

Groundwater Monitoring Well Installation and Sampling

E & E plans to install six shallow and three deep groundwater monitoring wells at the site. The proposed well locations are indicated on Figure 3-2. All shallow wells are expected to be installed to a maximum depth of about 25 feet and set in unconsolidated sands. Wells will be constructed of 2-inch inside diameter (ID) polyvinyl chloride (PVC), with a screen positioned across the water table. In each well, soil samples will be collected from grade to the bottom of the borehole or to refusal, whichever is first encountered.

ID
Inside diameter

PVC
polyvinyl chloride

Three deep wells will be paired with three of the shallow wells to explore geologic and water quality conditions at the lowest point in the upper aquifer. Deep wells will be installed from grade to the depth of the first confining layer, which is expected to be bedrock at a depth of approximately 110 to 130 feet BGS. Each well will be constructed of 2-inch PVC, and equipped with a 10-foot screen positioned at the bottom of the borehole.

One of the three deep wells will be installed in a highly-contaminated area on the 53 Luzerne Road property. This well will be constructed with a telescoping design so as not to drag contaminated soil deeper into the aquifer. An upper large-diameter (8 or 10-inch) casing will be installed to a depth of 40 feet BGS. Once grouted into place, the well will be extended to a depth of approximately 120 feet using a 4-inch diameter drill bit. This will seal off the upper zone of the aquifer from the lower zone, minimizing the potential for vertical migration of contaminants through drilling activities.

One round of groundwater samples from each well will be collected; all samples will be submitted for the full TCL/TAL suite of analyses. At the time of sample collection, groundwater pH, temperature, conductivity, and turbidity will be evaluated.

Two rounds of groundwater level data will be scheduled, separated by an adequate time period to assess seasonal effects.

In addition to the six shallow and three deep new groundwater monitoring wells, 10 groundwater monitoring wells currently exist at the site. Each of these wells will be redeveloped. One sample from each of these 10 wells will be collected and submitted for full TCL/TAL analyses.

Hydraulic Conductivity

Hydraulic conductivity of the upper (overburden) aquifer will be evaluated by the use of either a rising head or falling head slug test on each of the wells, as described in the field procedure methodology (see Section 3.2.3). Data from these tests will be presented in the RI report. If water movement rates are sufficiently rapid so as not to yield high quality slug test data, single well drawdown tests will be performed.

3.2.1.5 Surface Water and Sediment Evaluation

In addition to site soils, the adjacent wetland north of the site, and three drainage way channels leading to or from it, will also be explored. If drainage ways contain water, one water sample will be collected from each. Also, one water sample will be collected from the wetland area. All water samples will be submitted for PCB analysis using Method 8082.

Sediment samples will be collected at three points in each drainage channel and at three points in the wetland. At each point, a hand auger will be used to extract soil samples from the upper 6 inches of the sediment. Sediment samples will be submitted for PCB analysis using the PCB screening system. Ten percent of the sediment samples collected will be submitted for PCB analysis using Method 8082 and for total organic carbon analysis.

3.2.1.6 PCB Screening Analysis

Soil and sediment samples will be submitted for a PCB screening analysis using a modified Method 8082 approach as described in Appendix B. The PCB screening will be performed at E & E's ASC. The analysis will be calibrated for Aroclor 1254 or 1016 only. These Aroclors have been targeted based on historical site data. If other PCBs are present or the samples exhibit a weathered pattern, the results will be reported as quantified by the nearest Aroclor. The detection limits will be 0.5 ppm for low level samples. Higher concentration samples will be analyzed at dilution with a high value of up to 2000 ppm. Samples requiring more than one dilution will be reported as extended or greater-than values. Samples with potential sulfur contamination will be cleaned up prior to analysis. The laboratory will provide summary results for all samples as well as copies of the chromatograms.

At least 10% of the samples will be confirmed by Method 8082 with extraction by Method 3550B. The confirmation results will require a one-week turnaround. The screening results and confirmation results will be reviewed weekly by the QA Officer to verify the screening methods are meeting data quality objectives.

IDW
investigation-derived waste

3.2.1.7 Investigation-Derived Waste (IDW)

All soil cuttings generated during soil boring and monitoring well installation will be handled according to procedures outlined in Section 3.2.2.13. If soil cuttings are placed in drums, data from analysis of boring soils will be used to evaluate the contents of the drums so that they may be properly disposed. Drums will be moved to an on-site location as directed by NYSDEC.

3.2.1.8 Base Map Development and Site Survey

Surveying will consist of two separate ground survey tasks: one prior to field investigation activities and one following field investigation activities. Each of these tasks is described below.

Initial Survey

This initial surveying effort consists of two components: establishing a grid and conducting a topographic survey. Initially, a grid containing 202 points around the site will be created to establish Geoprobe soil boring locations. Internodal spacing will be 50 feet. All nodes are to be marked by a wooden lath equipped with a brightly-colored ribbon tied to the top. All laths are to be labeled according to the node labeling system established for the site.

The topographic survey consists of surveying the site and constructing a site topographic map utilizing a 1-foot contour interval. Each contour will be assigned a "Z" elevation within the AutoCAD electronic file for use in digital terrain modeling.

Also included in the topographic survey will be the surveying of selected fixed features. The horizontal and vertical positions of 10 existing groundwater monitoring wells will be established. At each well, ground elevation and top of inner casing are to be measured. Also, the horizontal location of fixed features will be established. The list of features includes, but is not limited to, Luzerne Road, Veterans Road, the perimeter of the wetland, approximately three streams, approximately four telephone poles, the AMG properties building, and the fence traversing the landfill toe.

CAD
computer-aided design

The surveying subcontractor (YEC Engineers) will provide E & E with a draft hard copy map and a computer-aided design (CAD) electronic file of this survey. YEC will establish local horizontal and vertical site control unless existing NGS monumentation is within approximately 0.5 miles of the site.

3.2.1.9 Post Investigation Survey

The second survey effort will involve two components. First, the vertical and horizontal position, ground surface elevation, and top of inner casing elevation of all groundwater monitoring wells installed during this RI will be measured. Second, at each of eight residences, the horizontal control of three Geoprobe borehole locations, the house, nearest street(s) adjacent to the property, and other relevant site features such as driveways and telephone poles will be established. This second survey is to be commenced during the last week of field activities so that the field investigation team can show the survey team the points to be surveyed. Note that this second survey involves entering onto private property; therefore, it will be conducted under the accompaniment and/or permission of NYSDEC personnel only.

Well elevation data collected during this second survey will be added to the first CAD base map. A separate residential area CAD map will be developed.

3.2.2 Field Methodology

The following sections describe the field methodologies for activities outlined in Sections 3.2.1 and 3.2.2.

3.2.2.1 Base Map Development/Site Survey Procedures

A detailed topographic base map of the Luzerne Road Site and immediate vicinity will be developed by an MBE subcontractor (YEC) to E & E. The base map will be prepared by a ground survey. The ground survey will include the establishment of a local site benchmark based on a local USGS benchmark, if one is in close proximity to the site. If a USGS benchmark is not readily available, an arbitrary elevation will be assigned to the site benchmark(s) installed on the site. Additionally, horizontal and vertical controls will be established for a variety of notable site features. All relevant features of the sites and adjacent areas (e.g., site buildings, residences, fences, existing wells, etc.) will be plotted at a scale of 1 inch = 50 feet. Contours will be plotted at the appropriate intervals. The base maps will be produced on a CAD system and will be included in the RI report.

Additional surveying will be performed by the subcontractor in conjunction with the base maps. This additional surveying will include coordinates and elevations for each previously existing and new groundwater monitoring well, sampling location, and other key points. These locations will then be plotted on the base maps. Unsurveyed data (e.g., approximate property lines) developed through the use of current tax maps and the initial site visit will also be indicated on the map.

3.2.2.2 Air Monitoring

Air monitoring will be performed by the Site Safety Officer during drilling and soil boring activities to characterize airborne contaminant levels, including volatile organic vapors, cyanide gas, and particulates. The air monitoring will be conducted for the protection of site workers and the community, and to characterize environmental samples. The HASP 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 and particulates will be measured in the workers' breathing zone; action levels are based on those readings. Oxygen-deficient and combustible atmospheres will not be monitored in the workers' breathing zone. Instead, these monitors will be positioned at a location that will measure a worst-case contaminant level and will provide the earliest possible warning that a hazardous condition may be forming. Also, monitoring for particulates will be performed in the work zone, which will not be the breathing zone all of the time. This method will be more protective, as dust tends to be concentrated at the location where it is generated, rather than equally dispersed along the downwind perimeter of the site. Appropriate actions (initially, evacuation of the immediate work area) will be taken if established action levels are exceeded. Perimeter monitoring will be conducted if the action level is obtained at the work area. All air monitoring results, as well as wind direction and speed (estimates), will be documented in the site log book.

3.2.2.3 Subsurface Soil Sampling by DPT

Subsurface soil samples will be collected at the Luzerne Road Site in three parts of this RI: in the grid, at the containment cell, and on residential property. The samples will be collected using the equipment and procedures described below.

- Decontaminated stainless steel spoon;
- Glass jars;
- Appropriate sample containers (see Table 3-3); and
- Cooler with ice.

Each soil core will be laid on sheet plastic for extraction from the sampling device. Once extracted, the core will be scanned with an OVA to evaluate the presence and concentration of organic vapors. A general description of the soil core will be noted in the logbook. If organic vapors are present, a portion of the core will be used to fill two 40-ml VOA vials. The filled sample containers will be placed on ice. The remainder will be homogenized, and a portion will be used to fill one 4-oz jar. The jar will be labeled and submitted for PCB screenings and analysis.

3.2.2.4 Containment Cell Investigation

DPT soil boring in the containment cell will be conducted as described above. Shelby tube collection will be conducted by the subcontracted drilling team. All Shelby tubes collected are to be sealed with wax, labeled as to their orientation, and shipped promptly to the geotechnical laboratory for analysis.

3.2.2.5 Subsurface Soil Sampling During Monitoring Well Installation

Subsurface soil sampling during well installation will be conducted via split spoon sampling. For each split spoon collected, the following sampling equipment and procedures will be used:

- Decontaminated stainless steel spoon;
- Glass jars;

- Appropriate sample containers (see Table 3-3); and
- Cooler with ice.

Once extracted from the hole, the split spoon sampler will be laid on sheet plastic and opened to expose the soil core. The core will be scanned with an OVA to evaluate the presence and concentration of organic vapors. A description of the soil core will be noted in the logbook. If organic vapors are present, a portion of the core will be used to fill two 40-ml VOA vials. The filled sample containers will be placed on ice. The remainder will be homogenized, and a portion will be used to fill one 4-oz jar. The jar will be labeled and submitted for PCB screening analysis.

3.2.2.6 Residential Property Investigation

Subsurface soil sampling by DPT boring installation at residential properties will be conducted as described above under Section 3.2.2.3. Soil boring locations will be marked for future surveying by the surveying team.

3.2.2.7 Monitoring Well Installation, Development, Sampling, and Aquifer Testing

Nine monitoring wells will be drilled, installed, developed, sampled, and aquifer tested at the Luzerne Road Site (see Figure 3-2). The monitoring wells are expected to be drilled and installed into overburden. Methods for drilling and installing both the shallow and deep overburden monitoring wells are described below.

Monitoring Well Installation

OD
outside diameter

The boreholes for the shallow overburden or bedrock wells will be advanced through the overburden using 4.25-inch ID hollow-stem augers. Continuous split-spoon sampling will be conducted at each well. The samples will be collected using a standard 2-inch outside-diameter (OD) split spoon driven by a 140-pound drill rig hammer. If a hydraulic hammer is not used, blow counts will be recorded for each split-spoon sample. Drill cuttings generated during drilling will be handled according to procedures outlined in Section 3.2.2.13.

Two types of deep monitoring wells will be installed: telescoping and non-telescoping. For each of the three deep overburden wells, a 3.25-inch ID auger and continuous split-spoon sampling will be used to drill from grade to the depth at which split-spoon sampler refusal is reached. These small-diameter augers will then be extracted from the borehole. In the one telescoping casing, either an 8.25- or 10.25-inch auger will be used to drill to a depth of 40 feet. Depending on the auger size used, either 6- or 8-inch ID carbon steel casing will then be inserted into the hole and grouted in place. The grout will be allowed to set a minimum of 24 hours prior to continuing well drilling. The remaining overburden will then be drilled using either 4- or 6-inch ODEX drilling equipment until bedrock is encountered. This is expected to be at a depth of approximately 110 to 130 feet. For the two non-telescoping wells, a 4- or 6-inch ODEX drilling system will be used to drill from grade to bedrock. Augers and drilling equipment will be decontaminated using high pressure steam.

The shallow wells will be constructed using 10 feet of 2-inch Schedule 40 PVC machine-slotted screen (0.010-inch slot) which will be installed from the bottom of the hole up to 2 feet above the top of the water table, followed by 2-inch ID Schedule 40 PVC riser casing. The deep monitoring wells will be constructed similarly. However, their screens will be completely submerged for all nine wells, and a sand filter pack composed of chemically inert, well-sorted, coarse-grained sand will be placed from the bottom of the hole to 1 to 2 feet above the top of the screen. A 2-foot-thick bentonite pellet seal will be placed above the sand, followed by Portland cement/5% bentonite grout to surface. The wells will be completed either 2 feet aboveground surface with locking, protective steel casings set in concrete drainage pads, or flush to ground surface (see Figures 3-3 and 3-4). The necessity for flush mount wells will be determined in the field. Vented PVC well caps will be placed on each well casing for wells completed aboveground, and water-tight caps will be placed on flush mount wells. The deep overburden well scenario is similar. However, the screen is set at the bottom of the hole, entirely within the aquifer.

Monitoring Well Development

Following construction of new wells, each new and existing well will be developed using PVC or stainless steel bailers and/or submersible pumps until pH, specific conductance, and temperature have stabilized and turbidity of the discharge is 50 nephelometric turbidity units (NTUs) or less. The wells will initially be surged in order to draw fine sediments out of the sand pack and into the well for removal. If, after significant effort, substantial improvement has been noted through the development process but the proposed goal of 50 NTUs has not been met, the E & E and NYSDEC project managers will be notified. Development completion will then be based upon mutual agreement between E & E and NYSDEC. Development water from the wells will be handled according to methodology described in Section 3.2.2.13.

NTUs
nephelometric turbidity units

Groundwater Sampling

Groundwater samples will be collected from the nine new and 10 previously-existing groundwater monitoring wells at the Luzerne Road Site. The 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.

Purging and sampling will be accomplished using disposable polyethylene bailers on new polypropylene line. Prior to purging, static water levels will be measured to within ±0.01 foot in each well and piezometer. All wells will be purged of three to five times the volume of water standing in the well. Purged water will be containerized in the same manner as the development water. Temperature, pH, specific conductance, and turbidity will be measured and recorded during purging. If 50 NTUs cannot be obtained after well purging, the well(s) will be allowed to settle no longer than 24 hours before sampling the metals portion. Upon returning to the well, E & E will remeasure and record the turbidity. No additional purging will be performed. If 50 NTUs cannot be achieved, the E & E and NYSDEC project managers will be consulted. Turbidity at the time of sampling will be noted on the chain-of-custody documents. No field filtering will be performed. The groundwater samples will be tested for the parameters outlined in Table 3-1.

Aquifer Testing

Upon completion of monitoring well installation, development, and sampling, aquifer testing will be performed on the nine new wells. The procedure will consist of slug injection/withdrawal tests to determine the hydraulic conductivity and transmissivity of the soils in the immediate vicinity of each well screen. This will be accomplished by recording water level changes (±0.01 foot) by a downhole data logger following the injection (falling head test) and withdrawal (rising head test) of a solid slug or slug of water to and from the well being tested. If the well screen and sand filter pack are completely submerged in the aquifer, a falling head test will be performed. However, if the well screen or filter pack is partially above the water table, then a rising head test will be performed because any water displaced in the well by slug injection will favorably saturate the unsaturated portion of the sand pack, resulting in erroneous readings.

02:000699_QQ01_00_01_90-B0148
Fig 3-3.CDR-4/23/99-GRA

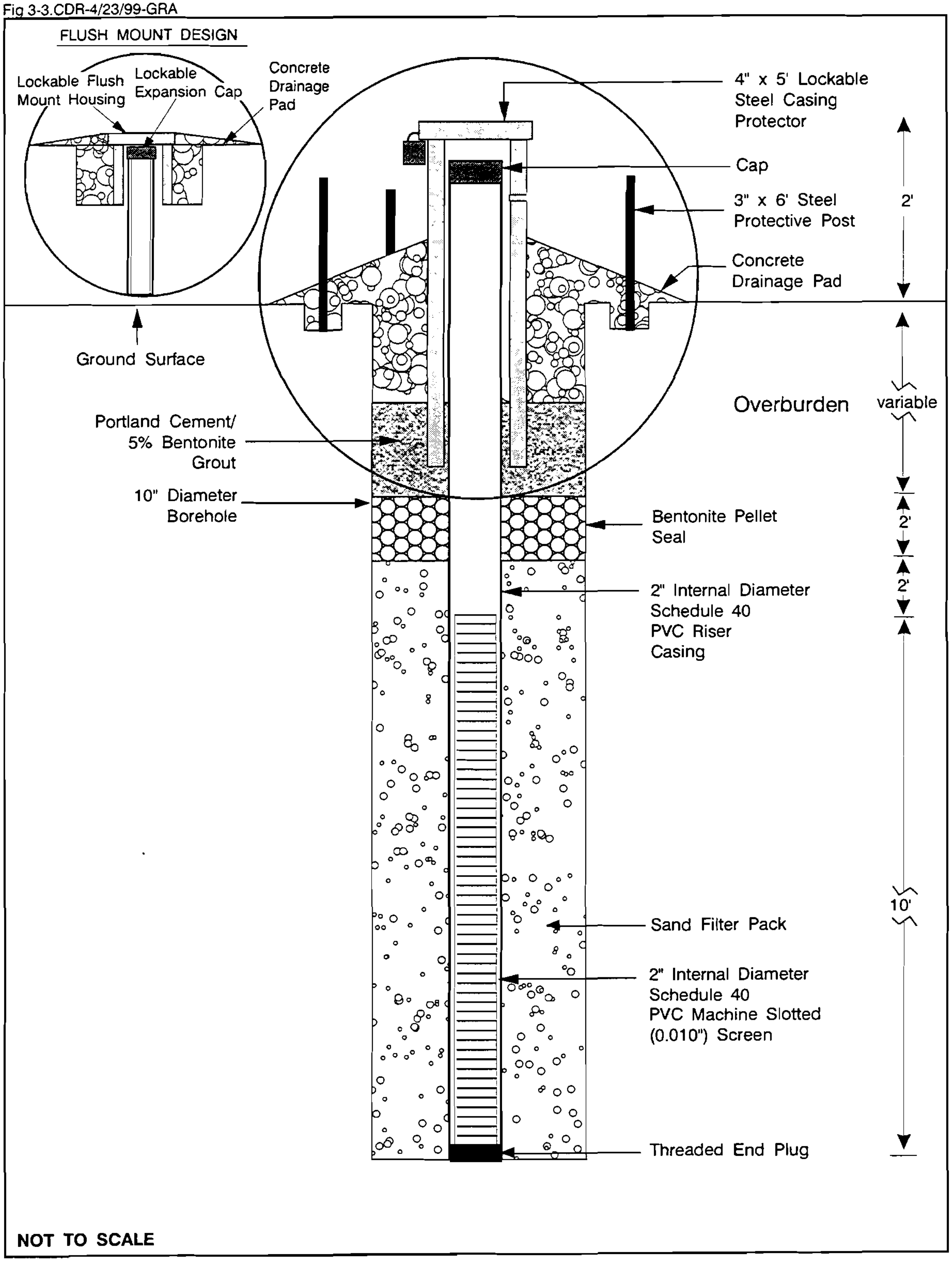


Figure 3-3 PROPOSED CONSTRUCTION FOR SHALLOW OVERBURDEN MONITORING WELLS

02:000699_QQ01_00_01_90-B0148
Fig3-4.CDR-4/23/99-GRA

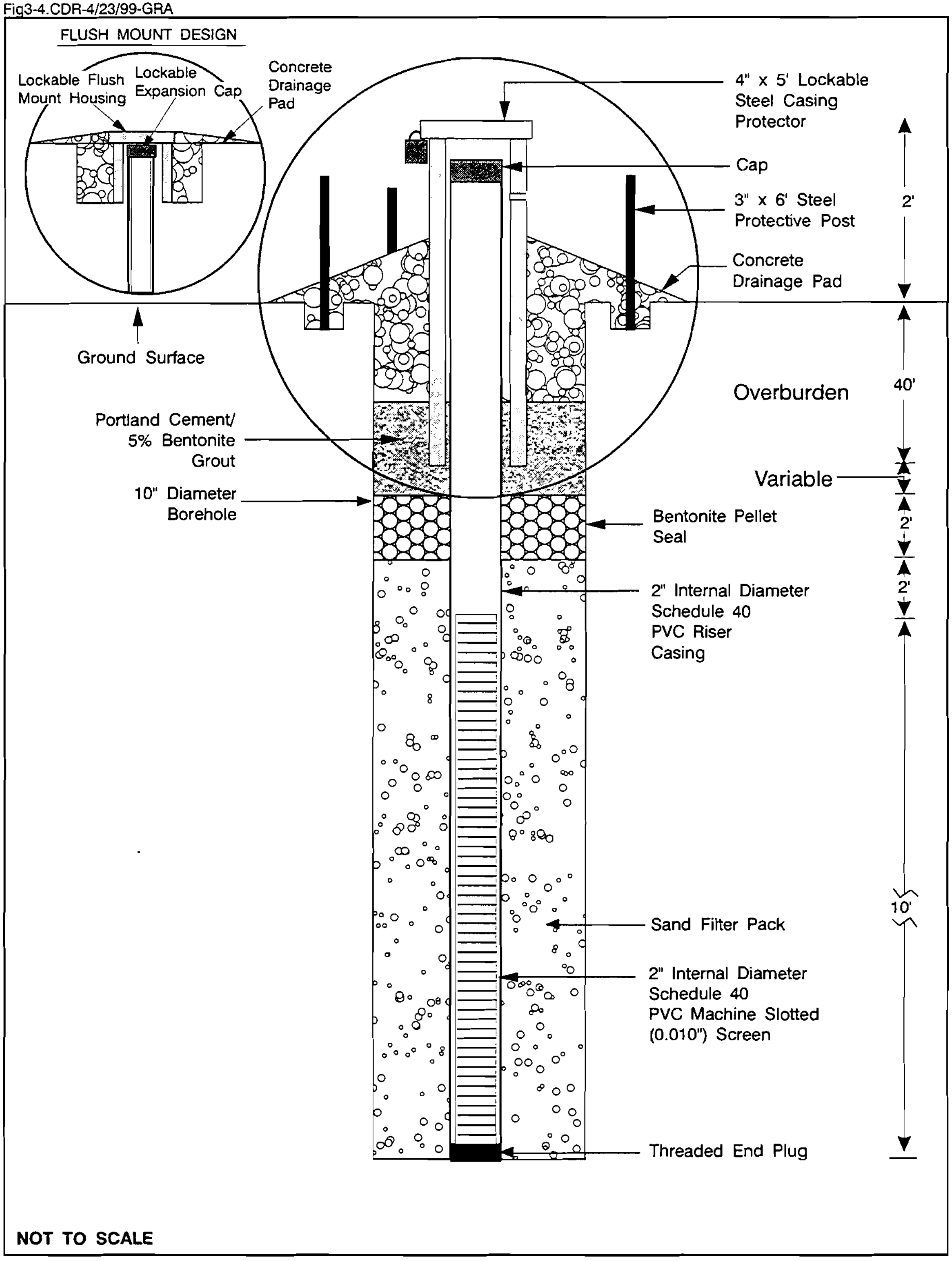


Figure 3-4 PROPOSED CONSTRUCTION FOR TELESCOPING OVERBURDEN GROUNDWATER MONITORING WELL

The tests will be performed using the equipment and methodologies described below.

Equipment and Supplies

- Water level indicator;
- Burgh Schoenenberger Loggerhead data logger, or equivalent;
- Solid slug of known volume;
- Bailer and dedicated nylon rope;
- Large capacity funnel;
- Clean potable water; and
- Laptop computer.

Slug Test Procedures

Falling Head Test

- Measure and record static water level in well;
- Determine if falling head test is applicable (i.e., screen and sand pack must be fully submerged in the aquifer). If not, then perform rising head test only (see below);
- Spray loggerhead with clean water to dislodge any solids in holes at the tip;
- Insert loggerhead in well several feet below the surface of the water table to allow clearance for the solid slug to be inserted (if used). Do not allow the unit to touch the bottom of the well because solids may plug transducer tip;
- Allow well to equilibrate to the initial static water level; and
- Rapidly insert a solid slug (by lowering the slug into the well with dedicated nylon rope until it is completely submerged) or inject several gallons of clean water into the well (by pouring the water from a bucket into a large funnel). Begin recording the falling head with the loggerhead data logger as soon as the slug is completely in the well. If a solid slug is used, be careful not to lower the slug into the transducer probe. Record the

falling head until it has returned to at least 90% of its initial static level or until no significant change in head is recorded within one hour.

Rising Head Test

- Measure and record static water level in well;
- If the loggerhead is not already in the well from the falling head test, spray the transducer with clean water to dislodge any solids in holes at the tip;
- Insert the loggerhead in well several feet below the surface of the water table to allow clearance for the solid slug to be inserted. Do not allow the unit to touch the bottom of the well because solids may plug the transducer tip;
- If the solid slug is not already in the well below the water table from the falling head test, insert the slug or bailer in the well, and allow the well to equilibrate to the initial static water level; and
- Rapidly remove the slug or bailer and begin recording the rising head with the loggerhead as soon as the slug is completely out of the water column within the well. Record the rising head until it has returned to at least 90% of its initial static level or no significant change in head is recorded within one hour.

3.2.2.8 Surface Water/Sediment Sampling

Surface water samples will be collected from the wetland and wetland tributaries, if present. If no surface water is present at the time of sampling or upon completion of all field activities at the site, only the sediment portion at that sampling location will be collected. The samples will be collected using the equipment and procedures described below.

Surface Water Sampling

The surface water sample will be collected at the same location as the sediment sample. The surface water sample will be collected first, followed by the sediment sample, to minimize turbidity. Equipment and sampling procedures are described below.

Equipment and Supplies

- pH, specific conductivity, temperature, and turbidity meters;

mL
milliliter

- Dedicated stainless steel or glass beakers (500 milliliter [mL] minimum volume), or 8-oz glass jars;
- Appropriate sample containers and sample preservation solutions (see Table 3-4); and
- Cooler with ice.

Surface Water Sampling Procedures

- Submerge the appropriate container into the water. Submerge a decontaminated beaker, glass jar, or the appropriate sample container into the water. If a beaker or glass jar is used, slowly pour the contents into the appropriate sample bottles.
- Add preservatives (if necessary) as indicated in Table 3-4, and label the sample containers as specified in Section 3.2.2.10.
- Measure pH, temperature, specific conductance, and turbidity.

Table 3-4 Sample Containers, Volumes, Preservation, and Holding Times for Liquid Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time[a]
Purgeable (volatile) organics	40-ml glass vial with teflon-backed septum	Three; fill completely, leaving no head space	Cool to 4°C (ice in cooler)[c]	7 days
Extractable organics (BNAs) and pH	80-ounce glass amber bottles with teflon-lined caps	One; fill completely	Cool to 4°C (ice in cooler)[c]	Must be extracted within 5 days; analyzed within 40 days
Pesticides/PCBs	80-ounce glass amber bottles with teflon-lined caps	One; fill completely	Cool to 4°C (ice in cooler)	Must be extracted within 5 days; analyzed within 40 days
Metals (excluding hexavalent chromium) and Hardness	1-liter washed polyethylene bottle with polyethylene-lined caps	One; fill completely	Nitric acid to below pH 2 (approx. 1.5 ml concentration HNO_3 per liter), cool to 4°C (ice in cooler)	6 months[b]

Table 3-4 Sample Containers, Volumes, Preservation, and Holding Times for Liquid Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time[a]
Cyanide	1-liter polyethylene bottle with polyethylene-lined caps	One; fill completely	Sodium hydroxide to pH 12 and cool to 4°C (ice in cooler)	12 days or 24 hours, if sulfide present

Note: All sample bottles will be prepared in accordance with EPA bottle washing procedures and QC-tested before use.

[a] Holding time is based on the time from verified time of sample receipt at the laboratory.

[b] Maximum holding time for mercury is 26 days.

[c] If residual chlorine is present in drinking water from residential taps, sodium thiosulfate will be added to the sample: 3 mg per 40-mL vial, and 80 mg per liter (189 mg per 80-ounce bottle).

Key:

BNAs = Base neutral acid extractables.
HNO_3 = Nitric acid.
PCBs = Polychlorinated biphenyls.

- Place samples in a cooler maintained with ice at 4°C. Ship the cooler to the laboratory via overnight delivery with chain-of-custody documents prepared in accordance with the procedure specified in Section 3.2.2.10.

Sediment Sampling

Equipment and Supplies

- Dedicated stainless steel spoons or trowels;
- Appropriate sample containers (see Table 3-5); and
- Cooler with ice.

Table 3-5 Sample Containers, Volumes, Preservation, and Holding Times for Soil, Sediment, and Solid Waste Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time[a]
Purgeable (volatile) organics[c]	40-ml glass vial with teflon-backed septum	Two; fill completely, leaving as little head space as possible	Cool to 4°C (ice in cooler)	7 days

Table 3-5 Sample Containers, Volumes, Preservation, and Holding Times for Soil, Sediment, and Solid Waste Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Maximum Holding Time[a]
Extractable organics (BNAs)	8-oz. glass jar with teflon-lined cap	One; fill completely	Cool to 4°C (ice in cooler)	Must be extracted within 5 days; analyzed within 40 days
Pesticides/ PCBs				Must be extracted within 5 days; analyzed within 40 days
Metals[c]				6 months[b]
Cyanide				12 days or 24 hours, if sulfide present
TOC				26 days
PCB Screening	4 oz. clear glass	One; fill completely	None	Extracted within 48 hours from sampling

Notes: All sample bottles will be prepared in accordance with EPA bottle-washing procedures and QC-tested before use. Additional samples also will be taken for geotechnical analyses.

[a] Holding time is based on the time from verified time of sample receipt at the laboratory.

[b] Maximum holding time for mercury is 28 days. For inorganic analyses, technical requirements for sample holding time have been established for water matrices only. However, they also are suggested for use as guidelines in evaluating soil/sediment data.

[c] Specified requirements would also apply for this type of TCLP analysis.

Key:

BNAs = Base Neutral Acid Extractables.
PCBs = Polychlorinated biphenyls.
TOC = Total organic carbon.

Sediment Sampling Procedures

- Using a stainless steel spoon or trowel, collect samples to be analyzed for volatile organics first, if an OVA reading is detected, followed by the remainder of the sample parameter portions. All miscellaneous debris is removed first.
- Place samples in a cooler maintained with ice at 4°C. Ship the cooler to the laboratory via overnight delivery with chain-of-custody documents prepared in accordance with procedures specified in Section 3.2.2.10.

3.2.2.9 Sample Containers and Preservation

The volumes and containers for the liquid and solid samples are presented in Tables 3-4 and 3-5, respectively. Sample preservation and holding time requirements also are presented in these tables. For additional information pertaining to sampling requirements

QAPP
Quality Assurance Project Plan

ASC
Analytical Services Center

DOT
United States Department of Transportation

POC
point of contact

(including QA/QC), see the Quality Assurance Project Plan (QAPP) in Appendix B of this work plan. Pre-washed sample containers will be provided by E & E's Analytical Services Center (ASC) and prepared in accordance with EPA bottle washing procedures.

Samples will be stored on ice pending delivery to E & E's ASC. In addition, all water sample portions to be submitted for metals analysis will be preserved by adding concentrated nitric acid until the sample pH is lowered to 2.0 standard units or less. All water sample portions to be submitted for cyanide analysis will be preserved by adding concentrated sodium hydroxide until the sample pH is raised to 12.0 standard units or higher. Sample pH will be checked in the field by pouring a small amount of the previously preserved sample into a separate container and checking the pH using indicator paper. Preservation procedures will be documented in the field logbooks. If residential tap water samples are chlorinated, the VOC portion will be preserved with 3 mg of sodium thiosulfate per 40-mL vial and 80 mg per liter (189 mg per 80-oz bottle).

3.2.2.10 Sample Labeling, Packaging and Shipping, and Custody

Sample Labeling

All samples will be assigned a unique sample identifier. Labels for each sample container will contain the sample identifier, date of sample collection, analytical parameters, and type of preservation used. Any change in the label information prepared prior to the sample collection will be initialed by the sampler.

Sample Packaging and Shipping

Sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. The bags will be placed in coolers in such a manner as to eliminate the chance of breakage during shipment. 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 E & E's ASC in Lancaster, New York, by an overnight courier service. Arrangements will be made with the E & E ASC point of contact (POC) for samples that are to be delivered to a laboratory on a weekend and for water samples requiring hexavalent chromium analysis, so that holding times are not compromised.

E & E ASC POC:

Mr. William Howard
Ecology and Environment Analytical Services Center
4493 Walden Avenue
Lancaster, NY 14086
716/685-8080

Sample Custody

A sample is considered to be in custody under the following situations:

- The sample is directly in your possession,
- The sample is clearly in your 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 of the sample container or cooler. The seals will be signed or initialed and dated by field personnel when affixed to the container and cooler.

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

3.2.2.11 Analytical Program

Table 3-1 provides a summary of sampling and analysis for the Luzerne Road Site. Analysis of all samples collected during the RI/FS will be subject to the NYSDEC Contract Laboratory Program (CLP) as defined in the Analytical Services Protocol (ASP) of December 1995. All analyses will be performed by E & E's ASC. Data generated by E & E's ASC will undergo internal data validation and independent data validation by a third party data validator (Chemworld Environmental, Inc.).

CLP
Contract Laboratory Program

ASP
Analytical Services Protocol

TSP
trisodium phosphate

3.2.2.12 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 drilling and DPT soil boring equipment will be decontaminated prior to drilling or boring, after drilling each monitoring well or installation of each boring, and after the completion of all drilling and soil boring. Special attention will be given to the drilling assembly, augers, split spoons, and the backhoe bucket. Split spoons will be decontaminated prior to and following each use. Decontamination of drilling will consist of:

- Removal of foreign matter, followed by
- High-pressure steam cleaning.

Split spoons and other non-disposable sampling equipment will be decontaminated using the procedure above or by the following procedure:

- Initially clean all foreign matter;
- Scrub with brushes in trisodium phosphate (TSP) solution;
- Rinse with deionized water;
- Rinse with 10% nitric acid;
- Triple-rinse with deionized water; and
- Allow to air dry.

A temporary decontamination area will be established in the secure area on each site using heavy plastic sheeting as a pad. The primary purpose of the pad will be to decontaminate heavy equipment, such as the drill rig and backhoe. Fluids generated during decontamination will be handled according to procedures outlined in Section 3.2.2.13.

3.2.2.13 Disposal of Investigation-Derived Waste

TAGM
New York State Technical and Administrative Guidance Memorandum

At least four types of IDW will be generated: drill cuttings, drill decontamination water, groundwater, and PPE. Waste streams will be segregated and not mixed. Drill cuttings from well and boring installations will be containerized on site and disposed of in accordance with New York State Technical and Administrative Guidance Memorandum (TAGM) HWR-89-4032 issued by NYSDEC on November 21, 1989. A registry of all drums, a description of their sources and contents, and documentation of the analytical results from tests on the containerized solids will be provided to the client.

Investigation-derived soils and water will be field-screened using visual inspection and an OVA to determine initially whether these wastes are contaminated. If non-volatile contamination is visually noted, the IDW will be placed in 55-gallon drums. Drill cuttings that are not contaminated (based on PCB screening analyses) will be spread on the ground, if possible. If clean cuttings cannot be placed at the well location, they will be drummed. If contaminated soils are identified by field screening, these soils will be containerized in DOT-approved 55-gallon drums.

All groundwater brought to the surface via sampling, well development, or well purging will be containerized in DOT-approved 55-gallon drums.

All drummed cuttings and water will be stored in a secure area on site until analytical results for the respective sites are received. The contents of drums from areas suspected or determined to be contaminated based on PCB screening analytical results may need further characterization to determine the suitability of subsequent disposal methods. If necessary, sampling and disposal of contaminated materials will be performed by the contractor under a contract modification.

All expendable materials generated during the investigation (including, but not limited to, Tyvek clothing, gloves, spoons, and plastic sheeting from the decontamination pad) will be placed in 55-gallon drums and stored at a secure location on site. All drums containing IDWs will be labeled with the type of generated material, site name, location where the material was generated, and date when the material was generated. E & E will not be responsible for waste disposal unless requested by NYSDEC under a separate agreement.

Personal decontamination is discussed in the HASP, which is presented in Appendix B of this work plan.

3.3 Task 3: RI Report

3.3.1 Task 3.1: Luzerne RI Report

An RI report detailing the site background data compiled during the investigation, investigation procedures undertaken, and data interpretation will be published. It will also include a photolog documenting site activities and findings, and both shallow and deep groundwater monitoring well soil boring logs. Data usability summary reports, as well as a general data quality review comparing PCB screening data with PCB verification sample data. The document will also contain both a human health and an ecological risk evaluation.

The RI report will screen the data to present a preliminary evaluation as to which areas may be considered hazardous and may require remedial action. Where contamination is detected, E & E will identify, present, and discuss routes of migration to potential human and environmental receptors and predicted fate of the contaminants.

3.4 Task 4: Risk Assessment

3.4.1 Task 4.1: Human Health Risk Assessment

In accordance with direction from NYSDEC, no formal quantitative risk assessment will be performed. Where contamination is detected, E & E will identify, present, and discuss both the routes of migration to potential human and environmental receptors and the predicted fate of the contaminants for both current and expected future site conditions. It is anticipated that adequate assessment of potential risks can be made through reference to available screening guidances such as NYSDEC's TAGM 4046 and EPA's Soil Screening Levels (SSLs) and New York State Class GA groundwater criteria.

SSL
Soil Screening Level

3.4.2 Task 4.2: Ecological Risk Assessment

As part of the RI Report, E & E will provide the applicable components of an ecological risk assessment. The goals of the ecological risk assessment for the site include:

- Documenting whether actual or potential ecological risks exist,
- Identifying which contaminants pose a risk, and
- Generating data to be used in evaluating remedial activities.

FWIA
Fish and Wildlife Impact Assessment

Consistent with New York State Guidance (*Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites,* October 1994, NYSDEC Division of Fish and Wildlife), the ecological risk assessment will follow the first two steps of a Fish and Wildlife Impact Assessment (FWIA).

- Step I: Site Description: a. site maps; b. description of fish and wildlife resources; and c. description of fish and wildlife resource values.

- Step II: Contaminant-Specific Impact Assessment: a. pathway analysis; b. criteria-specific screening; and c. toxic effect analysis.

Step I: Site Description

Step I includes site mapping, field observations of the value of fish and wildlife resources at and in the vicinity of the site, and identification of applicable fish and wildlife regulatory criteria. To accomplish this task, two biologists will perform a two-day field investigation. Prior to the field investigation, the biologists will develop a base map from available topographical and aerial photography maps and use this information to develop a preliminary covertype map of the area within a 0.5-mile radius of the site. Additionally, federal and state natural resource agencies will be contacted regarding endangered, threatened, and special-concern plants and animals; significant fish and wildlife resources; and federal and state-designated freshwater wetlands present within 2 miles of the site. In the field, the biologists will confirm and extend the covertype map, identifying vegetative species and current land uses. It is anticipated that a sustained effort to identify species occurring within each covertype will not be necessary unless endangered or threatened species are identified. Observations of various species will be noted while completing the covertype survey.

Step II: Contaminant-Specific Impact Assessment

Step II of the FWIA (Contaminant-Specific Impact Assessment) is an iterative process. For planning purposes, E & E assumes that only elements A (pathway analysis) and B (criteria-specific screening) will be performed. In the pathway analysis, potential pathways of contaminant migration and exposure are identified. If potential pathways are identified, a criteria-specific screening will be performed using published numerical criteria established for specific media or biota. If numerical criteria are exceeded, then the need for further analysis of toxic effects is usually required. E & E will develop a scope of work for additional components of the ecological risk assessment if the initial analysis indicates that fish and wildlife resources are potentially exposed to toxic levels of site-related contaminants of concern.

3.5 Task 5: Feasibility Studies

The FS determines which areas of the site may require cleanup and evaluates alternative approaches to meeting cleanup objectives. The description of the FS in Work Element II of the Superfund Standby Contract calls for FSs that follow the TAGM 4030, *Selection of Remedial Actions at Inactive Hazardous Waste Sites*. In general, this guidance calls for:

- Development of remedial action objectives;
- Identification and screening of remedial technologies;
- Assembly of remedial technologies into remedial alternatives;
- Preliminary screening of remedial alternatives to reduce the number of retained alternatives;
- Detailed analysis of the retained alternatives; and
- Selection of remedy.

However, in the eight years since the publication of this TAGM, experience has been gained in the evaluation and application of remedial technologies, including the remediation of PCB-contaminated sites. Therefore, this process can be streamlined in order to more cost-effectively select a remedy for the site, while still ensuring that a full range of options has been considered. For the FS, E & E assumes that the process can be streamlined to minimize discussion of the identification and screening of technologies and to eliminate the need for a preliminary screening of remedial alternatives. Thus, the process to be followed for the FS is:

- Development of remedial action objectives;
- Identification of technologies appropriate for treating the types of contaminants present;
- Assembly of technologies into alternatives;
- Detailed analysis of alternatives; and
- Selection of remedy.

Each of these components is discussed below.

3.5.1 Development of Remedial Action 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. A quantitative risk assessment is not being performed for this site; thus, cleanup goals cannot be back-calculated from acceptable risk levels for assumed or observed site-specific exposure routes. Instead, applicable or relevant and appropriate requirements (ARARs) or other guidances to be considered (TBCs) will be used to establish cleanup goals.

ARARs
applicable or relevant and appropriate requirements

TBC
to be considered

MCLs
maximum contaminant levels

No ARARs have been established for soil, except for certain compounds such as PCBs. Thus, cleanup goals 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 include the *Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC TAGM 4046), the EPA SSLs, and the EPA Region III Screening Values.

For groundwater, the process is more straightforward. All groundwater in New York is considered a drinking water resource, and therefore subject to state drinking water standards. Class GA maximum contaminant levels (MCLs) will be considered ARARs for the groundwater at each site.

Once the cleanup goals have been set, the area requiring remediation will be determined by comparing the RI data to the cleanup goals.

3.5.2 Development of Remedial Alternatives

Development of remedial alternatives involves identifying technologies appropriate for treating the types of wastes identified in the RI and assembling those technologies into alternatives. Both treatment technologies and containment technologies will be identified. As discussed in Section 3.4, because of the relatively mature nature of treatment technologies for treating PCB-contaminated soils, it is unlikely that a screening process would be required to reduce the number of technologies to be used in alternatives. However, new or innovative technologies that may offer cost or effectiveness advantages will be considered and used in alternatives as appropriate.

Once appropriate technologies have been identified, they will be assembled into alternatives. For example, one alternative may include pumping and treatment of the groundwater on or off site. The alternatives will provide a clear definition of the technologies they incorporate and will span the range of approaches from no action to full site remediation. E & E assumes that approximately five alternatives will be developed for each site, and that each alternative will address all contaminated media.

3.5.3 Detailed Analysis of Remedial Alternatives

In this component 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:

O&M
operation and maintenance

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

Consideration will also be given to site-specific criteria, public acceptance, and site redevelopment issues. Following individual analyses, the alternatives will be comparatively reviewed and evaluated.

3.5.4 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 ARARs to the extent practicable. The selection of remedy will be made considering a preference for alternatives that include, as a principal element, treatment that significantly and permanently reduces volume, toxicity, and/or mobility of contaminants. A conceptual design of the selected remedy will also be presented.

3.6 Task 6: Support Activities

PRAP/ROD
proposed remedial action plan/record of decision

E & E will provide support to NYSDEC in its Citizen Participation Activities. E & E will attend two public meetings. The first will be to present the draft final work plan to the public. The second will be to present the final RI/FS to the public as part of the proposed remedial action plan/record of decision (PRAP/ROD) process. E & E's support activities may also include review of citizen participation documents (e.g., Citizen Participation Plan, fact sheets, announcements, press releases and media contacts, PRAP, ROD and Responsiveness Summary) for technical accuracy and preparation of up to three specialized figures or diagrams for presentation at the public meetings.

6

Subcontracting Requirements

Three subcontractors (including one subconsultant) are required for this project.

An MBE subconsultant (YEC Engineering P.C.) will be used for survey work and assistance in the field. The scope of work for Lu Engineers is included in Appendix A. An estimate for this subconsultant cost is included in the estimated budget and presented in Appendix A.

Drilling services also will be subcontracted. E & E has three drillers retained on a standby basis. A driller has been selected from among these three firms based on low costs for this particular project, according to their standby rates and site-specific mobilization costs. The costs for each of the drillers for this project are summarized in Appendix A. As shown in this summary, Applied Earth Technologies, a WBE, has the lowest cost for this particular project and will be hired for drilling at this site.

A WBE subcontractor (ChemWorld Environmental, Inc.) will be used to perform data reviews and prepare data usability summary reports (DUSRs) for the samples analyzed under this RI. The scope of work to be performed, as well as quotations received to perform this data review work, are presented in Appendix B.

7

Budget Assumptions

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 in 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 this site.

Section 7

Schedule 2.11(a) Summary of Work Assignment Price

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

1.	Direct Salary Costs (Schedule 2.11(b))	$78,259
2.	Indirect Costs	$144,780
3.	Direct Non-Salary costs (Schedules 2.11(c) and (d))	$170,446

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.11(e))

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	YEC, Inc.	Survey	67442
B			
C			
D			

4. Total Cost-Plus-Fixed-Fee Subcontracts 67,442

Unit Price Subcontracts (Schedule 2.11(f))

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	Atlantic Testing	Geotechnical Analysis	1293
B	Applied Earth Technologies	Drilling	81599
C	Chem World	Data Validation	3535
D	Applied Earth Technologies	Clearing	1000

5.	Total Unit Price Subcontracts	87,427	
6.	Subcontract Management Fee	3,264	
7.	Total Subcontract Costs (Lines 4+5+6)		158,133
8.	Fixed Fee		16,728
9.	Total Work Assignment Price (Lines 1+2+3+7+8)		568,346

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 # : D003493-16
Project Name: Luzerne Road RI/FS

DIRECT LABOR HOURS BUDGETED - BY NSPE GRADE

Rates for Year Ending February 1, 2000

NSPE Grade	IX	VIII	VII	VI	V	IV	III	II	I	Total	Labor	Overhead		Fee	
Rate/Hour	$64.74	$42.93	$36.97	$31.28	$26.65	$21.78	$19.32	$17.13	$13.14	Hours	Cost	185%	SUBTOTAL	7.50%	TOTAL
TASK DESCRIPTION															
TASK 1: Work Plan Development	0	8	28	120	128	25	33	36	2	380	$10,368	$19,181	$29,549	$2,216	$31,765
TASK 2: Remedial Investigation	0	8	16	164	490	310	0	20	0	1,008	26,218	48,503	74,721	5,604	80,325
TASK 3: RI Report	0	16	16	120	260	25	88	142	10	677	16,770	31,025	47,795	3,585	51,380
TASK 4: Risk Assessment	0	8	0	40	0	164	0	0	0	212	5,167	9,559	14,726	1,104	15,830
TASK 5: Feasibility Study	0	40	100	300	0	1	93	24	2	560	17,054	31,550	48,604	3,645	52,249
TASK 6: Citizen Support	0	0	0	40	40	0	10	10	0	100	2,682	4,962	7,644	573	8,217
Est. Direct Labor Hours	0	80	160	784	918	525	224	232	14	2,937					
Est. Direct Labor Cost	$0	$3,434	$5,915	$24,524	$24,465	$11,435	$4,328	$3,974	$184	**TOTALS**	$78,259	$144,780	$223,039	$16,728	$239,767

Engineer/Contract # D003493
Project Name Luzerne Road Site RI/FS
Work Assignment No. 16

Date Prepared April 1999

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

NSPE Labor Classification	9	8	7	6	5	4	3	2	1	Total No. of Direct Administrative Labor Hrs. Budgeted
Task 1 Work Plan			12					2	2	16
Task 2 RI	2		20		2			16		40
Task 3 RI Report	2		14					8		24
Task 4 Risk Assessment			2					4		6
Task 5 FS	2		14					8		24
Task 6 Citizen Support			2					4		6
Task 7										
Task 8										
Task 9										
Task 10										
Task 11										
Task 12										
Total Hours	6		64		2			42	2	116

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

1. Work Plan Development
   - Conflict of Interest Check
   - Develop budget schedules and supporting documentation
2. Review work assignment (WA) progress
   - Conduct progress reviews
   - Prepare monthly project report
   - Update WA progress schedule
   - Prepare monthly M/WBE Utilization Report
3. Review work assignment costs
   - Prepare monthly cost control report
   - Cost control reviews
4. CAP Preparation
   - Oversee and prepare monthly CAP
   - Respond to payment issues/disallowances
   - NSPE list updates
   - Equipment Inventory
5. Manage subcontracts
6. Implement and manage program management and staffing plans
7. Conduct Health and Safety Reviews
8. Word processing and graphic artists
9. Report editing

Contract/Project administration hours would <u>not</u> include activities such as:

1. QA/QC reviews
2. Technical oversight by management
3. Develop subcontracts
4. Work plan development
5. Review of deliverables

Section 7

Schedule 2.11(c) Direct Non-Salary Costs

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

ITEM	Maximum Reimbursement Rate	Unit	Estimated No. of Units		Total Estimated Costs
A. IN-HOUSE COSTS*					
Communication Costs	$ 5.00	Call	353		1,765.00
Reproduction	$ 0.05	Page	22,580		1,129.00
Blueprinting	$ 1.75	Page	-		-
CAD Computer Usage	$ 10.00	Hour	80		800.00
Protective Clothing: Level D	$ 15.00	Day	86		1,290.00
Protective Clothing: Level C	$ 50.00	Day	-		-
Protective Clothing: Level B	$ 70.00	Day	-		-
Shipping: Lab Samples	$ 102.00	75 lbs.	7		714.00
Shipping: Equipment		lbs.	-		-
Shipping: Other Fedex Priority	$ 31.00	10 lbs.	24		744.00
Postage		0	-		400.00
Purchased Items - Incidentals		Lump Sum			-
Equipment Purchased Under Contract		Lump Sum			12,232.70
Site Dedicated Equipment/Miscellaneou		Lump Sum			8,826.78
E&E Analytical Services		Lump Sum			123,031.00
				Subtotal	150,932.48
B. MISCELLANEOUS					
1. TRAVEL**					
Airfare: Buffalo/Albany	$ 258.00	RT	24.00		6,192.00
Per Diem: Albany	$ 40.00	Day	-		-
Per Diem: Warren County	$ 35.00	Day	87.00		3,045.00
Lodging: Warren County	$ 74.00	Night	66.00		4,884.00
Auto Rental	$ 50.00	Day	10.00		500.00
Van Rental	$ 69.99	Day	69.00		4,829.31
Local Mileage	$ 0.315	Mile	200.00		63.00
Parking		Day	-		-
Gasoline/Tolls		RT	-		-
				Subtotal	19,513.31
TOTAL DIRECT NON-SALARY COSTS					**$ 170,445.79**

NOTES: *PPE Costs are estimated. Actual costs will be billed.
NOTES: **See Quotes in Appendix A

Schedule 2.11(c) - 1 Direct Non-Salary Costs, Proposed Sampling Costs Work Assignment D003493-16, Luzerne Road Site RI/FS

Item		Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Turn-Around Mark-up ($)	Total Estimated Cost ($)
Analysis	Method				
TCL Volatiles (VOCs)	CLP 95-1	$ 100.00	96	$0	$9,600.00
TCL Semivolatiles (BNAs)	CLP 95-2	$ 240.00	24	$0	$5,760.00
TCL PCB *	8082	$ 100.00	96	$9,600	$19,200.00
TCL PCB/ Pesticides	8081/8082	$ 100.00	169	$0	$16,900.00
PCB Screening **	Modified 8082	$ 42.00	1585		$66,570.00
TAL Metals (+Mercury)	CLP-M	$ 90.00	24	$0	$2,160.00
Cyanide	CLP-M	$ 20.00	24	$0	$480.00
pH	9045C	$ 5.00	6	$0	$30.00
Total Organic Carbon	415.1	$ 30.00	64	$0	$1,920.00
Oil and Grease	9071A	$ 35.00	9	$0	$315.00
COD	410	$ 16.00	6	$0	$96.00
			Total Cost		$ 123,031.00

Notes:

* An expedited turnaround makup fee has been included for 96 PCB soil screening verification samples. This is necessary so verification results may be obtained within a reasonable time frame to verify and if necessary adjust soil screening procedure to site conditions.

** Five quotes for PCB screening testing are included in Appendix A

Section 7

Schedule 2.11(d) Equipment Usage Schedule

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzeme Road 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 Equipment Purchase Under Contract
D003493-16, Luzerne Road Site RI/FS

Equipment Purchase Items	Unit Cost ($)	Number of Units	O&M Rate ($/month)	Term of Usage (months)	Tax 8%	Cost ($)
Camera	$668.99	1	0	3	$53.52	$722.51
Camera Accessory Kit	$151.99	1	0	3	$12.16	$164.15
Telephone/Fax	$200.00	1	0	3	$16.00	$216.00
Mini-Ram	$1,495.00	2	0	2	$239.20	$3,229.20
Laptop PC	$2,003.00	1	0	2	$160.24	$2,163.24
OVA	$2,495.00	1	0	2	$199.60	$2,694.60
Oxygen Meter/Explosimeter	$2,168.00	1	0	2	$173.44	$2,341.44
Turbidity Meter	$649.67	1	0	2	$51.89	$701.56
Total Equipment Purchase						$12,232.70

See attached quotes.

Schedule 2.11(d) - 3

Vendor Rented Equipment
D003493-16, Luzerne Road Site RI/FS

Equipment Rented	Unit Cost ($)	Number of Units	Estimated Usage	Cost ($)
Total Equipment Rented				$0.00

There will be no outside rentals of equipment for this project.

Schedule 2.11(d) - 4

Site Dedicated Equipment
D003493-16, Luzerne Road Site RI/FS

Equipment Purchase Items	Number of Units	Unit Cost ($)	Cost ($)
Field Trailer Mobilization/Demob.	1	$365.00	$365.00
Field Trailer Rental (6 months)	1	$1,020.00	$1,020.00
Hydrogen Supply	1	$33.48	$33.48
Hydrogen Supply Tank Rental (6 months)	1	$26.70	$26.70
Portable toilet (monthly)	6	$70.00	$420.00
Basic Telephone Monthly Service (per month)	6	$30.00	$180.00
Power Connection	1	$1,600.00	$1,600.00
Power/Month (per month)	6	$30.00	$180.00
Telephone Service Hookup	1	$125.00	$125.00
Drums for Purge and Development Water	22	$55.00	$1,210.00
Weighted Disposable Polyethylene 36" Bailers (24/case)	1	$240.00	$240.00
Equipment Shipping	8	$60.00	$480.00
Soil Sampling Jars *	1585	$0.96	$1,521.60
Miscelaneous Field Supplies - rope, ice, bags, etc. (per day)	41	$25.00	$1,025.00
Total Purchased Dedicated Equipment			$8,426.78

Notes:
See attached quotes.
* Additional soil sampling jars necessary for screening samples only.

Supplement To Form 2.11(d)

Project Equipment Purchased Under Other Work Assignments

The following equipment will be used on this work assignment, although it was purchased under another work assignment.

Item	Cost	Project On Which Purchased
Water Level Indicator	$4947.57	Perfection Plating
Water Level Indicator	$4947.57	Rose Valley Landfill
2 Loggerheads	$3,224	Rose Valley Landfill
2 Loggerheads	$3,224	Niagara Transformer
pH/Temperature/Conductivity Meters	$426.83	Perfection Plating
pH/Temperature/Conductivity Meters	$426.83	Rose Valley Landfill
Organic Vapor Analyzer (OVA)	$2,495	Rose Valley Landfill
Laptop Computer	$2,003	Rose Valley Landfill
Turbidity Meter	$648.67	Rose Valley Landfill
Oxygen/Explosimeter	$2,168	Rose Valley Landfill

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Total Project Cost Summary

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	Survey,CAD,Geoprobe & Drilling	$67,441.76

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	16	763.04
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	133	4,193.49
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	2	54.80
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	657	15,623.46
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	4	70.40
Technician/Draftsperson	I	1999	15.94	1999	17.85	140	2,231.60
						Total Direct Salary Costs:	22,936.79

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 26,836.04

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	61 man-days	6,588.00
Mileage	0.31 /mile	4000 miles	1.240.00
Tolls	10.00 /trip	10 Trips	100.00
Survey Equipment Rental	65.00 /day	10 day	650.00
CAD Equipment	15.00 /hour	30 hours	450.00
Level D Protection	15.00 /man-day	55 man-days	825.00
Tele./Postage/Repro./Field supplies	350.00 lump sum		350.00
		Total Direct Non Salary Costs:	10,203.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 7,465.93

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Survey & CAD Mapping

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	Survey & CAD Mapping	$21,878.14

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	4	190.76
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	133	4,193.49
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	0	0.00
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	30	713.40
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	0	0.00
Technician/Draftsperson	I	1999	15.94	1999	17.85	140	2,231.60
						Total Direct Salary Costs:	7,329.25

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 8,575.22

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	17 man-days	1,836.00
Mileage	0.31 /mile	1200 miles	372.00
Tolls	10.00 /trip	3 trips	30.00
Survey Equipment Rental	65.00 /day	10 day	650.00
CAD Equipment	15.00 /hour	30 hours	450.00
Level D Protection	15.00 /man-day	0 mndays	0.00
Tele./Postage/Repro./Field supplies	250.00 lump sum		250.00
		Total Direct Non Salary Costs:	3,588

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 2,385.67

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Health & Safety Plan, Geoprobe & Drilling Support

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	HASP,Geoprobe & Drilling Support	$45,563.62

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	12	572.28
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	0	0.00
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	2	54.80
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	627	14,910.06
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	4	70.40
Technician/Draftsperson	I	1999	15.94	1999	17.85	0	0.00
						Total Direct Salary Costs:	15,607.54

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 18,260.82

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	44 man-days	4,752.00
Mileage	0.31 /mile	2800 miles	868.00
Tolls	10.00 /trip	7	70.00
Survey Equipment Rental	65.00 /day	0 day	0.00
CAD Equipment	15.00 /hour	0 hours	0.00
Level D Protection	15.00 /man-day	55 mndays	825.00
Tele./Postage/Repro./Field supplies	100.00 lump sum		100.00
		Total Direct Non Salary Costs:	6,615.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 5,080.25

Schedule 2.11(f) - 1

Unit Price Subcontractors, Work Assignment Number
D003493-16, Luzerne Road Site RI/FS

Name of Subcontractor	Sevices to be Performed	Subcontract Price ($)	Management Fee ($)
Chemworld Environmental, Inc.	Data Validation	$3,535.00	0

Analysis	Method	Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Total Estimated Cost ($)
TCL Volatiles (VOCs)	CLP 95-1	$8.00	96	$768.00
TCL Semi-Volatiles (BNAs	CLP 95-2	$9.00	24	$216.00
TCL PCB/ Pesticides	CLP 93-3	$8.00	265	$2,120.00
TAL Metals (+Mercury)	CLP-M	$9.00	24	$216.00
Cyanide	CLP-M	$2.00	24	$48.00
pH	9045C	$0.00	6	$0.00
Total Organic Carbon	415.1	$2.00	64	$128.00
Oil and Grease	9071A	$3.00	9	$27.00
COD	410	$2.00	6	$12.00
			Total Cost	$ 3,535.00

SUBTOTAL SUBCONTRACT	$3,535.00
SUBCONTRACT MANAGEMENT FEE	0
TOTAL	$3,535.00

See attached quotes.

Schedule 2.11(f) - 2

Unit Price Subcontractors, Work Assignment Number D003493-16, Luzerne Road Site RI/FS

Name of Subcontractor	Sevices to be Performed	Subcontract Price ($)	Management Fee ($)
Applied Earth Drilling	Drilling	$81,599.00	$3,263.96

Item	Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Total Estimated Cost ($)
SEE ATTACHED BID SHHET WITH UNIT RATES,QUANTITIES AND TOTALS			
		Total Cost	$ -

SUBTOTAL SUBCONTRACT	$81,599.00
SUBCONTRACT MANAGEMENT FEE	$3,264
TOTAL	$84,863.00

See attached quotes.

Schedule 2.11(f) - 3

Unit Price Subcontractors, Work Assignment Number D003493-16, Luzerne Road Site RI/FS

Name of Subcontractor	Sevices to be Performed	Subcontract Price ($)	Management Fee ($)
Atlantic Testing Laboratories Ltd.	Geotechnical Testing	$1,292.50	0

Analysis	Method	Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Total Estimated Cost ($)
Moisture Content	D2216	$5.50	5	$27.50
Humic Content	D2794-87	$27.50	5	$137.50
Atterburg Limit	D4318	$77.00	5	$385.00
Particle Size: Sieve Analysis	D422	$82.50	5	$412.50
Particle Size: Hydrometer	D422	Combined Above	5	
Dry Density	D2937-94	$16.50	5	$82.50
Specific Gravity	D854	$49.50	5	$247.50
			Total Cost	$ 1,292.50

SUBTOTAL SUBCONTRACT	$1,292.50
SUBCONTRACT MANAGEMENT FEE	0
TOTAL	$1,292.50

See attached quotes.

Schedule 2.11(f) - 4

Unit Price Subcontractors, Work Assignment Number D003493-16, Luzerne Road Site RI/FS

Name of Subcontractor	Sevices to be Performed	Subcontract Price ($)	Management Fee ($)
Applied Earth Drilling	Clearing	$1,000.00	$0.00

Item	Maximum Reimbursement Rate (Specify Unit) ($)	Estimated Number of Units	Total Estimated Cost ($)
1Day Site Clearing - John Deer 450 Dozer			$1,000.00
		Total Cost	$ 1,000.00

SUBTOTAL SUBCONTRACT	$1,000.00
SUBCONTRACT MANAGEMENT FEE	$0
TOTAL	$1,000.00

See attached quotes.

Section 7

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

Page ________ of ________
Date Prepared ___________
Billing Period ___________
Invoice No. ____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road 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	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$78,259	
2. Indirect Costs (185%)							$144,780	
3. Subtotal Direct Salary & Indirect Costs							$223,039	
4. Travel							$19,513	
5. Other Non-Salary Costs							$150,932	
6. Subtotal Direct Non-Salary Costs							$170,446	
7a. Subcontractors							$154,869	
7b. Subcontract Management Fee							$3,264	
8. Total Work Assignment Cost							$551,618	
9. Fixed Fee							$16,728	
10. Total Work Assignment Price							$568,346	

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

Page ________ of ________
Date Prepared ___________
Billing Period ___________
Invoice No. ___________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

TASK 1: Work Plan Development

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$10,368	
2. Indirect Costs (185%)							$19,181	
3. Subtotal Direct Salary & Indirect Costs							$29,549	
4. Travel							$395	
5. Other Non-Salary Costs							$221	
6. Subtotal Direct Non-Salary Costs							$616	
7a. Subcontractors							$0	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$30,165	
9. Fixed Fee							$2,216	
10. Total Work Assignment Price							$32,381	

Section 7

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

Page ________ of ________
Date Prepared ___________
Billing Period ____________
Invoice No. _____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

TASK 2: Remedial Investigation

Expenditure Category	A	B	C	D	E	F	G	H
	Costs Claimed This Period	Paid to Date	Total Disallowed to Date	Total Costs Incurred to Date (A+B+C)	Estimated Costs to Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1. Direct Salary Costs							$26,218	
2. Indirect Costs (185%)							$48,503	
3. Subtotal Direct Salary & Indirect Costs							$74,721	
4. Travel							$16,507	
5. Other Non-Salary Costs							$147,068	
6. Subtotal Direct Non-Salary Costs							$163,575	
7a. Subcontractors							$151,334	
7b. Subcontract Management Fee							$3,264	
8. Total Work Assignment Cost							$392,894	
9. Fixed Fee							$5,604	
10. Total Work Assignment Price							$398,498	

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

Page ________ of ________
Date Prepared ___________
Billing Period ___________
Invoice No. ____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

TASK 3: RI Report	A	B	C	D	E	F	G	H
Expenditure Category	Costs Claimed This Period	Paid to Date	Total Disallowed to Date	Total Costs Incurred to Date (A+B+C)	Estimated Costs to Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1. Direct Salary Costs							$16,770	
2. Indirect Costs (185%)							$31,025	
3. Subtotal Direct Salary & Indirect Costs							$47,795	
4. Travel							$0	
5. Other Non-Salary Costs							$1,650	
6. Subtotal Direct Non-Salary Costs							$1,650	
7a. Subcontractors							$3,535	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$52,980	
9. Fixed Fee							$3,585	
10. Total Work Assignment Price							$56,565	

Section 7

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

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

Page ________ of ________
Date Prepared __________
Billing Period ___________
Invoice No. ____________

TASK 4: Risk Assessment

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$5,167	
2. Indirect Costs (185%)							$9,559	
3. Subtotal Direct Salary & Indirect Costs							$14,726	
4. Travel							$904	
5. Other Non-Salary Costs							$565	
6. Subtotal Direct Non-Salary Costs							$1,469	
7a. Subcontractors							$0	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$16,195	
9. Fixed Fee							$1,104	
10. Total Work Assignment Price							$17,299	

Section 7

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

Page ________ of ________
Date Prepared ____________
Billing Period ____________
Invoice No. ____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

TASK 5: Feasibility Study	A	B	C	D	E	F	G	H
Expenditure Category	Costs Claimed This Period	Paid to Date	Total Disallowed to Date	Total Costs Incurred to Date (A+B+C)	Estimated Costs to Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1. Direct Salary Costs							$17,054	
2. Indirect Costs (185%)							$31,550	
3. Subtotal Direct Salary & Indirect Costs							$48,604	
4. Travel							$0	
5. Other Non-Salary Costs							$1,203	
6. Subtotal Direct Non-Salary Costs							$1,203	
7a. Subcontractors							$0	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$49,807	
9. Fixed Fee							$3,645	
10. Total Work Assignment Price							$53,452	

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

Page ________ of ________
Date Prepared __________
Billing Period ___________
Invoice No. ____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

TASK 6: Citizen Support

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$2,682	
2. Indirect Costs (185%)							$4,962	
3. Subtotal Direct Salary & Indirect Costs							$7,644	
4. Travel							$1,708	
5. Other Non-Salary Costs							$225	
6. Subtotal Direct Non-Salary Costs							$1,933	
7a. Subcontractors							$0	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$9,577	
9. Fixed Fee							$573	
10. Total Work Assignment Price							$10,150	

Schedule 2.11(g) - Supplemental

COST CONTROL REPORT
SUBCONTRACTS

Engineer Ecology and Environment Engineering, P.C.
Contract No. D003493
Project Name Luzerne Road RI/FS
Work Assignment No. D003493-16

Page 1 **of** 1
Date Prepared
Billing Period
Invoice No.

Subcontract Name	A Subcontract Costs Claimed this Application Inc. Resubmittals	B Subcontract Costs Approved for Payment on Previous Applications	C Total Subcontract Costs to Date (A plus B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	G Total Costs to Date (C plus F)
1. YEC, Inc			67,442.00	0			
2. Atlantic Testing Labs, Ltd			1,292.50	0			
3. Applied Earth Tech.			81,599.00	3,264			
4. ChemWorld			3,535.00	0			
5. Applied Earth Tech.			1,000.00	0			
6.							
7.							
8.							
9.							
10.							
11. TOTALS			154,865.50	3,264			

Project Manager Steve Blair

Date June 1999

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

Section 7

Schedule 2.11(h) Summary of Labor Hours

Page _______ of _______
Date Prepared __________
Billing Period ___________
Invoice No. ____________

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-16
Project Name: Luzerne Road RI/FS

Rates for Year Ending February 1, 2000

NSPE Grade	IX		VIII		VII		VI		V		IV		III		II		I		TOTAL	
Rate/Hour	$64.74		$42.93		$36.97		$31.28		$26.65		$21.78		$19.32		$17.13		$13.14		HOURS	
TASK	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.
TASK 1: Work Plan Development	0	0	0	8	0	28	0	120	0	128	0	25	0	33	0	36	0	2	0	380
TASK 2: Remedial Investigation	0	0	0	8	0	16	0	164	0	490	0	310	0	0	0	20	0	0	0	1,008
TASK 3: RI Report	0	0	0	16	0	16	0	120	0	260	0	25	0	88	0	142	0	10	0	677
TASK 4: Risk Assessment	0	0	0	8	0	0	0	40	0	0	0	164	0	0	0	0	0	0	0	212
TASK 5: Feasibility Study	0	0	0	40	0	100	0	300	0	0	0	1	0	93	0	24	0	2	0	560
TASK 6: Citizen Support	0	0	0	0	0	0	0	40	0	40	0	0	0	10	0	10	0	0	0	100
TOTAL HOURS		0		80		160		784		918		525		224		232		14		2,937
TOTAL COST		$0		$3,434		$5,915		$24,524		$24,465		$11,435		$4,328		$3,974		$184		$78,260

CONSULTANT/CONTRACTOR DETAI[illegible] M/WBE-EEO UTILIZATION PLAN
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Consultant/Contractor Name: Ecology and Environment Engineering, P.C.			
Contract Type/Number: D003493-16		**Contract Award Date:**	
Address: 368 Pleasant View Drive	**City:** Lancaster	**State:** New York	**Zip Code:** 14086
Project Owner Name: New York State Department of Environmental Conservation		**Project/Grant No.:**	
Address: 50 Wolf Road	**City:** Albany	**State:** New York	**Zip Code:** 12233
Authorized Representative:		**Title:**	
Authorized Signature:			

EEO AND MBE/WBE CONTRACT SUMMARY

M/WBE CONTRACT SUMMARY	%	Amount	EEO CONTRACT SUMMARY	%	No./Emp.	Wk./Hrs.
1. Total Dollar Value of the Prime Contractor	100	$568,346	6. Total for all Employees			
			7. Total Goal for Minority Employees			
2. State Share Amount			8. Total Goal for Female Employees			
3. MBE Goal/Amount	15	85,251.90/78,518	9. EEO Combined Totals			
4. WBE Goal/Amount	5	28,417./85,134				
5. MBE/WBE Combined Totals	20	164,652				

Office of Minority & Women's Business Programs Use Only

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

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

MBE Firm	Projected MBE Contract Amount and Award Date	Description of Work MBE	Contract Schedule/Start Date(s)	Contract Payment Schedule	Project Completion Date
Name: YEC Engineers Address: Clarkstow Executive Park 612 Corporate Way,Ste.4M City: Valley Cottage State/Zip Code: New York 10989 Telephone No.: 914/268-3203	$ 67,442. DATE:	Field services and surveying			
Name: Alverez & Bremer Address: 9336 Transit Rd. City: East Amherst State/Zip Code: New York 14051 Telephone No.: 716/688-4567	$ 11,076. DATE:	Airfare and Lodging			
Name: Address: City: State/Zip Code: Telephone No.:	$ DATE:				

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

WBE Firm	Projected WBE Contract Amount and Award Date	Description of Work WBE	Contract Schedule/Start Date(s)	Contract Payment Schedule	Project Completion Date
Name: ChemWorld Environmental Address: 14 Orchard Way North City: Rockville State/Zip Code: Maryland 20854 Telephone No.: 301/294-6144	$ 3,535. DATE:	Data Review/DUSR Preparation			
Name: Applied Earth Technologies Address: 6589 Hwy. 11 City: Canton State/Zip Code: New York 13617 Telephone No.:	$ 81,599. DATE:	Drilling			
Name: Applied Earth Technologies Address: 6589 Hwy. 11 City: Canton State/Zip Code: New York 13617 Telephone No.:	$ 1,000. DATE:	Clearing			

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

		All Employees		Minority Employees			
Job Categories	Total Work Hours of Contract	Male	Female	African-American	Asian	Native American	Hispanic
fficials/ anagers							
ofessionals							
chniccians							
les Workers							
ffice/Clerical							
raftsman							
borers							
ervices/ orkers							
tals							

8

MBE/WBE Utilization Plan

8.1 Introduction

E & E fully subscribes to the New York State policy that MBE/WBE firms be afforded the maximum opportunity to participate in contracts offered by New York State 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.

In this section, E & E's general MBE/WBE Utilization Plan is described, 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 New York State 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 report reproduction services.

8.4 Criteria for Selection

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 five bids will be obtained. If the bids range between $5,000 and $10,000, three bids will be obtained. In either case, based on the bids submitted, an award will be made to the most responsible MBE/WBE bidder provided that the bid is within 10% of the lowest bid and NYSDEC agrees to accept the MBE/WBE. If the bids are less than $5,000, E & E plans to enlist a sole-source procurement from an MBE/WBE firm.

Subconsultants (Professional Services)

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

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. 16 Goals

The established percentage goals for this work are as follows:

		Dollar Amount
Total project amount:		$568,346
Total percent of MBE/WBE work goal:	20%	113,669
- Total percent of MBE work goal:	15%	85,252
- Total percent of WBE work goal:	5%	28,417

8.6 Proposed MBE/WBE Utilization-Work Assignment No. 16

Three tasks, or portions of these tasks, from the Luzerne Road RI/FS have been identified as appropriate for subcontracting. The tasks to be subcontracted, the proposed MBE/WBE subcontractor, and the value of work are identified on Table 8-1. The MBE subconsultants' SOW and price quotes and the WBE subcontractor's SOW and bid are identified in Appendix A.

Table 8-1 MBE/WBE Subcontractor Information

Task	Task Description	Subcontractor Scope of Work	MBE/WBE Subcontractor	Value ($)
1	RI	Airfare - Buffalo, NY/ Albany, NY	Alvarez & Bremer Travel, Inc. (MBE)	$258
2	RI	Field services and surveying	YEC Engineering, PC (MBE)	$67,442
2	RI	Drilling	Applied Earth Technologies (WBE)	$81,599
2	RI	Site Clearing	Applied Earth Technologies (WBE)	$1,000
2	RI	Airfare - Buffalo, NY/ Albany, NY	Alvarez & Bremer Travel, Inc. (MBE)	$4,386
2	RI	Lodging, Glens Falls, NY	Alvarez and Bremer Travel, Inc. (MBE)	$4,440
4	Fish and Wildlife Risk Evaluation	Airfare - Buffalo, NY/ Albany, NY	Alvarez & Bremer Travel, Inc. (MBE)	$516
4	Fish and Wildlife Risk Evaluation	Lodging, Glens Falls, NY	Alvarez and Bremer Travel, Inc. (MBE)	$148
6	Public Participation Support	Airfare - Buffalo, NY/ Albany, NY	Alvarez & Bremer Travel, Inc. (MBE)	$1,032
6	Public Participation Support	Lodging, Glens Falls, NY	Alvarez and Bremer Travel, Inc. (MBE)	$296
3	RI Analytical/Data Validation	Data Review; Data Usability Summary Report (DUSR) Preaparation	ChemWorld Environmental, Inc. (WBE)	$3,535
Total MBE Subcontract Total WBE Subcontract				$78,518 $86,134
Total Contract				$568,346
Percent Total Contract (MBE) Percent Total Contract (WBE)				13.82 % 15.16 %

A

Bids and Quotes

A. Bids and Quotes

Subconsultant Scope of Work

Exhibit 1

Scope of Work for Professional Services at the Luzerne Road Site Town of Queensbury, NY

1.0 Introduction

1.1 Overview

Ecology and Environment, Engineering, P.C. (E&E) will be performing a remedial investigation at the Luzerne Road site, located in Glens Falls, New York. E & E intends to use a subconsultant to assist in the associated field effort. This scope of work (SOW) describes the work required and the schedule. The work involves field support for certain site investigation activities and conducting two events of site surveying.

1.2 Site Description

The Luzerne Road site is the location of a former copper scavenging operation. Scavengers salvaged copper from electrical transformers, and in the process, dumped the PCB-containing liquid contents of the transformers onto the ground. A soil remediation activity was conducted in the late 1970's, during which PCB-contaminated soil was excavated and placed in a secure cell constructed on site. In the early to mid 1990s, monitoring indicated a release of PCB fluid from the cell may have occurred. The objective of this RI is to determine the magnitude and extent of the PCB contamination at this site.

The study area, which includes the site and surrounding area, comprises approximately 7 acres. The area is relatively flat-lying and lightly vegetated. A structure (AMG industries) is located on the adjacent property to west, and the area south of the secure cell is covered mostly by trees. Further east of the site is Veterans Road. Northwest of the site is the Glens Falls Landfill, and north of the site is a wetland. Several wells are located between the wetland and the landfill toe.

2.0 Health and Safety Plan

YEC Engineering, P.C. (YEC) shall provide a site-specific health and safety plan (HASP) in accordance with the requirements of 29 Code of Federal Regulations (CFR) 1910.120. The HASP will apply to both the survey work described in section 3, below, and the field work assistance described in section 4, below. YEC Engineer's HASP will be an original document specific to the site. The HASP will be reviewed, though not approved, by E & E. The E & E HASP will be available for reference by YEC Engineers.

3.0 Surveying

Surveying will consist of two separate ground survey tasks; one prior to field investigation activities, and one following field investigation activities. Each of these are described below.

3.1 Initial Survey

This initial surveying effort consists of three components: establishing a grid; a topographic survey, and a fixed feature survey. Initially, YEC will set out a grid containing 210 points around the site to establish geoprobe soil boring locations. Internodal spacing will be 50 feet. All nodes are to be marked by a wooden lath equipped with a brightly-colored ribbon tied to the top. All laths are to be labeled according to the node labeling system established for the site.

Exhibit 1

The topographic survey consists of surveying the site and constructing a site topographic map utilizing a 1-foot contour interval. Each contour will be assigned a "Z" elevation within the AutoCAD electronic file for use in digital terrain modeling. The attached United States Geologic Survey (USGS) topographic map photocopy depicts the area of the site to be addressed by the topographic survey. E & E also will require a copy of all field log and/or data dumps, and summaries of field accuracy checks.

Also included in the topographic survey will be the surveying of selected fixed features. The horizontal and vertical positions of ten existing groundwater monitoring wells will be established. At each well, ground elevation and top of inner casing are to be measured. Also, the horizontal location of fixed features will be established. The list of features includes, but is not limited to, Luzerne Road, Veterans Road, the perimeter of the wetland (to be delineated by E & E), approximately three streams, approximately four telephone poles, the AMG Properties building, and the fence traversing the landfill toe.

YEC will provide E & E with a draft hard copy map and a CAD electronic file using (AutoCAD 12) of this survey within two weeks (ten business days) following completion of field activities. Following any revisions by E & E, YEC will finalize the figure and provide E & E with six hard copies within five (5) business days of receiving E & E's comments.

The subcontractor (YEC) will establish local horizontal and vertical site control unless existing NGS monumentation is within a ~0.5 miles of the site. It is the responsibility of the subcontractor to determine whether or not this monumentation exists.

3.2 Post Investigation Survey

The second survey effort will involve two components. First, the vertical and horizontal position, ground surface elevation, and top of inner casing elevation of all groundwater monitoring wells installed during this RI will be measured. Secondly, at each of eight residences, YEC will establish horizontal control of three geoprobe borehole locations, the house, nearest street(s) adjacent to the property, and other relevant site features such as driveways and telephone poles. This second survey is to be commenced during the last week of field activities so that the field investigation team can show the survey team the points to be surveyed. Note that this second survey involves entering onto private property; therefore, it will only be conducted under the accompanyment and/or permission of NYSDEC personnel.

Well elevation data collected during this second survey will be added to the first CAD basemap. YEC is to use the residential survey data to construct a separate residential area CAD map using AutoCAD release 12. YEC will provide E & E with a draft hard copy of the updated site base map and a CAD electronic file using (AutoCAD 12) of the residential survey within one week (five business days) following completion of field surveying activities. Following any revisions by E & E, YEC will finalize the figure and provide E & E with six hard copies within three (5) business days of receiving E & E's comments.

Exhibit 1
Page 3 of 3

4.0 Field Crew Assistance

YEC will assist E & E by providing one support person to each of two field crews during the performance of certain Remedial Investigation (RI) tasks to work under the supervision of the site manager. The subcontractor will provide NSPE grade II or III persons to fill these positions. One field person will be on site with a Geoprobe crew for a period of approximately 35 consecutive field days, excluding holidays and weekends. The second field person will assist in the monitoring well installation activities; they will be on site for a period of approximately 20 consecutive field days, excluding holidays and weekends. This 20-day period is expected to commence after approximately 10 field days of the Geoprobe crew operating; its entire operation is simultaneous to the Geoprobe crew operation. The responsibilities of these two persons is to provide any necessary assistance to the field teams, to conduct soil sampling; purging, development, and sampling of wells; conduct surface water and sediment sampling, and to use air monitoring equipment.

Work will be conducted Monday through Friday; field days will average 10 hours. The subcontractors will arrive onsite on Monday mornings by no later than 10 AM; all other field days are to begin at the site at 7:00 a.m. Fridays are expected to conclude at approximately 3:00 p.m.

YEC Engineer's bid will include all costs necessary for the workers to perform the services outlined above. This includes, but is not limited to, development of the HASP, conducting the ground surveying, field crew assistance, and the following:

- Wages and Overhead;
- Travel and Lodging; and
- Level D Personal Protection (including tyvek suits, disposable gloves, and boot covers).

Note that all rates must be in accordance with YEC's standby agreement with E & E.

Extra travel time beyond that proposed shall not be invoiced to the project. E & E shall supply air monitoring and water sampling equipment, logbooks, and other field supplies.

Bid items for these categories are included in the bid sheet in Exhibit 2. However, it is emphasized that despite the line items listed in the bid sheet, the costs bid shall include all costs for providing the professional services as required.

Note that resumes of all persons working on this project are to be submitted with the bid.

5. Schedule

The work described in this scope of work is expected to take place during the summer of 1999. Surveying will likely occur in June, and field activities investigation activities likely will be conducted in July and August. However, please note that these dates are estimates.

The subcontractors investigation team personnel must be available for the continuous 35 days of fieldwork once the work commences. The survey crew must be available prior to commencing subsurface investigation activities, and immediately following subsurface investigation activities.

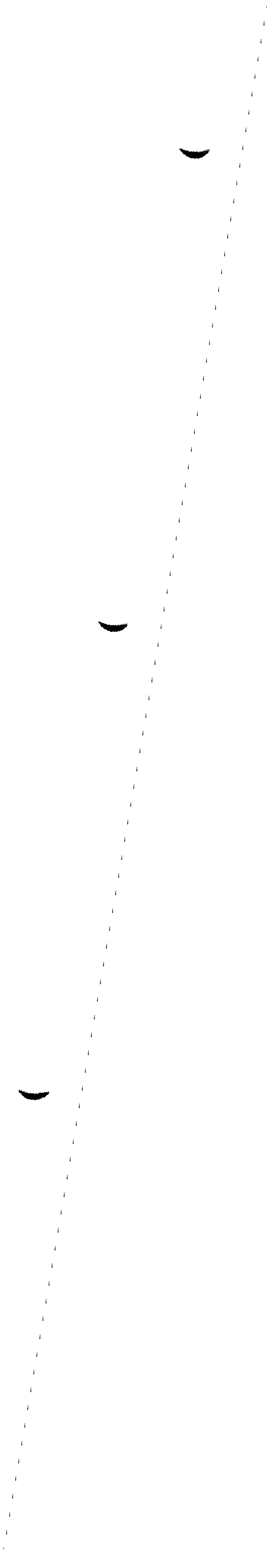
Exhibit 2

Bid Schedule For Professional Services at the Luzerne Road Site

Item	Unit Cost	Quantity	Total Cost
Site Health and Safety Plan (HASP)	$_____/ea	1	
Site Surveys, including travel Initial Topographic Survey Well and Residential survey	 $_____ (lump sum) $_____ (lump sum)	 1 1	
Field assistance personnel, not including travel NSPE Grade III, Geoprobe Team NSPE Grade III, Drilling Team	 $_____/hr $_____/hr	 __hrs. __hrs.	
Travel, Survey Crew	$____/trip	2	
Travel, Field Assistance Personnel	$____ trip	7	
Level D Personal Protection, Survey Crew	$_____/day	__ man-days	
Level D Personal Protection, Field Crew	$_____/day	__ man-days	
		Total	

Subconsultant Quotation

Subconsultant Quotation



YEC, INC./YEC ENGINEERING, P.C.
Clarkstown Executive Park
612 Corporate Way, Suite 4M
Valley Cottage, NY 10989
Tel: (914) 268-3203 Fax: (914) 268-5313

April 19, 1999

Steven Blair
Ecology and Environment Engineering, P.C.
Buffalo Corporate Center
368 Pleasantview Dr
Lancaster, New York 14086

RE: YEC, Inc. Proposal Package for
Luzerne Road Survey & Field Crew Assistance

Dear Mr. Blair:

Attached please find the following information/forms for YEC's Survey & Field Crew Assistance tasks for the Luzerne Road Site project:

(1) YEC Schedules 2.11(e);
(2) Completed Subcontractor Acknowledgement Form;
(3) Completed Vendor/Subcontractor Certification;
(4) Completed Subcontractor's Bid Response Form;
(5) Proposed YEC Key Staff Resumes; and
(6) YEC Certifications of Insurance (1 for General Liability & 1 for Professional Liability).

If you have any questions please feel free to contact us.

Sincerely,

Y.S. Ed Chen, Ph.D., P.E.
President, YEC, Inc.

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Total Project Cost Summary

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	Survey,CAD,Geoprobe & Drilling	$67,441.76

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	16	763.04
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	133	4,193.49
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	2	54.80
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	657	15,623.46
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	4	70.40
Technician/Draftsperson	I	1999	15.94	1999	17.85	140	2,231.60
						Total Direct Salary Costs:	22,936.79

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 26,836.04

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	61 man-days	6,588.00
Mileage	0.31 /mile	4000 miles	1,240.00
Tolls	10.00 /trip	10 Trips	100.00
Survey Equipment Rental	65.00 /day	10 day	650.00
CAD Equipment	15.00 /hour	30 hours	450.00
Level D Protection	15.00 /man-day	55 man-days	825.00
Tele./Postage/Repro./Field supplies	350.00 lump sum		350.00
		Total Direct Non Salary Costs:	10,203.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 7,465.93

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Survey & CAD Mapping

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	Survey & CAD Mapping	$21,878.14

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	4	190.76
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	133	4,193.49
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	0	0.00
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	30	713.40
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	0	0.00
Technician/Draftsperson	I	1999	15.94	1999	17.85	140	2,231.60
						Total Direct Salary Costs:	7,329.25

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 8,575.22

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	17 man-days	1,836.00
Mileage	0.31 /mile	1200 miles	372.00
Tolls	10.00 /trip	3 trips	30.00
Survey Equipment Rental	65.00 /day	10 day	650.00
CAD Equipment	15.00 /hour	30 hours	450.00
Level D Protection	15.00 /man-day	0 mndays	0.00
Tele./Postage/Repro./Field supplies	250.00 lump sum		250.00
		Total Direct Non Salary Costs:	3,588.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 2,385.67

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Luzerne Road Site
Health & Safety Plan, Geoprobe & Drilling Support

April 16, 1999

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	HASP,Geoprobe & Drilling Support	$45,563.62

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	1999	47.69	1999	51.51	12	572.28
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	1999	31.53	1999	34.68	0	0.00
Staff Geologist/ Scientist/Engineer	IV	1999	27.40	1999	30.14	2	54.80
Staff Geologist/ Scientist/Engineer/CAD Operator	III	1999	23.78	1999	26.40	627	14,910.06
Senior Technician/Staff Engineer/Scientist/Geologist	II	1999	17.60	1999	19.71	4	70.40
Technician/Draftsperson	I	1999	15.94	1999	17.85	0	0.00
						Total Direct Salary Costs:	15,607.54

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 18,260.82

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Per Diem	108.00 /man-day	44 man-days	4,752.00
Mileage	0.31 /mile	2800 miles	868.00
Tolls	10.00 /trip	7	70.00
Survey Equipment Rental	65.00 /day	0 day	0.00
CAD Equipment	15.00 /hour	0 hours	0.00
Level D Protection	15.00 /man-day	55 mndays	825.00
Tele./Postage/Repro./Field supplies	100.00 lump sum		100.00
		Total Direct Non Salary Costs:	6,615.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 5,080.25

VENDOR/SUBCONTRACTOR CERTIFICATION

Please complete the following as applicable.

Vendor/Subcontractor Certification (Federal)

The Vendor/Subcontractor, YEC, Inc. (Company Name), represents and certifies that it is as prescribed by applicable provisions of the Federal Acquisition Regulations as:

- ✓ **Small Business**
- ✓ **Small Disadvantaged Business**
- __ **Women Owned Small Business**
- __ **Large Business**
- __ **Other** ____________

Certifying Officer of Corporation

President
Title

4/16/99
Date

Subcontractor Certification (State)

The Vendor/Subcontractor, YEC, Inc. (Company Name), represents and certifies that it is as prescribed by applicable provisions of the laws of the State of New York (State) as:

- ✓ **Minority Owned Business**
- ✓ **Disadvantaged Business**
- __ **Women Owned Business**
- __ **Other** ____________
- __ **A copy of the certification is attached hereto (if applicable)**

Certifying Officer of Corporation

President
Title

4/16/99
Date

Notice: Any person who misrepresents a firm status as a business concern in order to obtain a contract or subcontract to be awarded under preference programs established by law may be subject to criminal or civil action and other penalty as may be proscribed by law.

SUBCONTRACTOR ACKNOWLEDGMENT FORM

I, Y. S. Ed Chen, on behalf of Subcontractor, confirm the following:

1. I have reviewed and am in Agreement with the costs presented in the attached Bid b Proposal Sheet/Schedule of Prices, and understand that the work described in the plans and specifications will be completed in full for the price presented;

2. I have reviewed all pertinent documents made available to us in preparing the cost estimate, including the Draft Subcontract Agreement; and

3. I agree to enter into the Subcontract Agreement without further modification, if selected for this project and understand that E & E at its discretion may determine our bid to be nonresponsive if any subsequent Subcontract Agreement modification is presented.

Signature of Authorized Subcontractor Representative

YZL, Inc

Name of Subcontractor

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

12/02/98

PRODUCER
Beardsley, Brown & Bassett
55 Walls Drive
Fairfield, CT 06430
203 254-7525

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED
YEC, Inc.
612 Corporate Way
Valley Cottage, NY 10989

INSURERS AFFORDING COVERAGE

INSURER A: Gulf Insurance Group
INSURER B:
INSURER C:
INSURER D:
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	☐ COMMERCIAL GENERAL LIABILITY				FIRE DAMAGE (Any one fire)	$
	☐ ☐ CLAIMS MADE ☐ OCCUR				MED EXP (Any one person)	$
	☐				PERSONAL & ADV INJURY	$
	☐				GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
	☐ POLICY ☐ PROJECT ☐ LOC					
	AUTOMOBILE LIABILITY ☐ ANY AUTO				COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS				BODILY INJURY (Per person)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS				BODILY INJURY (Per accident)	$
	☐				PROPERTY DAMAGE (Per accident)	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	☐ OCCUR ☐ CLAIMS MADE				AGGREGATE	$
						$
	☐ DEDUCTIBLE					$
	☐ RETENTION $					$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				WC STATUTORY LIMITS / OTHER	
					E.L. EACH ACCIDENT	$
					E.L. DISEASE - EA EMPLOYEE	$
					E.L. DISEASE - POLICY LIMIT	$
A	OTHER Professional Liability	GS5857001	10/05/98	10/05/99	$1,000,000 Aggregate $1,000,000 Occurrence $10,000 Deductible	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
The certificate holder above is listed as Additional Insured on the Policy.
Professional Service Agreement No.QQ1000-E for Engineering Services in Support of Ecology & Environment's NYSDEC Stand-By Contract.
This is a Claims Made Policy -10/5/94 Retro Date.
Pollution Liability is included in this policy.

CERTIFICATE HOLDER ☒ ADDITIONAL INSURED; INSURER LETTER:

N.Y. State Dept. of
Environmental Conservation and
Ecology and
Environment Engineering, P. C.,
368 Pleasant View Drive
Lancaster, NY 14086

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97) 1 of 2 #36316 MEF

CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY) 4/16/99

PRODUCER

Paris-Kirwan Associates, Inc.
1040 University Avenue
Rochester, NY 14607

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

INSURED

YEC, Inc. &
YEC Engineering, PC
612 Corporate Way
Valley Cottage NY 10989

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A Hartford Insurance Co.
COMPANY LETTER B
COMPANY LETTER C
COMPANY LETTER D
COMPANY LETTER E

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF. DATE (MM/DD/YY)	POLICY EXP. DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY ☒ COMM. GENERAL LIABILITY ☐ CLAIMS MADE ☒ OCC. ☐ OWNER'S & CONTRACT'S PROT ☐	01SBACG0943	2/17/99	2/17/00	GENERAL AGGREGATE	2000000
					PROD-COMP/OP AGG.	2000000
					PERS. & ADV. INJURY	1000000
					EACH OCCURRENCE	1000000
					FIRE DAMAGE (One Fire)	300000
					MED. EXP. (One Pel)	10000
A	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ☒ NON-OWNED AUTOS ☐ GARAGE LIABILITY	01SBACG0943	2/17/99	2/17/00	COMBINED SINGLE LIMIT	1000000
					BODILY INJURY (Per person)	
					BODILY INJURY (Per accident)	
					PROPERTY DAMAGE	
A	EXCESS LIABILITY ☒ UMBRELLA FORM ☐ OTHER THAN UMBRELLA FORM	01SBACG0943	2/17/99	2/17/00	EACH OCCURRENCE	1000000
					AGGREGATE	1000000
A	WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY	01WECVT2485	2/17/99	2/17/00	☐ STATUTORY LIMITS	
					EACH ACCIDENT	100000
					DISEASE-POLICY LIMIT	500000
					DISEASE-EACH EMP.	100000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND ECOLOGY AND ENVIRONMENT ENGINEERING, P.C. NAMED AS ADDITIONAL INSURED.

CERTIFICATE HOLDER

ECOLOGY AND ENVIRONMENT
ENGINEERING, P.C., D. GOULDING
368 PLEASANT VIEW DRIVE
LANCASTER, NY 14086

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Angelo

ACORD 25-S (7/90)

Drilling Scope of Work

EXHIBIT 1
SCOPE OF WORK
LUZERNE ROAD SITE
GLENS FALLS, NEW YORK

Project Description

This work effort is part of a remedial investigation being conducted for our client. The purpose of this effort is to thoroughly investigate and appraise the potential impact to public health, welfare and the environment from past activities involving the release of PCBs. The site is located at 53 Luzerne Road in Glens Falls, New York. A total of nine wells, six shallow and three deep, as well as approximately 210 geoprobe boreholes, will be installed. Two drill crews will be required. The geoprobe crew will operate for the entire project duration, while the monitoring well crew will operate for approximately the second half of the field effort.

Site Geology

The geology beneath the site consists of lacustrine sands underlain by shale and limestone. Depth to bedrock is estimated to be approximately 120 feet below ground surface (BGS); no bedrock wells are to be installed. Groundwater is anticipated to be encountered at 16- to 24-feet BGS.

Task Description

The following scope of work describes the various tasks involved in the project. The task descriptions correspond to the task costing information requested in Exhibit 2. The subcontractor will be responsible for:

- submission of a written health and safety plan for drilling activities at least five business days PRIOR TO COMMENCING WORK ON SITE;
- mobilizing all necessary equipment and supplies to the site AT THE BEGINNING of the respective field tasks (geoprobe and monitoring well installation);
- providing a steam cleaner and water tank for decontaminating all equipment FOR EACH DRILL CREW;
- arranging for water and power sources near the site;
- drilling and installing six shallow and three deep overburden monitoring wells as described in Tasks 2 and 3;
- providing a minimum of 3 complete split spoon samplers and conducting continuous split spoon sampling during all monitoring well borehole installation;

- using a second work crew, installing approximately 210 geoprobe boreholes, facilitating collection of both groundwater and subsurface soil samples, then backfilling each borehole with bentonite chips and bentonite/cement grout, as described in Task 4;
- removing all non-contaminated disposables such as sand bags, cement bags, and sheet plastic generated during drilling operations.

The subcontractor shall be prepared to be on site at the agreed-upon time and date arranged with E & E at the time of contract awarding. All drilling equipment needed will be on site at this time. Currently, it is anticipated field work will be start in the summer of 1999. The geoprobe activity will commence first. After approximately two weeks of geoprobe activity, the drill rig crew will arrive on site and install all groundwater monitoring wells simultaneous to the continued operation of the geoprobe crew. Once on site, the subcontractor shall complete the work within four consecutive 5-day work weeks, as noted in Exhibit 2.

All nine wells and 210 geoprobe boreholes will be installed in relatively flat areas throughout the property. All work is expected to be conducted wearing Level D personal protection, although all personnel must be prepared to upgrade to Level C protection, if required.

The Lurzerne Road site is not a secure location. Leaving equipment on site overnight is at the discretion of the drilling contractor.

E & E will establish utility clearance for all subsurface activities. Contaminated investigation-derived waste disposal is the responsibility of the overall client.

TASK 1. MOBILIZATION/DEMOBILIZATION

Mobilize and demobilize equipment and personnel for all tasks described above; assemble and disassemble decontamination pad; and write and submit a site-specific health and safety plan for all drilling activities. The health and safety plan must be submitted to E & E for review (not approval) at least 5 business days prior to commencing any project-related activities.

TASK 2. SHALLOW OVERBURDEN MONITORING WELL INSTALLATION

Six overburden groundwater monitoring wells will be installed in the uppermost water bearing zone, which is assumed to be approximately 16 to 24 feet BGS. Each well borehole will be drilled using 4 1/4 inch hollow stem augers. Continuous split spoon samples will be collected from grade to total depth. Once total depth is reached, a 10-foot long well screen of 2-inch inner diameter (ID) schedule 40, flush threaded, polyvinyl chloride (PVC) with 0.01-inch slots will be placed on the bottom of the well. Threaded to the bottom of the 10-foot long screen will be a PVC end plug and threaded to the top of the screen will be 2 inch ID PVC well casing which will extend to two feet above grade. A sand filter pack of Morie brand # 0 or equivalent will be

poured around the well screen from the bottom of the well to two feet above the screen. A seal of bentonite chips will be placed two feet above the sand pack hydrated using a clean water source. A slurry of cement/5% bentonite grout will be installed via tremie line from the bentonite seal to grade. A slip cap with a 3/8-inch vent hole will be placed on the PVC casing.

Well protection construction and decontamination procedures are discussed below.

TASK 3. DEEP OVERBURDEN MONITORING WELL INSTALLATION

Three deep overburden wells will be installed to the top of the confining layer, present at a depth of approximately 120 feet BGS. Each of these wells will be paired with three of the shallow wells described above. Steel well casings will be set at each deep well in a telescoping fashion as to prevent floating contaminants present in the upper water zone from entering the well. The upper portion of the boreholes will be installed to a depth of approximately 40 feet BGS using 6 1/4-inch ID hollow stem augers. A 6-inch diameter steel casing will be set in place using cement grout. Following a minimum period of 24 hours, the hole will be extended to the depth of the first confining layer (approximately 120 feet BGS). Split spoon samples will be collected from grade to total depth.

Once total depth is reached, a 10-foot long well screen of 2-inch inner diameter (ID) schedule 40, flush threaded, polyvinyl chloride (PVC) with 0.01-inch slots will be placed on the bottom of the well. Threaded to the bottom of the 10-foot long screen will be a PVC end plug and threaded to the top of the screen will be 2 inch ID PVC well casing which will extend to two feet above grade. A sand filter pack of Morie brand # 0 or equivalent will be poured around the well screen from the bottom of the well to two feet above the screen. A seal of bentonite chips will be placed two feet above the sand pack hydrated using a clean water source. A slurry of cement/5% bentonite grout will be installed via tremie line from the bentonite seal to grade. A slip cap with a 3/8-inch vent hole will be placed on the PVC casing.

Well protection construction and decontamination procedures are discussed below.

TASK 4. GEOPROBE BOREHOLE INSTALLATION

A geoprobe is to be used to install approximately 210 soil borings to a depth of 16- to 24-feet each. Assume soils consist of mostly sand. All borings are to be continuously sampled from grade to total depth and will be logged by E & E staff geologists. Analytical soil and groundwater samples will be collected from each borehole within 24 hours of installation. Due to the nature of the unconsolidated sandy soils present at the site, use of a modified split spoon sampler is recommended. The volume of soil required for collection is relatively small and can be retrieved using a 1-inch diameter sampler. All boreholes are to be backfilled to within two feet of grade with bentonite chips, hydrated, and then filled with bentonite/cement grout. All soil cuttings are to be drummed.

Well Protection

Each of the nine monitoring wells will be completed with a four-inch ID steel protective casing equipped with a locking cover. This protective casing will be set into the grout approximately three feet below grade and extend above the PVC well cap by two inches. A two-foot square by 3 1/2-inches thick, concrete drainage pad will be poured around the well casing within one day following well completion. A 1/4- to 1/2-inch diameter drain hole will be drilled through the steel protective casing not more than four inches above the surface of drainage pad. The steel casing will be painted using liquid (brush-on) bright yellow paint. Wells will be labeled via use of a paint stick. All wells will be secured with padlocks that are keyed alike.

Decontamination

Decontamination must be performed so that all down-hole equipment, as well as the back of the drill rig, can be effectively cleaned of site contamination. Decontamination will be accomplished by using high pressure steam. A decontamination pad is to be constructed to assist in keeping cleaned items from contacting the ground surface. Steam cleaning will be required before drilling each monitoring well borehole and prior to exiting the site. All down-hole geoprobe equipment will be decontaminated with clean water and alconox between each borehole. All decontamination fluids are to be containerized by the drilling subcontractor.

Investigation Derived Waste

It is planned that all Investigation Derived Waste (IDW), including soil cuttings and decontamination wastes, will be contained in 55-gallon drums by the drilling subcontractor. The drummed IDW will be moved to a central on-site staging area by the drilling subcontractor at the direction of E & E. Sampling and disposal of these wastes will not be the responsibility of the drilling subcontractor.

MEMORANDUM

TO: Drilling companies bidding on Luzerne Road drilling program

FROM: Jon Nickerson, RI Task Leader

RE: Changes to drilling scope of work

DATE: April 9, 1999

CC: S. Blair, P.E.

Various inquiries have been made regarding the drilling program at the Luzerne Road site. The following clarifications and changes have been made. Attached is a modified Exhibit 2.

1. Water samples will be collected from approximately 10 geoprobe holes; not from all 210 holes.

2. An additional effort involving installation of three boreholes at each of eight residences has been added. Also, two more boreholes will be added at the scope of work at the main site.

3. Based on an average installation rate of seven geoprobe boreholes per day, Geoprobe drilling is to be completed within a 34 working day period.

3. Only one of the deep wells will require a telescoping casing. The tophole of this well is to be drilled using 12 1/4-inch I.D. augers, and drilled to a depth of 40 feet. Ten-inch I.D. steel casing is then to be grouted in place. Following a minimum 24-hour period, the well is to be extended to a depth of 120 feet using 4 1/4" I.D. augers. The entire borehole is to be split spooned sampled from grade to total depth. Due to the time required to install 4 1/4 augers through the 10" casing to a depth of 40 feet, a line item of one hour of drill string assembly has been added.

4. The other two deep wells will be drilled from grade to a depth of 120 feet using a conventional non-telescoping approach. These wells will be split spoon sampled from grade to a total depth.

5. All monitoring well installation is to be completed in 13 working days.

<u>REMINDER</u>: All drilling is charged at unit rates. The total quantities stated in Exhibit 2 are estimates. E & E does not in any way guarantee that the quantities listed will be required during this RI.

MEMORANDUM

TO: Drilling companies bidding on Luzerne Road drilling program

FROM: Jon Nickerson, RI Task Leader

RE: Changes to drilling scope of work

DATE: April 14, 1999

CC: S. Blair, P.E.

E & E has learned additional information about the subsurface geology at the Luzerne Road site which indicates a change to the scope of work is necessary. In speaking with those who have experience drilling in the Warren County area, E & E has learned that the overburden soils below a depth of approximately 35 feet contain large cobbles and boulders. While this geology will not affect the geoprobe work or the shallow monitoring well installation work scopes, it has severe ramifications to the deep groundwater monitoring well installation work scope. This geology is extremely difficult to penetrate using augering methods. The approach which has proven successful in the past is using an ODEX system. E & E has thus modified the work scope to the following.

TASK 3: DEEP MONITORING WELL INSTALLATION

For the two non-telescoping deep wells, a 3 1/4" I.D. auger will be advanced as deep as possible, with continuously split spooning starting from ground surface. Once refusal is encountered by the split spoon, the augers will be removed (The hole will likely collapse, but this is not consequential.) A 4- or 6-inch I.D. (approximately) ODEX drill system will be advanced from grade to the desired depth (approximately 120 feet). A 2-inch diameter PVC well equipped with a 10-foot segment of screen will be installed. Casing stick-up will be 2-foot. A sand pack will extend from the bottom of the well to a height of 2 feet above the top of the screen. A 2-foot bentonite seal will then be installed and hydrated. Following a minimum period of one hour, a cement-bentonite slurry will be installed from the top of bentonite to a grade. The well will be equipped with a locking steel protective casing, and two-foot square anti-percollation collars will be constructed around each well not more than one day following construction.

E & E recognizes that the ODEX system uses various non-standard sizes for the flush-joint casing and bits. The final diameter of the hole need only be large enough to successfully construct a good well.

For the one deep well to be installed in the contaminated zone, 81/4 I.D augers will be advanced to a depth of 40 feet, with continuous split spooning. 6-inch casing will then be grouted in place as the augers are removed. Following a minimum period of 24 hours, the 4-inch ODEX system will be used to drill from a depth of 40 feet to a depth of 120 feet. A 2-inch diameter well will

then be constructed as described above.

All cuttings must be containerized, and the containers must be staged at a designated drum storage area on site by the drill crew.

Please complete the modified Exhibit 2 attached. Also, note that due to this change, all drilling quotations for this project are due by 11:00 on Tuesday, April 20, 1999. Faxed copies are acceptable as long as an original is received by noon on Friday, April 23, 1999. Bidders may choose to subcontract ODEX drilling. If this is done, note that E & E's contract requirements apply to all sub-subcontractors, as well.

EXHIBIT 2
PRICE SCHEDULE
LUZERNE ROAD SITE
GLENS FALLS, NEW YORK
(Modified April 14, 1999)

TASK 1. MOBILIZATION/DEMOBILIZATION

Write health and safety plan for drilling personnel; mobilize drill rig, geoprobe, drilling equipment, drilling supplies, and well construction materials	(Lump Sum Cost)	$______
Decon pad construction and disassembly		$______
TASK 1 TOTAL:		$______

TASK 2. SHALLOW MONITORING WELL INSTALLATION

150 ft. of 4 1/4-inch hollow stem auger drilling (25 ft./well)	($_____/ft.)	$_______
150 ft. of continuous split spoon sampling (78 samples)	($_____/ea.)	$_______
60 ft. of 2-inch I.D., Sch. 40, 0.010 machine slotted, flush threaded, PVC screen (10 ft./well)	($_____/ft.)	$_______
6 2-inch PVC slip-on top caps	($_____/ea.)	$_______
6 2-inch PVC flush threaded end caps	($_____/cap)	$_______
102 ft. 2-inch I.D., Sch 40 PVC flush-joint well casing (17 feet/well)	($_____/ft.)	$_______
72 ft. 0.10-size sand filter pack	($_____/ft.)	$_______
12 ft. bentonite pellet seal	($_____/ft.)	$_______
66 ft. bentonite/cement grout	($_____/ft.)	$_______
6 above-ground completions with lockable steel protective casing, lock, 3 weep holes, concrete drainage pad	($_____/well)	$_______
7 events of decontamination	($_____/hr.)	$_______
18 55-gallon steel drums	($_____/ea.)	$_______
2 hours of Drum Staging		
TASK 2 TOTAL:		$_______

TASK 3. DEEP MONITORING WELL INSTALLATION

280 ft. of 3 1/4-inch hollow stem auger drilling (120 feet for each non-telescopoing hole; 40 feet in telescoping hole	($_____/ft.)	$_______
280 ft. of continuous split spoon sampling (140 samples)	($_____/ea.)	$_______
240 feet of 4-inch or 6-inch ODEX drilling in two non-telescoping holes	($_____/ft.)	$_______
40 ft. of 8 1/4-inch hollow stem auger drilling in telescoping hole	($_____/ft.)	$_______
40 ft. 6-inch steel casing, grouted in place	($_____/ft.)	$_______
One hour labor for installing 4-inch ODEX drill string in 6-inch casing	($_____/hr.)	$_______
30 ft. of 2-inch I.D., Sch. 40, 0.010 machine slotted, flush threaded, PVC screen	($_____/ft.)	$_______
3 2-inch PVC slip-on top caps	($_____/ea.)	$_______
3 2-inch PVC flush threaded end caps	($_____/cap)	$_______
336 ft. 2-inch I.D., Sch 40 PVC flush-joint well casing (112 feet/well)	($_____/ft.)	$_______
36 ft. 0.10-size sand filter pack (12 ft. / well)	($_____/ft.)	$_______
6 ft. bentonite pellet seal (2 ft./well)	($_____/ft.)	$_______
318 ft. bentonite/cement grout	($_____/ft.)	$_______
3 above-ground completions with lockable steel protective casing, lock, 3 weep holes, concrete drainage pad	($_____/well)	$_______
5 events of decontamination (One initial decon; one following installation of 40-foot tophole; and one following installation of each well)		
Drums for containerizing all cuttings	($_____/drum)	$______
Drum staging	($____/hr.)	$______
TASK 3 TOTAL:		$_______

TASK 4: GEOPROBE BOREHOLE INSTALLATION

Install 236 geoprobe boreholes; collect continuous soil samples from grade to specified depth. Collect groundwater using screen point and pump or mini-bailer from 10 of these 236 boreholes. Approximate depth of each hole is anticipated to be between 20 and 25 feet BGS. Each borehole will be backfilled with bentonite chips to within two feet of grade, then backfilled with bentonite/cement grout. All down-hole equipment will be decontaminated between borings.

Geoprobe and operator, and steam cleaning equipment	($____/day)	$_______
4248 ft. bentonite chips	($____/ft)	$_______
472 ft. bentonite/cement grout	($____/ft)	$_______
Other costs (please specify)		
	($____/ea)	$_______
	($____/ea)	$_______
	($____/ea)	$_______
TASK 4 TOTAL:		$_______

TOTAL CONTRACT NOT-TO-EXCEED PRICE: $_______

ALL WORK SHALL BE COMPLETED IN 33 CONSECUTIVE BUSINESS DAYS, EXCLUDING WEEKENDS AND HOLIDAYS.

Please provide unit costs for the following items. If any of these items are required on the job, costs based on the following rates will be added to the total not-to-exceed price.

Shelby tubes	$_____/ea.
Upgrade to Level C respiratory protection	$_____/hr.

Drilling Quotations

Drilling Quotations

Drilling Quotation Summary Comparison Table

Adjustments to the bids were required due to some bidders not providing quantities for all bid items. Also, each bidder was required to add the cost to conduct four hours of site clearing and collect five Shelby tubes. The following table summarizes these changes:

Vendor	Original Drilling Cost Quotation	Item	Unit Cost	Item Cost	Total Drilling Cost
Applied Earth Technologies	$78,538.40	- Site Clearing	$81/hr., 4 hrs.	$ 324	$ 81,599.40
		- Additional ODEX Drilling	$26.40/ft.; 80 feet	$ 2,112	
		- Shelby Tube Collection	5 tube;$150 ea.	$ 625	
American Auger	$95,611	- Site Clearing	$95/hr., 4 hrs.	$ 380	$ 100,691
		- Additional Day of Geoprobe	$1,250 /day	$ 1,250	
		- Shelby Tube Collection	5 tubes; $150 ea.	$ 750	
		-Subtract water truck	$2,700	$ 2,700	
SJB Services, Inc.	$105,459	- Site Clearing	$130/hr., 4 hrs.	$ 520	$ 110,729
		- Additional ODEX Drilling	$55/ft.; 80 feet	$ 4,400	
		- Shelby Tube Collection	5 tubes @ $70 ea.	$ 350	

See Attached Quotes.

Applied Earth Technologies
Environmental and Geotechnical Services

800-607-6883

One Roosevelt Highway, Suite [illegible]
Colchester, Vermont 0544[illegible]
802-655-0211 • FAX 802-655-[illegible]
email: aet@together.net

6589 US Highway [illegible]
Canton, New York 13617
315-265-5036 • FAX 315-265-5104
email: terratec@[illegible]

April 20, 1999 **_Proposal 9904012_**

Mr. Jon Nickerson
Ecology & Environment, Inc.
368 Pleasantview Drive
Lancaster, NY 14086
Phone: 716-684-8060
FAX: 716-684-0844

RE: Drilling Services at Luzerne Road Site, Glens Falls, Warren County, NY
E&E Project QQ08

Dear Mr. Nickerson:

Applied Earth Technologies (AET) is pleased to present this proposal for your consideration as follows:

- Pricing in Exhibit 2
- Copy of Current Certificate of Insurance
- Subcontractor Acknowledgment Form
- Subcontractor Certification Form with New York WBE Certification
- Subcontractor's Bid Response Form
- Notices

We will perform all services in a professional manner in accordance with all applicable federal, state and local regulations.

Thank you for considering Applied Earth Technologies. Please don't hesitate to call me at 800/607-6883 or 315/265-5036 with any questions regarding this project or any other that we may assist you with.

Sincerely yours,

SANDRA L. LACKAS
Sales
(Signing for Antonia L. Bouchard, CEO)

PRICE SCHEDULE - EXHIBIT 2

See Attachment.

CERTIFICATE OF INSURANCE

See Attachment.

SUBCONTRACTOR ACKNOWLEDGEMENT

See Attachment.

SUBCONTRACTOR CERTIFICATION

See Attachment.

SUBCONTRACTOR'S BID RESPONSE FORM

See Attachment.

NOTICES

This quotation is submitted with the following assumptions:

1. E&E will clear all boring locations for public and private underground utilities and provide written notice to AET of such.
2. AET will prepare a Site Safety Plan and submit to E&E for review at least 5 days prior to commencing work.
3. AET will mobilize 3 drilling teams.

4. There are no obstructions that will restrict the free movement of personnel and/or equipment.

5. The Client will:
   - clear access to the site;
   - assure that the site is drill rig accessible;
   - identify the boring locations & decontamination/drum staging area;
   - develop & sample the wells.

6. Drumming of waste will be required. Drums will be staged. Disposal of the waste will be the Client's responsibility.

6. Site restoration may be required on a case-specific basis and is not included in the pricing.

7. Standby time (time delays uncontrolled by AET) will be invoiced based on the fee of $140/hour.

8. Level D Personal Protection Equipment is required. AET will be prepared to upgrade to Level C if required.

9. Prevailing wages or Davis Bacon Act wages do not apply for Warren County NY.

10. Schedule: Geoprobe Drilling/Sampling = 34 days
Drilling/Sampling/Monitoring Well Installation = AET estimates 7 days

All current federal and state laws and regulations take precedence over this contract.

TASK 3. DEEP MONITORING WELL INSTALLATION

280 ft. of 3 1/4-inch hollow stem auger drilling (120 feet for each non-telescopoing hole; 40 feet in telescoping hole	($16.30 /ft.)	$ 4564
280 ft. of continuous split spoon sampling (140 samples)	($16.30 /ea.)	$ 4564
240 feet of 4-inch or 6-inch ODEX drilling in two non-telescoping holes	($ 26.40/ft.)	$ 6336
40 ft. of 8 1/4-inch hollow stem auger drilling in telescoping hole	($ 19.10/ft.)	$ 764
40 ft. 6-inch steel casing, grouted in place	($99.00/ft.)	$ 3960
One hour labor for installing 4-inch ODEX drill string in 6-inch casing	($ 275 /hr.)	$ 275
30 ft. of 2-inch I.D., Sch. 40, 0.010 machine slotted, flush threaded, PVC screen	($ 8.30 /ft.)	$ 249
3 2-inch PVC slip-on top caps	($ 4.00 /ea.)	$ 12.00
3 2-inch PVC flush threaded end caps	($18.00 /cap)	$ 54.00
336 ft. 2-inch I.D., Sch 40 PVC flush-joint well casing (112 feet/well)	($ 6.00 /ft.)	$ 2016
36 ft. 0.10-size sand filter pack (12 ft. / well)	($ 5.20 /ft.)	$ 187.20
6 ft. bentonite pellet seal (2 ft./well)	($31.05 /ft.)	$ 186.30
318 ft. bentonite/cement grout (by tremie method)	($ 8.00 /ft.)	$ 2544
3 above-ground completions with lockable steel protective casing, lock, 3 weep holes, concrete drainage pad	($ 140 /well)	$ 420
5 events of decontamination (One initial decon; one following installation of 40-foot tophole; and one following installation of each well)	$ 70/hr	350
Drums for containerizing all cuttings — 18	($ 55 /drum)	$ 990
Drum staging - 2 hours	($ 60 /hr.)	$ 120
TASK 3 TOTAL:		$ 27591.50

TASK 4: GEOPROBE BOREHOLE INSTALLATION

Install 236 geoprobe boreholes; collect continuous soil samples from grade to specified depth. Collect groundwater using screen point and pump or mini-bailer from 10 of these 236 boreholes. Approximate depth of each hole is anticipated to be between 20 and 25 feet BGS. Each borehole will be backfilled with bentonite chips to within two feet of grade, then backfilled with bentonite/cement grout. All down-hole equipment will be decontaminated between borings.

9904012 - Applied Earth Technologies

34d. – Geoprobe and operator, and steam cleaning equipment	($ 880 /day)	$ 29920
4248 ft. bentonite chips	($0.50/ft)	$ 2124
472 ft. bentonite/cement grout	($3.25/ft)	$ 1532
Other costs (please specify)		
13- 55 gallon steel drums	($ 55 /ea)	$ 715
2 hr – drum staging	($ 60 ~~/ea~~)hr	$ 120
10 - expendables	($17.25ea)	$ 172.50
TASK 4 TOTAL:		$ 34583.50

TOTAL CONTRACT NOT-TO-EXCEED PRICE: $ 78538.40

ALL WORK SHALL BE COMPLETED IN 33 CONSECUTIVE BUSINESS DAYS, EXCLUDING WEEKENDS AND HOLIDAYS. (Geoprobe work is estimated @ 34 days)

Please provide unit costs for the following items. If any of these items are required on the job, costs based on the following rates will be added to the total not-to-exceed price.

Shelby tubes	$ 125 /ea.
Upgrade to Level C respiratory protection	$____/hr.

Drilling / Well Installation / Sampling increase to upgrade to Level C = 10%

9904012 Applied Earth Technologies

ACORD. CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY)

DUCER

ck and Parker, Inc.
55 East Jackson Boulevard
Suite 600
Chicago, IL 60604-4187

TAM

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Applied Earth Technologies
6589 U.S. Highway 11
Canton, NY 13617

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A	RELIANCE NATIONAL COMPANIES
COMPANY LETTER B	FEDERAL INSURANCE COMPANY (CHUBB)
COMPANY LETTER C	
COMPANY LETTER D	
COMPANY LETTER E	

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$N/A
A	☒ COMMERCIAL GENERAL LIABILITY	NSA1114600-01 PKG	4/15/98	4/15/99	PRODUCTS-COMP/OP AGG.	$2,000,000
	☐ CLAIMS MADE ☒ OCCUR.				PERSONAL & ADV. INJURY	$INCL OCC
	☐ OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE	$2,000,000
	☒ X, C, U				FIRE DAMAGE (Any one fire)	$ 250,000
					MED EXPENSE (Any one person)	$N/A
	AUTOMOBILE LIABILITY					
A	☒ ANY AUTO	NKA1114638-01 BAP	4/15/98	4/15/99	COMBINED SINGLE LIMIT	$2,000,000
	☐ ALL OWNED AUTOS				BODILY INJURY (Per Person)	$
	☐ SCHEDULED AUTOS					
	☐ HIRED AUTOS				BODILY INJURY (Per Accident)	$
	☐ NON-OWNED AUTOS					
	☒ GARAGE LIABILITY				PROPERTY DAMAGE	$
	☒ Phys. damage	$500 coll/comp ded				
	EXCESS LIABILITY				EACH OCCURRENCE	$1,000,000
	☐ UMBRELLA FORM				AGGREGATE	$1,000,000
B	☒ OTHER THAN UMBRELLA FORM	(99)79759193 XSL	4/15/98	4/15/99	PROD-COMP/OP	$1,000,000
	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY				☒ STATUTORY LIMITS	
A		NWA1114639-01 WC	4/15/98	4/15/99	EACH ACCIDENT	$2,000,000
					DISEASE-POLICY LIMIT	$2,000,000
					DISEASE-EACH EMPLOYEE	$2,000,000
	OTHER				CLAIMS MADE COVERAGE	
A	Pollution/ Professional Liability	NTF2509759-01	4/15/98	4/15/99	$1,000,000 each claim $1,000,000 aggregate	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

CERTIFICATE HOLDER 00038

FOR BIDDING PURPOSES ONLY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

TAM

ACORD 25-S (7/90)

SUBCONTRACTOR ACKNOWLEDGMENT FORM

I, Sandra Lackas, on behalf of Subcontractor, confirm the following:

1. I have reviewed and am in Agreement with the costs presented in the attached Bid Proposal Sheet/Schedule of Prices, and understand that the work described in the plans and specifications will be completed in full for the price presented;

2. I have reviewed all pertinent documents made available to us in preparing the cost estimate, including the Draft Subcontract Agreement; and

3. I agree to enter into the Subcontract Agreement without further modification, if selected for this project and understand that E & E at its discretion may determine our bid to be non-responsive if any subsequent Subcontract Agreement modification is presented.

Sandra Lackas

Signature of Authorized Subcontractor
Representative

Applied Earth Technologies
Canton NY

Name of Subcontractor

SUBCONTRACTOR'S CERTIFICATION FORM

The Subcontractor, Applied Earth Technologies represents and certifies that is is as prescribed by:

TerraTech Incorporated dba Applied Earth Technologies
(Company Name)

applicable provisions of the laws of the State of New York, a:

__ Minority Owned Business

__ Disadvantaged Business

[✓ Women Owned Business]

__ Other ____________

[✓ A copy of the certification is attached hereto (if applicable)]

Antonia L. Bouchard
Certifying Officer of Corporation

CEO
Title

4-19-99
Date

Notice: Any person who misrepresents a firm status as a business concern in order to obtain a contract or subcontract to be awarded under preference programs established by law may be subject to criminal or civil action and other penalty as may be proscribed by law.

Rev. 8/95
Boilerlegal-2600

Empire State Development

Michelle Marquez-Melecio
Vice President
Affirmative Action, Compliance and Certification

July 23, 1997

ANTONIA BOUCHARD
TERRATECH INCORPORATED
6589 U S HIGHWAY 11
CANTON, NY 13617

Dear ANTONIA BOUCHARD:

This letter is sent to confirm your continued certification as a WBE-Owned Business Enterprise.

Be advised that your certification remains in effect until such time as you are contacted by this Office for recertification.

Please keep in mind that any changes which affect ownership, managerial, and/or operational control, (i.e. company name, business address, telephone numbers, principal products/services and bonding capacity, etc) must be reported to this Office within 30 days of the occurrence of such changes. Failure to submit any changes could result in your firm's certification status being revoked and the name of your firm removed from the Directory.

If your certification status is questioned by any public or private entity, you may direct the inquiry to this Office for further clarification. Should you have any questions regarding this matter, you may contact me at (518) 473-0582.

We wish you continued success in your future endeavors.

Sincerely,

Michelle Marquez-Melecio

Michelle Marquez-Melecio

File # 4951

JUL 25

Empire State Development Corporation
One Commerce Plaza Albany New York 12245

SUBCONTRACTOR'S BID RESPONSE FORM

Sandra Lackas

TO: Ms. Sondra Lockas
Applied Earth Technologies
6589 US Hwy 11
Canton, NY 13617

DATE: April 8, 1999

Re: Site Name: Luzerne Road Site
Site Location: Glens Falls, NY
Services Needed: Drilling
Client: New York State DEC
E & E Project No.: QQ08

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

Jon Nickerson
Ecology and Environment, Inc.
368 Pleasantview Drive
Lancaster, NY 14086

Telephone No.: 716/684-8060
Fax No.: 716/684-0844

X Bid enclosed.

___ No bid due to the following:

Please maintain our company on your bidder's list.

Signature Sandra Lackas

Printed Sandra Lackas

Title Sales Date 4-19-99

Applied Earth Technologies
Environmental and Geotechnical Services

800-607-6883

One Roosevelt Highway, Suite 110
Colchester, Vermont 05446
802-655-0211 • FAX 802-655-1258
email: cet@together.net

6589 US Highway 11
Canton, New York 13617
315-265-5036 • FAX 315-265-5104
email: terratec@northweb.com

April 26, 1999

Proposal 9904012R1

Mr. Jon Nickerson
Ecology & Environment, Inc.
368 Pleasantview Drive
Lancaster, NY 14086
Phone: 716-684-8060
FAX: 716-684-0844

RE: Drilling Services at Luzerne Road Site, Glens Falls, Warren County, NY
E&E Project QQ08 – Revision 1

Dear Mr. Nickerson:

Per our discussion this morning, here is the response to your questions:

1. Geoprobe acetate liners are covered under the 10 expendables @ $172.50.
2. Sourcing water = no added fees.
3. 80 additional feet of ODEX drilling @ $26.40/foot.
4. 40 Hour Certification – covered for the subcontractor.
5. Site Clearing = $81/hour (includes manpower and chain/handsaws).

Thank you for considering Applied Earth Technologies. Please don't hesitate to call me at 800/607-6883 or 315/265-5036 with any questions regarding this project or any other that we may assist you with.

Sincerely yours,

SANDRA L. LACKAS
Sales
(Signing for Antonia L. Bouchard, CEO)

Data Usability Summary Form Preparation Request for Quotation

Data Usability Summary Form Preparation Request for Quotation

EXHIBIT 1

SCOPE OF WORK

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 and feasibility study at the Luzerne Road Site, located in Glenns Falls, New York. E & E's assignment involves collection and analysis of environmental media samples. Following analysis, samples are to be validated by a third party.

Scope of Work

E & E will provide analytical data packages and supporting sample information such as sample numbers of duplicate samples, trip blanks, rinsate blanks, and matrix spike/matrix spike duplicates (MS/MSDs). The subcontractor is to review the data and prepare data usability summary forms (DUSRs) for all data generated from the analysis of environmental media samples. Environmental media may include soil, water, and sediment. The analyses include:

NYSDEC Method CLP-1 for volatile organic compounds.
NYSDEC Method 95-2 for Semivolatiles, including Trichlorobenzene
NYSDEC Method CLP-95-3 for polychlorinated biphenyls (PCBs);
NYSDEC Method CLP-M for the suite of TAL metals
NYSDEC Method CLP-M for cyanide
NYSDEC Method 415.1 for total organic carbon
NYSDEC Method 130.1 for hardness

The quantities of each of these analyses is not known at this time. However, it is anticipated that approximately 25 to 30 soil samples will be submitted for PCB analysis, and approximately 20 soils samples will submitted for VOC analysis. Water sampling will consist of approximately 25 samples submitted for full the TCL/TAL analytical suite. Five sediments will also likely be collected and submitted for PCB and TOC.

All DUSRs are to be prepared as per NYSDEC protocol. DUSR preparation will be performed at the unit rates listed in Exhibit B of this agreement.

Schedule

E & E is to receive a written validation report within 30 days following receipt of data from E & E. The project is expected to occur in the summer of 1999. Most validation, therefore, is expected to be completed in the second half of the summer.

EXHIBIT 2

COST SCHEDULE

The following unit rates are for preparing DUSRs on sample data for each of the analyses listed. These analyses correspond to the scope of work described in Exhibit 1.

Analysis	Unit Cost
Volatile organic compounds	$___
Semivolatiles, including Trichlorobenzene	$___
Polychlorinated biphenyls	$___
TAL Metals	$___
Cyanide	$___
TOC	$___
Hardness	$___

Data Usability Summary Form Preparation Quotation

Data Usability Summary Form Preparation Quotation

SUBCONTRACTOR'S BID RESPONSE FORM

TO: Andrea ~~Schussler~~ Schuessler
ChemWorld Environmental, Inc.
14 Orchard Way North
Rockville, MD 20854

RE: Site Name: Luzerne Road Site
Site Location: Glenns Falls, NY
Services Needed: Data Usability Summary Form Preparation
Client: New York State DEC
E & E Project No.: QQ08

DATE: April 12, 1999

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

Ecology and Environment, Inc.
368 Pleasantview Drive
Lancaster, NY 14086

__✓__ Bid enclosed.

_______ No bid due to the following:

Please maintain our company on your bidder's list.

Signature: Andrea P. Schuessler

Printed: ANDREA P. Schuessler

Title: President Date: 4/19/99

EXHIBIT 2

COST SCHEDULE

ChemWorld Environmental, Inc.

The following unit rates are for preparing DUSRs on sample data for each of the analyses listed. These analyses correspond to the scope of work described in Exhibit 1.

Analysis	Unit Cost
Volatile organic compounds (CLP-1)	$ 8
Semivolatiles, including Trichlorobenzene (95-2)	$ 10
Polychlorinated biphenyls (95-3)	$ 8
TAL Metals (CLP-M)	$ 9
Cyanide (CLP-M)	$ 2
TOC (415.1)	$ 2
Hardness (130.1)	$ 2

PCB Screening Analysis Scope of Work

Exhibit 1
Scope of Work

1. Background Information

Ecology and Environment Engineering, P.C., under contract with the New York State Department of Environmental Conservation, will be conducting a remedial investigation and feasibility study (RI/FS) at the Luzerne Road site in Glens Falls, New York. The purpose of the RI is to:

- Characterize the extent of PCB contamination in soil and groundwater at the site;
- Measure the concentration of PCBs in the storage cell, and determine the physical characteristics of the waste material stored in the cell;
- Determine whether contamination is confined to the site, or extends to adjacent properties; and
- Determine whether contamination is migrating off site via transport by surface water.

The analytical data will be used in an FS and, potentially, in remedial design. The purpose of an RI/FS is to identify the presence and extent of contamination in environmental media, to judge their potential impact on human and environmental receptors, and to recommend remedies for these impacts.

In addition to conventional laboratory methods for TCL and TAL analytes, a field screening approach will also be conducted to evaluate polychlorinated biphenyl (PCB) concentrations in site soils.

2. Field Screening Analyses

The screening method will be a modified Method 8082 analysis with a screening extraction equivalent to EPA Field Screening methods. The method will follow a laboratory's standard operating procedure (SOP). The extraction procedure includes weighing one gram of sample into a test tube, drying with sodium sulfate or absorbing the water with methanol, if necessary, and extracting with hexane by vortexing for one minute. Surrogate will be added prior to extraction. If the potential for sulfur interference is indicated, the extract will be subject to clean-up with elemental copper. The sample will be diluted and analyzed by a capillary column, gas chromatograph (GC) equipped with an electron capture detector.

A gas chromatograph (GC) will be calibrated initially with PCB Aroclor 1254 and 1016 in a linear range of at least 0.5 to 10 ppm. The calibration will be verified daily with acceptance criteria of 60% to 140%. If other PCBs are present or the samples exhibit a weathered pattern, the results will be reported as quantified by the nearest Aroclor. The detection limits will be 0.5 ppm for low level samples. Higher concentration samples will be analyzed at dilution with a

high value of up to 2000 ppm. Samples requiring more than one dilution will be reported as extended or greater-than values.

Quality control samples include a blank and matrix spike every 20 samples. Surrogate recoveries will be monitored on samples with concentrations up to 20 ppm. Surrogates in samples with higher concentrations will be diluted out of range. All matrix spike and surrogate recoveries must be within 60% to 140% or the sample will be re-extracted and re-analyzed to determine if the cause is matrix effects or analytical problems. If analytical problems are verified, the laboratory will contact the QA Officer to determine whether the entire batch requires re-extraction and re-analysis. A laboratory control sample may be used if persistent matrix problems are identified.

The laboratory will maintain a sample receipt logbook indicating the sample identification, sample date, sample analysis date, and date sample was returned for destruction. The laboratory also maintains a general logbook documenting all instrument maintenance, communications, method deviations, and other general items. The logbooks will be maintained as part of the project files at the end of the laboratory effort.

For the PCB screening samples, all results will be reported in wet weight. The report will include a summary of sample results, surrogate recoveries, and QC sample results. The laboratory will provide copies or originals of all chromatograms to the QA Officer on a weekly basis. All QC problems and corrective actions will be summarized. Any QC failures will be reported to the QA Officer immediately if corrective actions are not effective.

For the PCB screening samples, all results will be reported in wet weight. The report will include a summary of sample results, surrogate recoveries, and QC sample results. The laboratory will provide copies or originals of all chromatograms to the QA Officer on a weekly basis. All QC problems and corrective actions will be summarized. Any QC failures will be reported to the QA Officer immediately if corrective actions are not effective.

Prior to subcontract award, the subcontract lab must provide to E & E the following for approval:

- Affirmation of NYSDOH certification for solid waste PCB analysis;
- Copies of current acceptable performance evaluation samples for PCB analysis;
- List of instruments which will be used for this project;
- Copy of biographies of analysts which will be performing this work; and
- Copy of laboratory QA plan and SOP for PCB analysis.

3. Schedule

Approximately 1,600 soil samples are anticipated to be collected over a 7 week period spanning the months of July, August, and September, 1999. Daily sample quantities to be submitted to the laboratory are expected to range in size from 30 to 50 samples. All data is to be provided electronically and via Fax within 48 hours from the time of sample receipt.

Exhibit 2
PCB Analytical Screening
Luzerne Road RI

The following task is described in detail in Exhibit 1.

Task 1: Perform a PCB screening analysis on approximatley 1600 soil samples. Data is to be provided on a 48-hour turnaround time basis based on time or sample receipt. Data is to be provided both electronically and via a faxed hard copy. One hard copy of each sample batch's analytical data is also to be provided by US Mail to E & E. Subcontract laboratory is responsible for providing soil samples jars to the site.

Price per soil sample PCB screening analysis: $_________

PCB Screening Analysis Quotations

PCB Screening Analysis

Vendor	Unit Price	Quantity	Price
ChemTech	$49	1,585	$77,665
SCIlab	$45	1,585	$71,325
AMRO	$45	1,585	$71,325
Chopra-Lee	$42.5	1,585	$67,632
E & E	$42	1,585	$66,570

Geotechnical Analysis Scope of Work and Quotation

Geotechnical Testing

Vendor	Model/Item	Quantity	Unit Cost	Price
GZA GeoEnvironmental of New York	Moisture Content	5	6	$30
	Humic Content	5	38	$190
	Atterberg Limit	5	63	$315
	Particle Size: Sieve Analysis	5	88	$440
	Particle Size: Hydrometer	5	(combined above)	$0
	Dry Density	5	25	$125
	Specific Gravity	5	44	$220
	Total			$1,320
URS Greiner Woodward Clyde	Moisture Content	5	9	$45
	Humic Content	5	42	$210
	Atterberg Limit	5	99	$495
	Particle Size: Sieve Analysis	5	61	$305
	Particle Size: Hydrometer	5	123	$615
	Dry Density	5	39	$195
	Specific Gravity	5	48	$240
	Health and Safety			$275
	Total			$2,380
Atlantic Testing Limited	Moisture Content	5	5.5	$28
	Humic Content	5	27.5	$138
	Atterberg Limit	5	77	$385
	Particle Size: Sieve Analysis	5	82.5	$413
	Particle Size: Hydrometer	5	(combined above)	$0
	Dry Density	5	16.5	$83
	Specific Gravity	5	49.5	$248
	Total			$1,293

ecology and environment engineering, p.c.

BUFFALO CORPORATE CENTER
368 Pleasantview Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

April 15, 1999

Mr. Gary Klawinski
GZA Geoenvironmental of New York
364 Nagel Drive
Cheektowaga, NY 14225

RE: Geotechnical soils analysis quotation

Dear Mr. Klawinski:

Ecology and Environment Engineering, P.C. (E & E) is under contract with the New York State Department of Environmental Conservation to conduct a remedial investigation and feasibility study (RI/FS) at the Luzerne Road site in Queensbury, New York. This RI will require geotechnical analysis of soils. As discussed in our telephone conversation, E & E is seeking a quotation of unit prices to perform the geotechnical analyses listed in Table 1. In addition to these analyses, E & E with request one hard copy of the geotechnical data within 30 days upon receiving the samples.

Note that these samples are considered to contain a polychlorinated biphenyl (PCB) concentration in excess of 1 part per million. Likely concentrations will range in the hundreds of parts per million.

E & E has attempted to identify the ASTM methods which it intends to use for each of the analyses listed in Table 1. However, for those analyses for which no method number is listed, E & E requests GZA provide the ASTM method number.

Please provide your written quotation by 3:00 p.m. on Tuesday, April 20, 1999. A Faxed quotation is acceptable if an original copy is provided by Thursday, April 22. If you have any questions, please contact either myself or Steven Blair at 716/684-8060.

Sincerely,

Jon Nickerson

Jon Nickerson
RI Task Leader

cc: S. Blair, P.E.

recycled paper

Equipment Purchase, Service, and Rental Quotations

Summary of
Equipment and Service Cost Comparisons

Random Aeresol Dust Monitor Price Comparison Table

Vendor	Item	Unit Price	Quantity	Total
Instrument Depot	pDR-1000	$ 3,670	1	$3,670
Hazco	MIE Personal Dataram Monitor	$3,450	1	$3,450
Response Rentals	MIE PDM-3	$1,495	1	$1,495

Laptop Computer and Printer

Vendor	Model/Item	Quantity	Price
Dell Computer Corp.	Dell Inspiron 3500 with carry case Epson Stylus 640 Color Printer	1	$2,003.00
Gateway 2000, Inc.	Gateway Solo 2500 SE w/carry case Epson Stylus 640 Ink Jet Printer	1	$2,028.00
COMPAQ	Presario 1600i series IJ200 Printer	1	$2,178.00
Micron PC	TransPort TREK2 w/carry case Epson Stylus 640 Color Printer	1	$2,047.00

Organic Vapor Analyzer (OVA)

Vendor	Model/Item	Quantity	Price
Hazco	Model 128, Foxboro w/o GC mode	1	$4,000.00
Eirtech Instruments, Inc.	Model 128, Foxboro w/o GC mode	1	$2,495.00
Foxboro	TVA 1000 instead of 128	1	$8,45

Oxygen/Explosimeter/Hydrogen Sulfide Monitors

Vendor	Model/Item	Quantity	Price
Eirtech Instruments, Inc.	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,568.00
Hazco	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,168.00
Gastech, Inc.	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,573.0

Turbidity Meter

Vendor	Model/Item	Quantity	Price
Forestry Suppliers, Inc.	Orbeco-Hellige Portable turbidimeter	1	$648.67
Eirtech Instrument, Inc.	LaMotte 2020, Portable turbidity meter	1	$795.00
HACH	Model 2100P w/standards, case, etc.	1	$775.00

Electrical Service Installation Comparison

Vendor	Service Description	Price
Pinnacle Electric	Connect electrical service to sire trailer; install one telephone pole; includes permits and inspection fees	$1,600
EFG Electrical Service	Connect electrical service to sire trailer; install one telephone pole	$1650
K & J Electric Company	Connect electrical service to sire trailer; install one telephone pole	$4,500

Field office Trailer

Vendor	Model/Item	Quantity	Price
GE Capital Modular Space	Field Office/Trailer 6-month rental Trailer mobilization/demobilization	6 months 1	$1,020 $365
Williams Scotsman, Inc.	Field Office/Trailer 6-month rental Trailer mobilization/demobilization	6 months 1	$1,110 $ 515
Premier Modulars, Inc.	Field Office Trailer; 6-month rental; with steps mobilization/demobilization	6-months 1	$900 $709

Digital Camera

Vendor	Model/Item	Quan-tity	Price	Tax	Total
Olympus America, Inc.	D600L Digital Camera, 4MB, with accessory kit (batteries, charger)	1	$820.98	$65.68	$ 886.66
Sony	1344 X 1024, rechargeable	1	$1,789.95	$143.20	$1,933.15
Kodak	1536 X 1024, Rechargeable	1	$839.95	$67.20	$ 907.15

Airfare; Round Trip between Buffalo and Albany

Vendor	Model/Item	Quantity	Price
Shuttle America	Round Trip, unrestricted coach	1	$258
USAirways	Round Trip, unrestricted coach	1	$498
Continental	Round Trip, unrestricted coach	1	$502

Van Rental

Vendor	Model/Item	Quantity	Price
Thrifty	Daily Rate plus 100 miles	69	$3,449
Budget	Daily Rate plus 100 miles	69	$3,567
U-Haul	Daily Rate plus 100 miles	69	$4,068

Items for Which Fewer Than Three Quotations Were Obtained

Vendor	Amount	Item/Service	Reason for Fewer Quotations
Taylor Welding Supply	$60.18	Hydrogen supply; supply tank rental	Less than $1,000
IBS Septic and Drain	$420	Portable Toilet, monthly rental and cleaning	Less than $1,000
Bell Atlantic	$305	Telephone service (6 months) and hook-up	Monopoly

Random Aeresol Dust Monitor Price Comparison Table

Vendor	Item	Unit Price	Quantity	Total
Instrument Depot	pDR-1000	$ 3,670	1	$3,670
Hazco	MIE Personal Dataram Monitor	$3,450	1	$3,450
Response Rentals	MIE PDM-3	$1,495	1	$1,495

Organic Vapor Analyzer Quotation Summary Comparison Table

Vendor	**Model/Item**	**Quantity**	**Price**
Hazco	Model 128, Foxboro w/o GC mode	1	$4,000.00
Eirtech Instruments, Inc.	Model 128, Foxboro w/o GC mode	1	$2,495.00
Foxboro	TVA 1000 instead of 128	1	$8,458.00

Notes: OVA no longer made, TVA made instead
Low bid is for a refurbished OVA unit

O_2 Meter/explosimeter and H_2S meter Quotation Summary Comparison Table

Vendor	**Model/Item**	**Quantity**	**Price**
Eirtech Instruments, Inc.	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,568.00
Hazco	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,168.00
Gastech, Inc.	Model GT 302 PGM O_2 Meter/explosimeter and H_2S meter	1	$2,573.00

Turbidimeter Quotation Summary Comparison Table

Vendor	**Model/Item**	**Quantity**	**Price**
Forestry Suppliers, Inc.	Orbeco-Hellige Portable turbidimeter	1	$648.67
Eirtech Instrument, Inc.	LaMotte 2020, Portable turbidity meter	1	$795.00
HACH	Model 2100P w/standards, case, etc.	1	$775.00

Field office Trailer

Vendor	Model/Item	Quantity	Price
GE Capital Modular Space	Field Office/Trailer 6-month rental Trailer mobilization/demobilization	6 months 1	$1,020 $365
Williams Scotsman, Inc.	Field Office/Trailer 6-month rental Trailer mobilization/demobilization	6 months 1	$1,110 $ 515
Premier Modulars, Inc.	Field Office Trailer; 6-month rental; with steps mobilization/demobilization	6-months 1	$900 $709

Van Rental

Vendor	Model/Item	Quantity	Price
Thrifty	Daily Rate plus 100 miles	69	$3,449
Budget	Daily Rate plus 100 miles	69	$3,567
U-Haul	Daily Rate plus 100 miles	69	$4,068

Note: A cost of $20 per day is to be added to each of the final prices to include the cost of taxes and gasoline.

Items for Which Fewer Than Three Quotations Were Obtained

Vendor	**Amount**	**Item/Service**	**Reason for Fewer Quotations**
Taylor Welding Supply	$60.18	Hydrogen supply; tank rental	Less than $1,000
IBS Septic and Drain	$420	Portable Toilet	Less than $1,000
Bell Atlantic	$305	Telephone service and hook-up	Less than $1,000
Bulldozer	$1,000	Site Clearing	MBE