

REPORT OF SOIL
EXCAVATION AND
REMEDIATION SYSTEM
INSTALLATION AT
2 BADGER AVENUE,
ENDICOTT, NEW YORK

AUGUST 1993

REC'D
AUG 12

KIRKWOOD OFFICE

PREPARED FOR:

MR. CARL TOUHEY
TOUHEY ASSOCIATES
WASHINGTON AVENUE EXTENSION
BUILDING 2
ALBANY, NEW YORK

PREPARED BY:

BUCK ENGINEERING
PO BOX 5150
3845 ROUTE 11 SOUTH
CORTLAND, NEW YORK 13045
607-753-3403

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

TABLE OF CONTENTS

	Page
Introduction	1
NYSDEC Coordination and Communication	2
Soil Excavation Description	3
Remediation System Installation	6
Appendices	
A - Miscellaneous Documents	10
B - Laboratory Reports	11
C - Credentials	12
D - Soil Excavation Work Plan	13
E - Health and Safety Plan	14

**REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93**

INTRODUCTION

Recent subsurface investigations at the 2 and 7 Badger Avenue properties, and nearby properties, in the Village of Endicott, New York revealed the presence of significant concentrations of chlorinated solvent compounds in the groundwater beneath the sites. The highest concentrations of contaminants are located in an area immediately northeast of the 2 Badger Avenue building, with significantly lower concentrations found in the groundwater both east and west of this location. The direction of groundwater flow is generally east. Groundwater monitoring wells have been installed in positions that are both hydraulically up-gradient and down-gradient from the area of highest concentration.

Prior site investigations revealed the presence of two floor drains and associated dry wells within the 2 Badger Avenue building. These drywells were suspected of being the primary source of the subsurface contamination. The dry wells have been removed and contaminated soil from these excavations has been staged on plastic sheeting at the site for later disposal off-site.

Recent plots of subsurface contaminant concentrations indicated a possible contaminant source located approximately 20 ft. northeast of the 2 Badger Avenue building, under a paved area in the general vicinity of monitoring well 6. Gary Dyer Excavation of Endicott was retained to perform exploratory excavations in this area.

The remainder of this report provides a description of the soil excavation activity, a description of the activities associated with a remediation system installation and testing and several appendices containing laboratory reports, a site plan and other pertinent documents.

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

NYSDEC COORDINATION AND COMMUNICATION

As a result of finding chlorinated solvent contamination of the groundwater at this site at concentrations that exceed NYS Department of Environmental Conservation (DEC) guidelines, previous engineering reports and laboratory analysis reports have been regularly sent to the DEC office in Kirkwood, New York.

A meeting was held at the site on May 20, 1993 with the following persons attending:

Mr. Thomas Suozzo, P.E. - NYSDEC (Kirkwood Office)
Mr. Charles Branaugh, P.E. - NYSDEC (Syracuse Office)
Mr. Carl Touhey - Touhey Associates
Mr. John H. Buck, P.E. - Buck Engineering
Mr. Phillip W. Shaffner - Buck Engineering

The purpose of the meeting was to review the available analytical data and engineering reports resulting from subsurface investigations at this site.

The DEC indicated that groundwater contaminant concentrations exceed regulatory guidelines. However, for technical reasons, there was no plan to have the site formally listed as a hazardous waste disposal site. The DEC requested that they be kept informed of planned activity at the site.

Subsequent to that meeting, a Work Plan was developed for exploratory excavation activity in the area of the highest contaminant concentrations. A copy of the Work Plan was sent to the DEC.

**REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93**

SOIL EXCAVATION DESCRIPTION

A Work Plan for exploratory excavations in the area of highest contaminant concentration near the northeast corner of the 2 Badger Avenue building was developed and provided to the owner and to the NYSDEC. A copy of the plan is provided in an appendix.

A Health and Safety Plan was also developed for this activity. A copy of this plan is also provided in an appendix.

The exploratory excavation at the 2 Badger Avenue site in Endicott, New York took place on June 17, 1993. The excavation work was performed by Gary Dyer, Inc. of Endicott, New York.

All personnel from Buck Engineering and Gary Dyer, Inc. that were present on the site during the excavation had received OSHA 40-hour hazardous waste training.

Test pits were excavated east, north, and west of monitoring well 6 which is located approximately 20 ft. northeast of the 2 Badger Avenue building. Soil removed from the test pits was screened with an HNu photoionization detector for indications of volatile organic compounds.

Significant concentrations of organic compounds were detected in the west test pit (between the monitoring well and the building). No significant HNu meter readings were obtained from soil from the north or east test pits.

Additional excavation was performed in the area south of monitoring well 6. This excavation revealed a limited area (200 to 300 sq. ft.) in size that had apparently been used in the past as a dump or refuse pile. The soil in the area was black and contained wire fencing, bits of cloth, broken glass, pieces of metal and other miscellaneous objects. The subject materials were located at a depth of 1 to 2.5 ft. beneath the surface. There was a noticeable odor from the excavation. The highest HNu meter readings from this material were in excess of 20 ppm (parts per million).

The suspect material was removed from the excavation and staged on plastic sheeting for later off-site disposal. An estimated 30 cu. yd. of soil and refuse was excavated. The total depth of the excavation was approximately 6 ft. After the contaminated material was removed from the excavation, the soil in the bottom of the pit was checked with the HNu meter and no readings were obtained. A soil sample from the bottom of the excavation was obtained for laboratory analysis.

An east/west trench was excavated in the bottom of the pit to a depth of approximately 7 ft. beneath the surface. Approximately 13 ft. of perforated 4 in. diameter PVC pipe

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

Soil Excavation Description (Con't.)

was placed horizontally in the trench with a solid 4 in. diameter riser connected to the center of the perforated pipe with a "T" fitting and leading to the surface. The intention is to use the perforated pipe as a recovery vent for a soil vapor extraction and air sparging system that is further described in the following section.

After installation of the perforated pipe and riser, the excavation was backfilled with virgin bank-run gravel brought to the site. The back-fill used in the excavation contained a significant quantity of stones and cobbles.

It should be noted that there is a narrow north/south strip of land between the 2 and 7 Badger Avenue properties that is owned by the Village of Endicott. A portion of the visibly contaminated material excavated from the site may have been located on this property.

Subsequent to the excavation and backfill activity, a sample of the excavated soil was obtained from the material stockpiled on plastic sheeting. The sample was analyzed for volatile organic compounds via gas chromatograph using EPA Method 8021. The analysis showed elevated levels of sec-Butylbenzene and tert-Butylbenzene. However, no indications of chlorinated compounds were detected.

The soil sample taken from the bottom of the excavation after all visibly contaminated soil had been removed was analyzed for volatile organic compounds via gas chromatograph using EPA Method 8021. The analysis revealed trichloroethene at a concentration of 6.7 ug/kg.

It is possible that the point-source of the subsurface chlorinated compound contamination is the small area of refuse discovered during these excavations. However, the available evidence is conflicting. While the analytical result from the excavated material does not indicate chlorinated solvent contamination, the analysis of the sample from the bottom of the excavation revealed a low concentration of chlorinated compound contamination.

An HNu photoionization detector was used on a periodic basis during the soil excavation activity to monitor ambient conditions at several monitoring points (including a down-wind location) around the soil excavation area. No volatile organic compounds were detected at these monitoring points at any time during the excavation activity.

A sketch of the excavation area is provided on the following page. Photographs of the excavation site are also provided.

BUCK ENGINEERING

CONSULTING ENVIRONMENTAL ENGINEERS
3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403

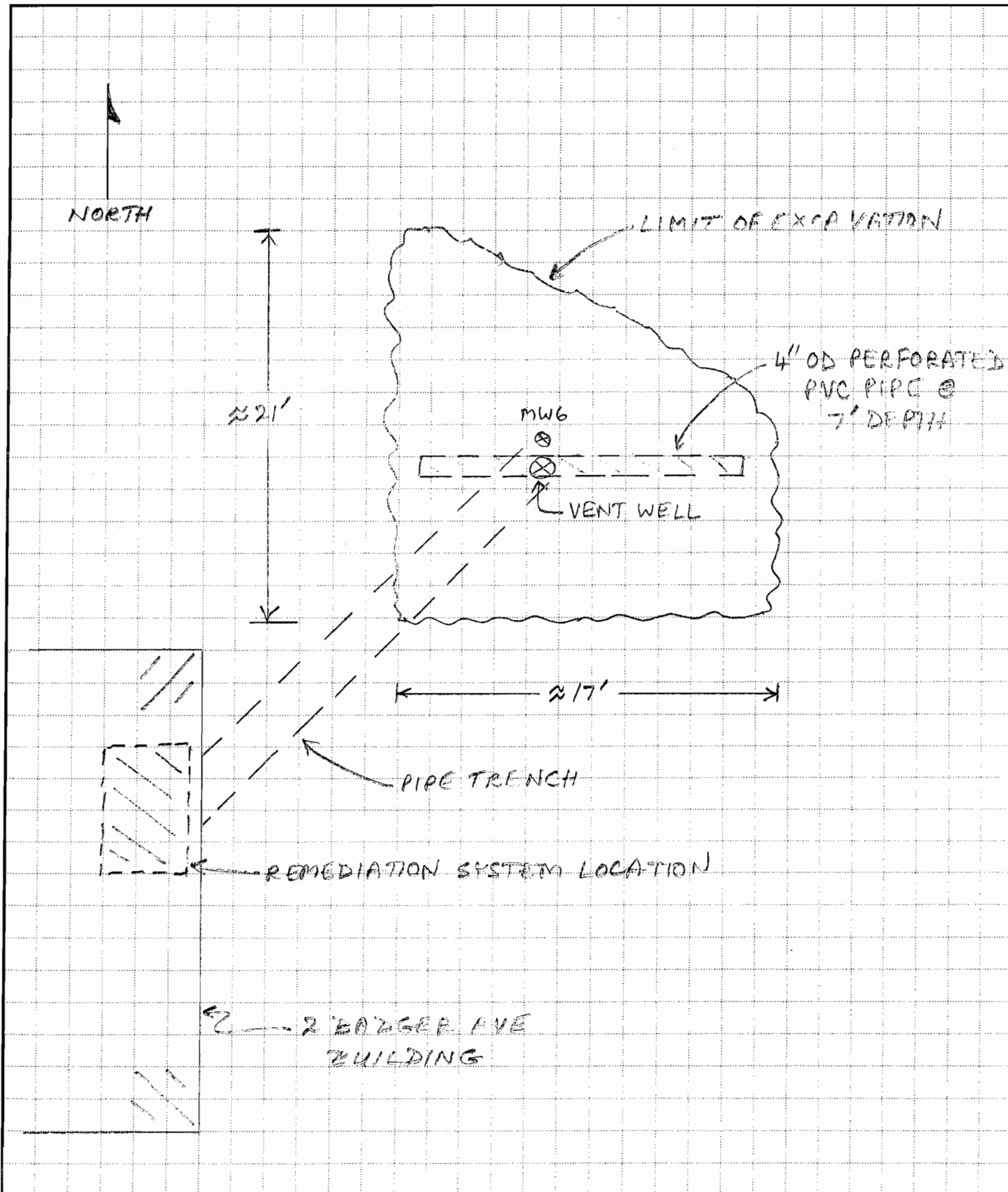
JOB 2 BADGER AVE, ENDICOTT, NY

SHEET NO. SOIL EXCAVATION AREA

CALCULATED BY _____ DATE _____

CHECKED BY PWS DATE 8/19/93

SCALE NOT TO SCALE



REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

SOIL EXCAVATION PHOTOGRAPHS



Photograph of the soil excavation taken from the southwest corner of the excavation, looking northeast. Monitoring well 6 is visible in the center of the excavation. (June 17, 1993)



Photograph of the soil excavation taken from the southeast corner of the excavation, looking northwest. Monitoring well 6 is visible in the center of the excavation. (June 17, 1993)

**REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93**

REMEDICATION SYSTEM INSTALLATION

A soil vapor extraction/air sparging system has been installed at the 2 Badger Avenue site by Buck Engineering personnel. The installation of 4 in. diameter perforated PVC pipe in the bottom of the soil excavation area is described in the previous section. This pipe will be used as a vent well to withdraw soil vapor from the immediate vicinity of the well.

A 1 ft. deep trench was excavated by Gary Dyer, Inc. from the general vicinity of monitoring well 6 and the vent well, in a southwesterly direction, to the front wall of the 2 Badger Avenue building to accommodate system plumbing. Discolored and odorous soil was encountered during the excavation of this trench and a sample of the materials was obtained for laboratory examination. The analysis indicates that the sample contained a variety of volatile organic compounds. The laboratory report from the analysis is provided in an appendix.

Two 2 in diameter PVC pipes were placed in the trench and led into the building through holes placed in a concrete block near ground level. The trench was backfilled with excavated material after the installation of the pipes. One of the pipes is connected to monitoring well 6 and will be used in the air sparging portion of the system. An air compressor was purchased and installed in the building and connected to this pipe. When placed in operation, compressed air from the compressor air tank will be routed through the pipe, down monitoring well 6 and through a diffuser into the groundwater and surrounding soil. This sparging air will assist the clean-up process by stripping the volatile contaminants from the groundwater, allowing them to be withdrawn from the soil and groundwater by the action of the system blower.

The second pipe is connected to the 4 in. vent well and through the trench into the interior of the building where it is connected to a regenerative blower. The blower, specifically designed for use in soil vapor extraction systems, will create a negative pressure in the vent well, causing soil vapor to be withdrawn from the surrounding soil and groundwater. A particulate trap and a condensate trap are in series between the vent well and the blower to remove condensate or particulate that may be drawn from the vent well.

The blower exhaust is connected to a 55 gal. drum of granulated activated carbon. Soil vapor drawn from the vent well, after passing through the filters and blower, is passed through the activated carbon to remove volatile organic compounds before the vapor is released to the outside ambient air. The exhaust from the carbon barrel leads to an exhaust line that is routed out through the front wall of the building and up to roof level.

**REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93**

Remediation System (Con't.)

A schematic diagram of system components and photographs of the installed system components at the site are provided at the end of this section.

Remediation System Testing

After installing the system components described above, several tests were performed as described below.

Several test runs were conducted to determine the radius of influence of the soil vapor extraction system. A hollow steel rod with a slotted tip was inserted 8 ft. into the ground at three points located 4 ft., 8 ft. and 12 ft. from the vent well. The system was then started, the vacuum was adjusted to 15 in. of water, and the system was allowed to run for approximately 30 min. to allow conditions to stabilize in the vent well. After 30 min., a manometer was connected to the top of the hollow steel rod and the vacuum at the 8 ft. depth was measured. The results from these tests are provided in the following table:

<u>Probe Distance from Vent Well</u>	<u>Depth</u>	<u>"H₂O</u>
4 ft.	8 ft.	0.25
8 ft.	8 ft.	0.14
12 ft.	8 ft.	0.10

We conclude from this test that the soil vapor extraction system will have a radius of influence of at least 12 ft. in all directions from the vent well.

Tests were also run to determine the contaminant loading of the soil vapor being extracted from the vent well. Two of these tests were run: the first was with the blower taking suction from monitoring well 6; and the second was with suction being taken from the 4 in. vent well.

To perform these tests, the system was placed in operation for approximately 30 min. and allowed to stabilize. The exhaust gas velocity from the blower was then measured and an air sample was obtained from this exhaust. The air samples were analyzed for volatile organic compounds via gas chromatograph using EPA Method 601 and NYSDOH Method 311-2. A laboratory report showing the results of the analysis is provided in an appendix.

No volatile organic contaminants were detected in the air sample taken when the blower was connected to monitoring well 6. However, significant concentrations of these compounds (primarily trichloroethene - TCE) were found in the air sample taken when the blower was connected to the 4 in. vent well. TCE was detected at 9,000 ug/m³.

We conclude from the air tests that the system will be

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

Remediation System Installation (Con't.)

Remediation System Testing (Con't.)

effective in removing volatile organic contaminants from the soil in the vicinity of the vent well.

It should be noted that the excavation around monitoring well 6 and the vent well was backfilled with virgin material that contained a high percentage of stones and cobbles. This material is very porous and may cause ambient air from the surface to be drawn down through the backfill, creating a short-circuiting condition. If this situation occurs, it may be necessary to seal the surface of the backfilled area with asphalt or similar material.

Future Action

At the time this report was prepared, the system is fully installed and ready to be placed into continuous operation. Discussions with DEC personnel indicate that it will be necessary to obtain an air emissions permit before the system can be placed in full operation.

Additional air tests have been conducted on the exhaust of the system with the granular activated carbon in use. The samples will be analyzed in the immediate future and the results will be used to complete the permit application.

The system will be placed in continuous operation as soon as DEC approval has been received.

BUCK ENGINEERING

CONSULTING ENVIRONMENTAL ENGINEERS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045

P.O. BOX 5150
607-753-3403

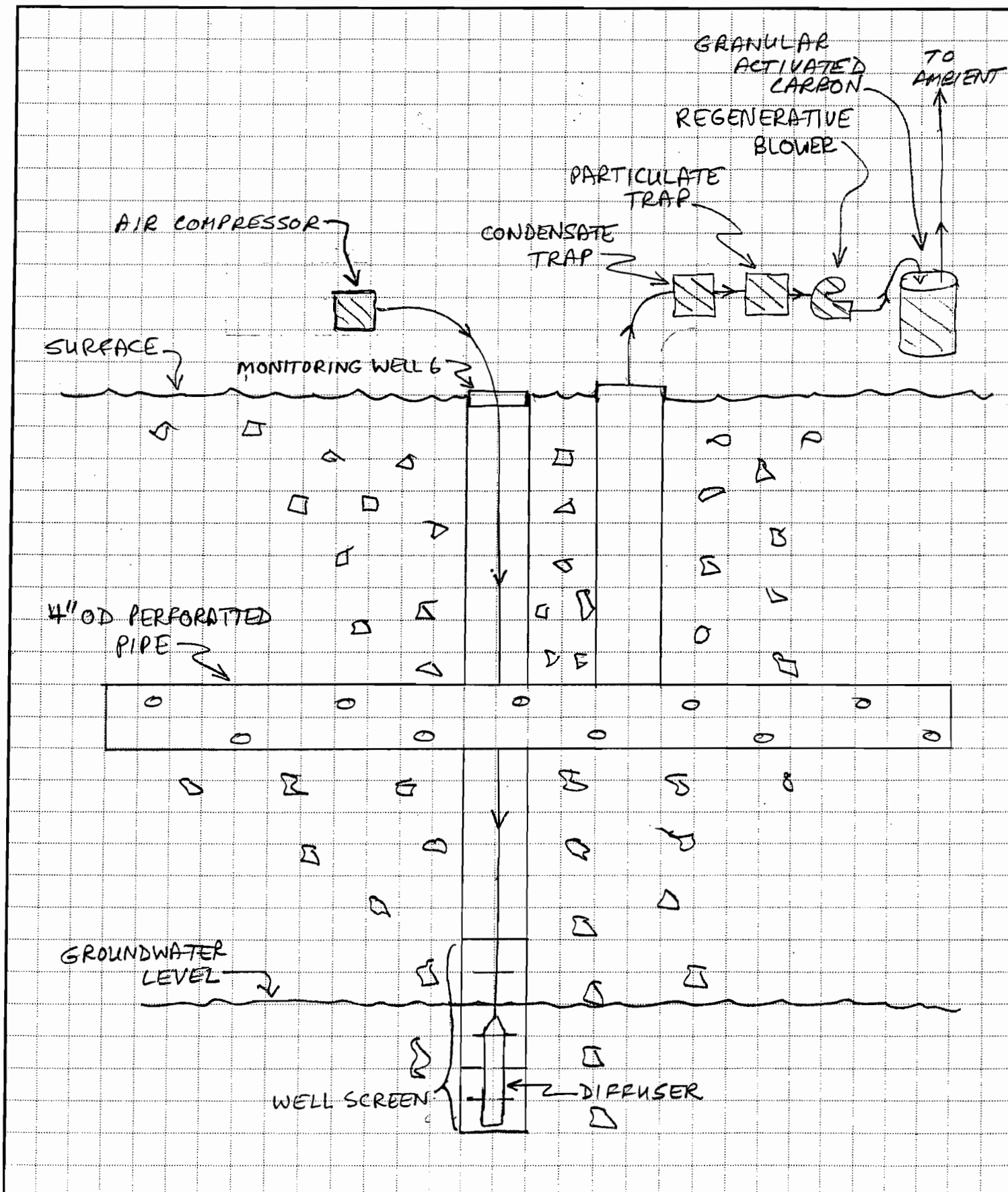
JOB BADGER AVE REMEDIATION SYSTEM

SHEET NO. SCHEMATIC DIAGRAM

CALCULATED BY _____ DATE _____

CHECKED BY PWS DATE 8/19/93

SCALE NOT TO SCALE

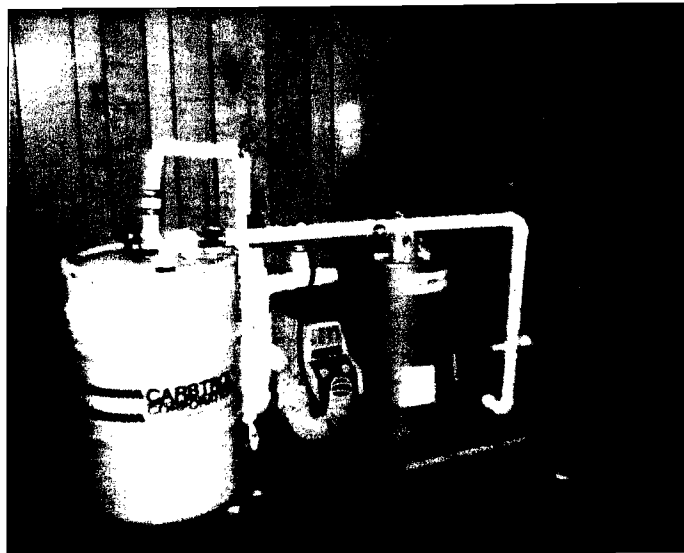


REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

REMEDIATION SYSTEM PHOTOGRAPHS



Photograph of the front of the 2 Badger Avenue building. The orange cone marks the site of the vent well. The white pipe on the front of the building to the left of the window is the system exhaust line. (August 20, 1993)



Photograph of the remediation system components inside the 2 Badger Avenue building. The components, from left to right are: carbon drum, air compressor, condensate trap, particulate trap, regenerative blower. (August 20, 1993)

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

APPENDIX A

MISCELLANEOUS DOCUMENTS

Miscellaneous documents related to the soil excavation and system installation activities are provided on the following pages.

June 14, 1993

Mr. Thomas Suozzo, P.E.
New York State DEC
RD 1 Route 11
Kirkwood, NY 13795

Re: Touhey Associates property on Badger Avenue in
Endicott, NY

Dear Tom:

The purpose of this letter is to confirm the recent discussions held at the above location with you, Mr. Charles Branaugh (NYSDEC, Syracuse), Mr. Carl Touhey, Mr. John Buck, and me.

The purpose of the meeting was to review the status of the investigation of subsurface contamination found at the site. Extensive hydrogeological investigations of the site have been conducted by Buck Engineering and Buck Environmental Laboratories, Inc. The investigations have revealed the presence of significant concentrations of trichloroethylene (TCE) and related compounds. Copies of the reports resulting from these investigations have been provided to the NYSDEC.

One objective of the investigations has been to identify the source of the contaminants found beneath the 2 and 7 Badger Avenue properties. This objective has met only limited success. Two dry wells formerly located within the 2 Badger Avenue building have been excavated and a quantity of soil has been removed for off-site disposal. However, we have not been able to conclude with certainty that the dry wells were the original source of the problem. It is our opinion that the contamination is not recent. That is, we believe that the release of chlorinated compounds occurred many years ago.

The subsurface contaminant concentration contour lines have been plotted on a site drawing. This plot indicates that a potential point source for the contaminants exists in the immediate vicinity of the northeast corner of the 2 Badger Avenue building. Further exploratory excavation is planned for this location.

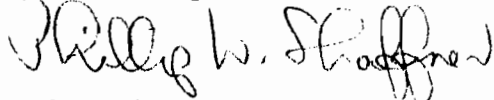
Our understanding of the NYSDEC position regarding the Badger Avenue site is that there is concern because the concentration of chlorinated compounds in the groundwater

significantly exceeds NYSDEC groundwater standards. Further, the NYSDEC has requested that they be appraised of investigative or remedial action planned for the site. However, the NYSDEC has no immediate or future plans to formally list the site as an active or inactive hazardous waste site.

For your information, Buck Engineering plans to conduct additional exploratory excavations at the site in the immediate future. In the event that contaminated soil is encountered, it will be removed and staged on plastic sheeting for later disposal off-site. We also plan to install a soil vapor extraction and air sparging system at the site to remove as much of the contamination as feasible from the subsurface soil and groundwater. Components for the remediation have been ordered. We will soon be in contact with your office to apply for an air emission permit for that system.

Thank you for your cooperation. We plan to routinely provide you with copies of work plans, engineering reports, laboratory analyses and other pertinent documents regarding this site and to provide advance notification of all planned site activities. Please contact me if you have questions.

Sincerely,



Phillip W. Shaffner
Project Manager

cc: Mr. Carl Touhey, Touhey Associates
Mr. Charles Branaugh, NYSDEC Syracuse

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

APPENDIX B

LABORATORY REPORTS

Laboratory reports resulting from the analysis of soil and air samples taken during the activities described herein are provided on the following pages.

BUCK ENVIRONMENTAL
LABORATORIES, INC.

ACCREDITED ENVIRONMENTAL ANALYSIS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045P.O. BOX 5150
607-753-3403**LABORATORY REPORT**

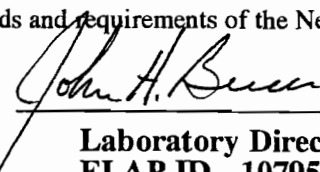
Lab Log No: 9306239

Client: *Touhey Associates*
Pine West Plaza, Building 2
Washington Avenue Extension
Site: Badger AvenueReport Date: 07/28/93
Sampling Date: 06/17/93
Sampled By: P. Shaffner
Date Received: 06/17/93
Analyzed by: CEB, 07/01/93**Sample ID: Soil-Bottom of Excavation****VOLATILES BY METHOD EPA 8021**

ANALYTE	CAS #	UNITS	DL	RESULT
Benzene	71-43-2	ug/kg	2.0	nd
Bromobenzene	108-86-1	ug/kg	2.0	nd
Bromochloromethane	74-97-5	ug/kg	2.0	nd
Bromodichloromethane	75-27-4	ug/kg	2.0	nd
Bromoform	75-25-2	ug/kg	2.0	nd
Bromomethane	74-83-9	ug/kg	2.0	nd
n-Butylbenzene	104-51-8	ug/kg	2.0	nd
sec-Butylbenzene	135-98-8	ug/kg	2.0	nd
tert-Butylbenzene	98-06-6	ug/kg	2.0	nd
Carbon Tetrachloride	56-23-5	ug/kg	2.0	nd
Chlorobenzene	108-90-7	ug/kg	2.0	nd
Chloroethane	75-00-3	ug/kg	2.0	nd
Chloroform	67-66-3	ug/kg	2.0	nd
Chloromethane	74-87-3	ug/kg	2.0	nd
2-Chlorotoluene	95-49-8	ug/kg	2.0	nd
4-Chlorotoluene	106-43-4	ug/kg	2.0	nd
Dibromochloromethane	124-48-1	ug/kg	2.0	nd
1,2-Dibromo-3-chloropropan	96-12-8	ug/kg	2.0	nd
1,2-Dibromoethane	106-93-4	ug/kg	2.0	nd
Dibromomethane	74-95-3	ug/kg	2.0	nd
1,2-Dichlorobenzene	95-50-1	ug/kg	2.0	nd
1,3-Dichlorobenzene	541-73-1	ug/kg	2.0	nd
1,4-Dichlorobenzene	106-46-7	ug/kg	2.0	nd
Dichlorodifluoromethane	75-71-8	ug/kg	2.0	nd
1,1-Dichloroethane	75-34-3	ug/kg	2.0	nd
1,2-Dichloroethane	107-06-2	ug/kg	2.0	nd
1,1-Dichloroethene	75-35-4	ug/kg	2.0	nd
cis-1,2-Dichloroethene	156-59-4	ug/kg	2.0	nd
trans-1,2-Dichloroethene	156-60-5	ug/kg	2.0	nd
1,2-Dichloropropane	78-87-5	ug/kg	2.0	nd
1,3-Dichloropropane	142-28-9	ug/kg	2.0	nd
2,2-Dichloropropane	590-20-7	ug/kg	2.0	nd
1,1-Dichloropropene	563-58-6	ug/kg	2.0	nd
cis-1,3-Dichloropropene	10061-01-5	ug/kg	2.0	nd
trans-1,3-Dichloropropene	10061-02-6	ug/kg	2.0	nd
Ethylbenzene	100-41-4	ug/kg	2.0	nd
Hexachlorobutadiene	87-68-3	ug/kg	2.0	nd
Isopropylbenzene	98-82-8	ug/kg	2.0	nd
p-Isopropyltoluene	99-87-6	ug/kg	2.0	nd
Methylene Chloride	75-09-2	ug/kg	2.0	nd
Naphthalene	91-20-3	ug/kg	2.0	nd
Propylbenzene	103-65-1	ug/kg	2.0	nd
Styrene	100-42-5	ug/kg	2.0	nd
1,1,1,2-Tetrachloroethane	630-20-6	ug/kg	2.0	nd
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	2.0	nd
Tetrachloroethene	127-18-4	ug/kg	2.0	nd
Toluene	108-88-3	ug/kg	2.0	nd
1,2,3-Trichlorobenzene	87-61-6	ug/kg	2.0	nd
1,2,4-Trichlorobenzene	120-82-1	ug/kg	2.0	nd
1,1,1-Trichloroethane	71-55-6	ug/kg	2.0	nd
1,1,2-Trichloroethane	79-00-5	ug/kg	2.0	nd
Trichloroethene	79-01-6	ug/kg	2.0	*6.7*
Trichlorofluoromethane	75-69-4	ug/kg	2.0	nd
1,2,3-Trichloropropane	96-18-4	ug/kg	2.0	nd
1,2,4-Trimethylbenzene	95-63-6	ug/kg	2.0	nd
1,3,5-Trimethylbenzene	108-67-8	ug/kg	2.0	nd
Vinyl Chloride	75-01-4	ug/kg	2.0	nd
o-Xylene	95-47-6	ug/kg	2.0	nd
m,p-Xylenes	108-38-3/1	ug/kg	2.0	nd

ND - None detected greater than detection limit (DL) noted.

These results are certified as conforming with generally accepted laboratory standards and requirements of the New York State Department of Health ELAP Program.

Laboratory Director
ELAP ID - 10795

BUCK ENVIRONMENTAL
LABORATORIES, INC.

ACCREDITED ENVIRONMENTAL ANALYSIS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045P.O. BOX 5150
607-753-3403Client: *Touhey Associates*
Pine West Plaza, Building 2
Washington Avenue Extension
Site: 7 Badger Avenue
Endicott, NY**LABORATORY REPORT**

Lab Log No: 9306338

Report Date: 07/28/93
Sampling Date: 06/23/93
Sampled By: D. Shearer
Date Received: 06/23/93
Analyzed by: PAI, 07/07/93**Sample ID: Soil Pile****VOLATILES BY METHOD EPA 8021**

ANALYTE	CAS #	UNITS	DL	RESULT
Benzene	71-43-2	ug/kg	125	nd
Bromobenzene	108-86-1	ug/kg	125	nd
Bromochloromethane	74-97-5	ug/kg	125	nd
Bromodichloromethane	75-27-4	ug/kg	125	nd
Bromoform	75-25-2	ug/kg	125	nd
Bromomethane	74-83-9	ug/kg	125	nd
n-Butylbenzene	104-51-8	ug/kg	125	nd
sec-Butylbenzene	135-98-8	ug/kg	125	*144*
tert-Butylbenzene	98-06-6	ug/kg	125	*148*
Carbon Tetrachloride	56-23-5	ug/kg	125	nd
Chlorobenzene	108-90-7	ug/kg	125	nd
Chloroethane	75-00-3	ug/kg	125	nd
Chloroform	67-66-3	ug/kg	125	nd
Chloromethane	74-87-3	ug/kg	125	nd
2-Chlorotoluene	95-49-8	ug/kg	125	nd
4-Chlorotoluene	106-43-4	ug/kg	125	nd
Dibromochloromethane	124-48-1	ug/kg	125	nd
1,2-Dibromo-3-chloropropan	96-12-8	ug/kg	125	nd
1,2-Dibromoethane	106-93-4	ug/kg	125	nd
Dibromomethane	74-95-3	ug/kg	125	nd
1,2-Dichlorobenzene	95-50-1	ug/kg	125	nd
1,3-Dichlorobenzene	541-73-1	ug/kg	125	nd
1,4-Dichlorobenzene	106-46-7	ug/kg	125	nd
Dichlorodifluoromethane	75-71-8	ug/kg	125	nd
1,1-Dichloroethane	75-34-3	ug/kg	125	nd
1,2-Dichloroethane	107-06-2	ug/kg	125	nd
1,1-Dichloroethene	75-35-4	ug/kg	125	nd
cis-1,2-Dichloroethene	156-59-4	ug/kg	125	nd
trans-1,2-Dichloroethene	156-60-5	ug/kg	125	nd
1,2-Dichloropropane	78-87-5	ug/kg	125	nd
1,3-Dichloropropane	142-28-9	ug/kg	125	nd
2,2-Dichloropropane	590-20-7	ug/kg	125	nd
1,1-Dichloropropene	563-58-6	ug/kg	125	nd
cis-1,3-Dichloropropene	10061-01-5	ug/kg	125	nd
trans-1,3-Dichloropropene	10061-02-6	ug/kg	125	nd
Ethylbenzene	100-41-4	ug/kg	125	nd
Hexachlorobutadiene	87-68-3	ug/kg	125	nd
Isopropylbenzene	98-82-8	ug/kg	125	nd
p-Isopropyltoluene	99-87-6	ug/kg	125	nd
Methylene Chloride	75-09-2	ug/kg	125	nd
Naphthalene	91-20-3	ug/kg	125	nd
Propylbenzene	103-65-1	ug/kg	125	nd
Styrene	100-42-5	ug/kg	125	nd
1,1,1,2-Tetrachloroethane	630-20-6	ug/kg	125	nd
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	125	nd
Tetrachloroethene	127-18-4	ug/kg	125	nd
Toluene	108-88-3	ug/kg	125	nd
1,2,3-Trichlorobenzene	87-61-6	ug/kg	125	nd
1,2,4-Trichlorobenzene	120-82-1	ug/kg	125	nd
1,1,1-Trichloroethane	71-55-6	ug/kg	125	nd
1,1,2-Trichloroethane	79-00-5	ug/kg	125	nd
Trichloroethene	79-01-6	ug/kg	125	nd
Trichlorofluoromethane	75-69-4	ug/kg	125	nd
1,2,3-Trichloropropane	96-18-4	ug/kg	125	nd
1,2,4-Trimethylbenzene	95-63-6	ug/kg	125	nd
1,3,5-Trimethylbenzene	108-67-8	ug/kg	125	nd
Vinyl Chloride	75-01-4	ug/kg	125	nd
o-Xylene	95-47-6	ug/kg	125	nd
m,p-Xylenes	108-38-3/1	ug/kg	125	nd

ND - None detected greater than detection limit (DL) noted.

These results are certified as conforming with generally accepted laboratory standards and requirements of the New York State Department of Health ELAP Program.


Laboratory Director
ELAP ID - 10795

BUCK ENVIRONMENTAL
LABORATORIES, INC.

ACCREDITED ENVIRONMENTAL ANALYSIS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045P.O. BOX 5150
607-753-3403**AIR SAMPLE LABORATORY REPORT**

Client: TOUHEY ASSOCIATES Lab Log No. 9306263
Report Date: 7/28/93
Site: Badger Avenue Date Sampled: 6/18/93
Date of Analysis: 7/02/93
Sample: Air Sampled By: E.S., D.D.
Purgeable Halocarbons By EPA 601 and NYSDOH 311-2

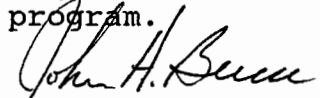
Sample Description	4" Sparging Vent*	MW-6**
bromodichloromethane	ND	ND
bromoform	ND	ND
bromomethane	ND	ND
carbon tetrachloride	ND	ND
chlorobenzene	ND	ND
chloroethane	ND	ND
2-chloroethylvinylether	ND	ND
chloroform	ND	ND
chloromethane	ND	ND
dibromochloromethane	ND	ND
1,2-dichlorobenzene	ND	ND
1,3-dichlorobenzene	ND	ND
1,4-dichlorobenzene	ND	ND
dichlorodifluoromethane	ND	ND
1,1-dichloroethane	ND	ND
1,2-dichloroethane	ND	ND
1,1-dichloroethene	ND	ND
trans-1,2-dichloroethene	ND	ND
1,2-dichloropropane	ND	ND
cis-1,3-dichloropropene	ND	ND
trans-1,3-dichloropropene	ND	ND
methylene chloride	ND	ND
1,1,2,2-tetrachloroethane	ND	ND
tetrachloroethene	58.2	ND
1,1,1-trichloroethane	40.0	ND
1,1,2-trichloroethane	ND	ND
trichloroethene	9,000	ND
trichlorofluoromethane	ND	ND
vinyl chloride	ND	ND
Additional Compounds:		
cis 1,2-dichloroethene	140.	ND

* - Detection limit for this sample is 40 ug/m3.

** - Detection limit for this sample is 20 ug/m3.

All concentrations are reported as ug/m3.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.


John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL
LABORATORIES, INC.
ACCREDITED ENVIRONMENTAL ANALYSIS3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403**AIR SAMPLE LABORATORY REPORT**

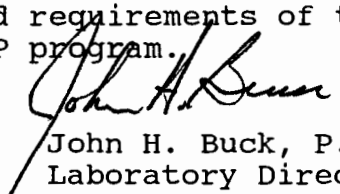
Client: TOUHEY ASSOCIATES	Report Date: 8/30/93
Site: 2 Badger Avenue	Sampling Date: 8/20/93
Sample: Air	Sampled By: E.Spencer
	Analysis Date: 8/20/93
	Lab Log No: 9308285

Purgeable Halocarbons By EPA 601 and NYSDOH 311-2

Sample Description	Infl 15 liters	Effl 15 liters
bromodichloromethane	ND	ND
bromoform	ND	ND
bromomethane	ND	ND
carbon tetrachloride	ND	ND
chlorobenzene	ND	ND
chloroethane	ND	ND
2-chloroethylvinylether	ND	ND
chloroform	ND	ND
chloromethane	ND	ND
dibromochloromethane	ND	ND
1,2-dichlorobenzene	ND	ND
1,3-dichlorobenzene	ND	ND
1,4-dichlorobenzene	ND	ND
dichlorodifluoromethane	ND	ND
1,1-dichloroethane	ND	ND
1,2-dichloroethane	ND	ND
1,1-dichloroethene	ND	ND
trans-1,2-dichloroethene	20.3	ND
1,2-dichloropropane	ND	ND
cis-1,3-dichloropropene	ND	ND
trans-1,3-dichloropropene	ND	ND
methylene chloride	ND	ND
1,1,2,2-tetrachloroethane	ND	ND
tetrachloroethene	41.7	ND
1,1,1-trichloroethane	88.4	ND
1,1,2-trichloroethane	ND	ND
trichloroethene	13,200	ND
trichlorofluoromethane	ND	ND
vinyl chloride	ND	ND
Additional Compound: cis-1,2 dichloroethene	272.	ND

All concentrations are reported as ug/m3.
ND - None detected greater than detection limit of 20 ug/m3.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.


John H. Buck, P.E.
Laboratory Director
NYS ELAP CERT 10795

BUCK ENVIRONMENTAL
LABORATORIES, INC.

ACCREDITED ENVIRONMENTAL ANALYSIS

3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403**AIR SAMPLE LABORATORY REPORT**

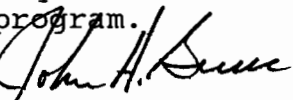
Client: TOUHEY ASSOCIATES	Report Date: 8/30/93
Site: 2 Badger Avenue	Sampling Date: 8/20/93
Sample: Air - Field Blank	Sampled By: E.Spencer
	Analysis Date: 8/20/93
	Lab Log No: 9308285

Purgeable Halocarbons By EPA 601 and NYSDOH 311-2

Sample Description	15 liters	
bromodichloromethane	ND	
bromoform	ND	
bromomethane	ND	
carbon tetrachloride	ND	
chlorobenzene	ND	
chloroethane	ND	
2-chloroethylvinylether	ND	
chloroform	ND	
chloromethane	ND	
dibromochloromethane	ND	
1,2-dichlorobenzene	ND	
1,3-dichlorobenzene	ND	
1,4-dichlorobenzene	ND	
dichlorodifluoromethane	ND	
1,1-dichloroethane	ND	
1,2-dichloroethane	ND	
1,1-dichloroethene	ND	
trans-1,2-dichloroethene	ND	
1,2-dichloropropane	ND	
cis-1,3-dichloropropene	ND	
trans-1,3-dichloropropene	ND	
methylene chloride	ND	
1,1,2,2-tetrachloroethane	ND	
tetrachloroethene	ND	
1,1,1-trichloroethane	ND	
1,1,2-trichloroethane	ND	
trichloroethene	ND	
trichlorofluoromethane	ND	
vinyl chloride	ND	
Additional Compound: cis-1,2 dichloroethene	ND	

All concentrations are reported as ug/m3.
ND - None detected greater than detection limit of 20 ug/m3.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.



John H. Buck, P.E.
Laboratory Director
NYS ELAP CERT 10795

BUCK ENVIRONMENTAL
LABORATORIES, INC.

ACCREDITED ENVIRONMENTAL ANALYSIS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045P.O. BOX 5150
607-753-3403Client: *Touhey Associates*
Pine West Plaza, Building 2
Washington Avenue Extension
Site: Badger Avenue**LABORATORY REPORT**

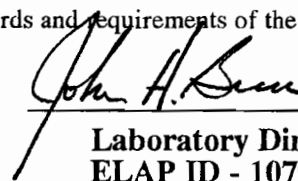
Lab Log No: 9307278

Report Date: 08/12/93
Sampling Date: 07/19/93
Sampled By: E. Spencer
Date Received: 07/19/93
Analyzed by: PAI, 07/30/93**Sample ID: Piping Trench by NW Window****VOLATILES BY METHOD EPA 8021**

ANALYTE	CAS #	UNITS	DL	RESULT
Benzene	71-43-2	ug/kg	10.	nd
Bromobenzene	108-86-1	ug/kg	10.	nd
Bromochloromethane	74-97-5	ug/kg	10.	nd
Bromodichloromethane	75-27-4	ug/kg	10.	nd
Bromoform	75-25-2	ug/kg	10.	nd
Bromomethane	74-83-9	ug/kg	10.	nd
n-Butylbenzene	104-51-8	ug/kg	10.	*1860*
sec-Butylbenzene	135-98-8	ug/kg	10.	nd
tert-Butylbenzene	98-06-6	ug/kg	10.	nd
Carbon Tetrachloride	56-23-5	ug/kg	10.	nd
Chlorobenzene	108-90-7	ug/kg	10.	nd
Chloroethane	75-00-3	ug/kg	10.	nd
Chloroform	67-66-3	ug/kg	10.	nd
Chloromethane	74-87-3	ug/kg	10.	nd
2-Chlorotoluene	95-49-8	ug/kg	10.	nd
4-Chlorotoluene	106-43-4	ug/kg	10.	nd
Dibromochloromethane	124-48-1	ug/kg	10.	nd
1,2-Dibromo-3-chloropropan	96-12-8	ug/kg	10.	nd
1,2-Dibromoethane	106-93-4	ug/kg	10.	nd
Dibromomethane	74-95-3	ug/kg	10.	nd
1,2-Dichlorobenzene	95-50-1	ug/kg	10.	nd
1,3-Dichlorobenzene	541-73-1	ug/kg	10.	nd
1,4-Dichlorobenzene	106-46-7	ug/kg	10.	nd
Dichlorodifluoromethane	75-71-8	ug/kg	10.	nd
1,1-Dichloroethane	75-34-3	ug/kg	10.	nd
1,2-Dichloroethane	107-06-2	ug/kg	10.	nd
1,1-Dichloroethene	75-35-4	ug/kg	10.	nd
cis-1,2-Dichloroethene	156-59-4	ug/kg	10.	nd
trans-1,2-Dichloroethene	156-60-5	ug/kg	10.	*10.3*
1,2-Dichloropropane	78-87-5	ug/kg	10.	nd
1,3-Dichloropropane	142-28-9	ug/kg	10.	nd
2,2-Dichloropropane	590-20-7	ug/kg	10.	nd
1,1-Dichloropropene	563-58-6	ug/kg	10.	nd
cis-1,3-Dichloropropene	10061-01-5	ug/kg	10.	nd
trans-1,3-Dichloropropene	10061-02-6	ug/kg	10.	nd
Ethylbenzene	100-41-4	ug/kg	10.	*374*
Hexachlorobutadiene	87-68-3	ug/kg	10.	nd
Isopropylbenzene	98-82-8	ug/kg	10.	nd
p-Isopropyltoluene	99-87-6	ug/kg	10.	*211*
Methylene Chloride	75-09-2	ug/kg	10.	nd
Naphthalene	91-20-3	ug/kg	10.	*276
Propylbenzene	103-65-1	ug/kg	10.	*219*
Styrene	100-42-5	ug/kg	10.	nd
1,1,1,2-Tetrachloroethane	630-20-6	ug/kg	10.	nd
1,1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	10.	nd
Tetrachloroethene	127-18-4	ug/kg	10.	nd
Toluene	108-88-3	ug/kg	10.	*18.5*
1,2,3-Trichlorobenzene	87-61-6	ug/kg	10.	nd
1,2,4-Trichlorobenzene	120-82-1	ug/kg	10.	nd
1,1,1-Trichloroethane	71-55-6	ug/kg	10.	nd
1,1,2-Trichloroethane	79-00-5	ug/kg	10.	nd
Trichloroethene	79-01-6	ug/kg	10.	nd
Trichlorofluoromethane	75-69-4	ug/kg	10.	nd
1,2,3-Trichloropropane	96-18-4	ug/kg	10.	nd
1,2,4-Trimethylbenzene	95-63-6	ug/kg	10.	*380*
1,3,5-Trimethylbenzene	108-67-8	ug/kg	10.	*266*
Vinyl Chloride	75-01-4	ug/kg	10.	nd
o-Xylene	95-47-6	ug/kg	10.	*200*
m,p-Xylenes	108-38-3/1	ug/kg	10.	*36.1*

ND - None detected greater than detection limit (DL) noted.

These results are certified as conforming with generally accepted laboratory standards and requirements of the New York State Department of Health ELAP Program.

Laboratory Director
ELAP ID - 10795

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

APPENDIX C

CREDENTIALS

Appropriate engineering and laboratory credentials are provided on the following pages.

NEW YORK STATE DEPARTMENT OF HEALTH

DAVID AXELROD, M. D. COMMISSIONER



Expires 12:01 AM April 1, 1
ISSUED April 1, 1992
REVISED June 5, 1992

INTERIM CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

Lab ID No.: 10795

Director: MR. JOHN BUCK

Lab Name: BUCK ENVIRONMENTAL LABORATORIES INC

Address : PO BOX 5150 3845 ROUTE 11 SO

CORTLAND NY 13045

is hereby APPROVED as an Environmental Laboratory for the category

ENVIRONMENTAL ANALYSES/AIR AND EMISSIONS

All approved subcategories and/or analytes are listed below:

Miscellaneous Air :
Fibers
Particulates

Metals I (ALL)

Purgeable Aromatics (ALL)

Serial No.: 12043

Lawrence S. Sturman, M.D., Ph.D., Acting Director

~~Director~~
Wadsworth Center for Laboratories and Research

Property of the New York State Department of Health. Valid only at the address shown.
Must be conspicuously posted. Valid certificate has a red serial number.

NEW YORK STATE DEPARTMENT OF HEALTH

DAVID AXELROD, M. D. COMMISSIONER



Expires 12:01 AM April 1, 19
ISSUED April 1, 1992
REVISED October 13, 1992

INTERIM CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

Lab ID No.: 10795

Director: MR. JOHN BUCK

Lab Name: BUCK ENVIRONMENTAL LABORATORIES INC

Address : PO BOX 5150 3845 ROUTE 11 SO

CORTLAND NY 13045

is hereby APPROVED as an Environmental Laboratory for the category

ENVIRONMENTAL ANALYSES/SOLID AND HAZARDOUS WASTE

All approved subcategories and/or analytes are listed below:

Characteristic Testing :
Corrosivity
Ignitability
Reactivity
FCLP
Toxicity - Metals Only

Miscellaneous :
Asbestos in Friable Material
Cyanide, Total

Metals I (ALL)
Purgeable Aromatics (ALL)

Polychlorinated Biphenyls (ALL)
Purgeable Halocarbons (ALL)

Serial No.: 13632

Herbert W. Dickerman, M.D., Ph.D., Director
Wadsworth Center for Laboratories and Research

Property of the New York State Department of Health. Valid only at the address shown.
Must be conspicuously posted. Valid certificate has a red serial number.

REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

APPENDIX D

SOIL EXCAVATION WORK PLAN

A copy of the Soil Excavation Work Plan developed by Buck Engineering for the soil excavation activity at the Badger Avenue site is provide on the following pages.

SOIL EXCAVATION
AT
2 BADGER AVENUE
ENDICOTT, NEW YORK

JUNE 1993

PREPARED FOR:

MR. CARL TOUHEY
TOUHEY ASSOCIATES
PINE WEST PLAZA, BUILDING 2
WASHINGTON AVENUE EXTENSION
ALBANY, NEW YORK 12205

AND

THE NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION

PREPARED BY:

BUCK ENGINEERING
PO BOX 5150
3145 ROUTE 11 SOUTH
CORTLAND, NEW YORK 13045
607-753-3403

COPIES TO: MR. CARL TOUHEY, TOUHEY ASSOCIATES
MR. EUGENE KUDGAS, P.E., VILLAGE OF ENDICOTT
ENGINEERING DEPARTMENT
MR. THOMAS SUOZZO, P.E., NYSDEC, KIRKWOOD
VILLAGE OF ENDICOTT WATER DEPARTMENT
MR. GARY DYER, DYER EXCAVATING

WORK PLAN FOR SOIL EXCAVATION
2 BADGER AVE., ENDICOTT, NY - JUN 1993

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Site Address	1
Project Schedule	1
Pre-Excavation Preparation	2
Excavation Activity	2
Site Monitoring	2
Health and Safety	3
Attachment - Site Sketch	

**WORK PLAN FOR SOIL EXCAVATION
2 BADGER AVE., ENDICOTT, NY - JUN 1993**

INTRODUCTION

Buck Engineering and Buck Environmental Laboratories, Inc. have conducted extensive hydrogeologic investigations in the immediate vicinity of the 2 and 7 Badger Avenue properties. The investigations revealed the presence of significant concentrations of TCE and related chlorinated compounds in the groundwater beneath the site. The investigation also involved the removal of two dry wells formerly located within the 2 Badger Avenue building that were believed to be possible sources of the subsurface contamination.

The TCE contaminant concentrations measured in samples taken from the various groundwater monitoring wells on the 2 and 7 Badger Avenue properties has been plotted and indicates the possibility of a point source of contamination located adjacent to the northeast corner of the 2 Badger Avenue building, under a paved area. The objective of this excavation activity is to explore subsurface conditions at the indicated area of high contaminant concentrations. Buck Engineering and Buck Environmental Laboratories have been retained by Touhey Associates to perform these investigations.

The purpose of this work plan is to define the activities that are to take place related to the exploratory excavation and sampling activities.

SITE ADDRESS

2 Badger Avenue
Endicott, NY

The site is located at the north end of Badger Avenue, next to the railroad tracks. The 2 Badger Avenue building is on the west side of the street.

PROJECT SCHEDULE

The excavation work is scheduled to take place on Thursday, June 17, 1993.

**WORK PLAN FOR SOIL EXCAVATION
2 BADGER AVE., ENDICOTT, NY - JUN 1993**

PRE-EXCAVATION PREPARATION

Buck Engineering:

1. Prepare a site specific Health and Safety Plan for use by Buck Engineering (BE) and Buck Environmental Laboratories (BEL) personnel.
2. Coordinate the excavation schedule with the Village of Endicott Engineering Department, the NYSDEC, and the Gary Dyer Excavating, the excavation contractor.
3. Provide all BE and BEL employees expected to work at the site with approved respirators equipped with granular activated carbon canisters.

Excavation Contractor:

1. Provide all contractor employees expected to work at the site with approved respirators equipped with granular activated carbon canisters.
2. Obtain ultraviolet (UV) resistant plastic sheeting of minimum 6 mil thickness for use in staging excavated soil at the work site.
3. Contact UFPO at least 48 hours prior to the start of excavation activity.

EXCAVATION ACTIVITY

1. Using either a rubber-tired backhoe with an extend-a-boom or a tracked excavator at a location designated by the Engineer, excavate the soil at one (1) location to a depth of 10 to 12 ft. Note: The final depth of the excavations will depend upon conditions found at the site.
2. Continuously monitor the excavation activity using an HNu photoionization detector. Background readings will be obtained prior to the start of excavation.
3. Remove any soil that is encountered that has HNu meter readings greater than 5 ppm. Stage contaminated soil on UV resistant plastic sheeting. At the conclusion of excavation activities, cover the contaminated soil pile with UV resistant plastic sheeting and ballast the covering sheet to ensure it remains in place.

**WORK PLAN FOR SOIL EXCAVATION
2 BADGER AVE., ENDICOTT, NY - JUN 1993**

Excavation Activity (Con't.)

4. Obtain a composite soil sample from the bottom of the excavation for laboratory analysis by EPA Method 8021.
5. Backfill the excavations with spoil removed from the excavations. In the event it is required, provide clean backfill material to completely close the excavations. Backfill material will be compacted with the excavator bucket to minimize surface settling. The asphalt covering is not to be replaced.

SITE MONITORING

Representatives of Buck Engineering will provide an HNu meter and an explosimeter for use in monitoring the ambient conditions at the site. In addition, the HNu meter will be used on a regular schedule (i.e., every 15 to 20 minutes) to monitor the ambient air at the down-wind property line. In the event that HNu meter readings above background levels are obtained at the down-wind property line, excavation activities will be stopped until engineering controls or other methods can be implemented to eliminate the escape of fugitive emissions from the property. In the event that excavation activities are stopped, the excavation and contaminated soil pile (if any) are to be immediately covered with plastic sheeting.

HEALTH AND SAFETY

A site specific Health and Safety Plan will be developed by Buck Engineering prior to the start of excavation activity for use by employees of Buck Engineering and Buck Environmental Laboratories.

SITE HAZARDS

In addition to possible volatile chlorinated compounds in the atmosphere, there is a Village of Endicott water line that is believed to run in a north/south direction along the west side of Badger Avenue and beneath the railroad tracks north of the property. It is believed that the excavation will be in the immediate vicinity of this line and caution must be used during the excavation to avoid damaging or disturbing the line. Prior notification of the excavation activity will be provided to the Underground Facilities Protective Organization (UFPO), the Village of Endicott Engineering Department and to the Village of Endicott Water Department.

BUCK ENGINEERING

CONSULTING ENVIRONMENTAL ENGINEERS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045

P.O. BOX 5150
607-753-3403

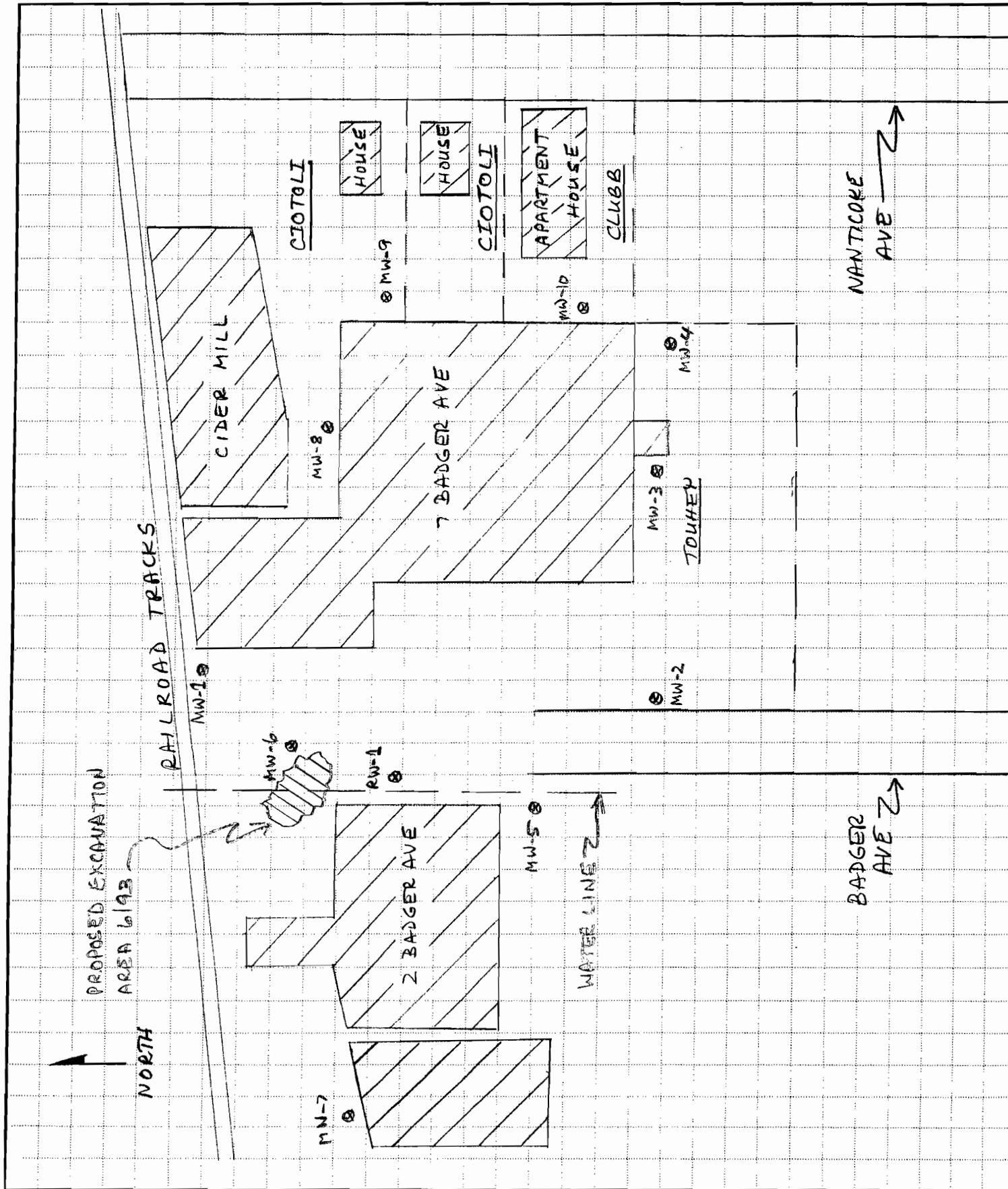
JOB BADGER AVE SITE

SHEET NO. _____ OF _____

CALCULATED BY PWS DATE 10/22/92

CHECKED BY PWS DATE 6/14/93

SCALE NOT TO SCALE



REPORT OF SOIL EXCAVATION AND REMEDIATION
SYSTEM INSTALLATION AT BADGER AVE, ENDICOTT-AUG 93

APPENDIX E

HEALTH AND SAFETY PLAN

A copy of the Health and Safety Plan developed by Buck Engineering for the soil excavation activity at the Badger Avenue site is provided on the following pages.

HEALTH AND SAFETY PLAN
FOR
SOIL EXCAVATION AT
2 BADGER AVENUE
ENDICOTT, NEW YORK

DATE PREPARED:

SEPTEMBER 20, 1992
UPDATED: JUNE 11, 1993

VERSION 2

PREPARED FOR:

MR. CARL TOUHEY
TOUHEY ASSOCIATES
PINE WEST PLAZA, BUILDING 2
WASHINGTON AVENUE EXTENSION
ALBANY, NEW YORK 12205

PREPARED BY:

BUCK ENGINEERING
P.O. BOX 5150
3845 ROUTE 11 SOUTH
CORTLAND, NEW YORK 13045
607-753-3403

HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY

DISCLAIMER

Buck Engineering and Buck Environmental Laboratories, Inc. do not guarantee the health and safety of any person entering or working at this site. No claim is made that all possible hazards that may be encountered at the site are known. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this plan were prepared specifically for this site and should not be used on any other site without prior research and evaluation by trained personnel. This health and safety plan was prepared specifically for employees of Buck Engineering and Buck Environmental Laboratories, Inc. that may be working at this site. Other entities working at the site may, at their discretion, adopt this plan in its entirety or use this plan as a basis for the development of their own unique plan. Neither Buck Engineering nor Buck Environmental Laboratories, Inc. assumes any liability for the health and safety of individuals working at the site that are not employees of these firms.

HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Site Address	1
Project Schedule	1
Project Staff	1
Persons Covered by the Plan	1
Touhey Associates Contact	1
Site Description	1
Site Activities	1
Overall Site Hazard Potential	2
Work Area	2
Exclusion Zone	2
Contamination Reduction Zone	2
Support Zone	2
Decontamination Procedures	2
Potential Hazards	2
Field Monitoring Equipment	3
Protective Equipment	3
Protective Clothing	3
Special Safety Procedures	3
Respirators	3
Emergency Escape Routes	3
Emergency Assistance	3
Directions to Nearest Hospital	4
Whom to Contact in Case of Emergency	4
Name of Person that Prepared Plan	4
Designated Safety Officer	4
Plan Review and Approval	4
Project Staff Acknowledgments	4
List of Attachments	4
Record of Safety Meetings	5

**HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY**

INTRODUCTION: Buck Engineering has been retained by Touhey Associates to plan and supervise an exploratory excavation of soil believed to be contaminated with trichloroethene from a paved area near the northeast corner of a building owned by Touhey Associates located at 2 Badger Avenue, Endicott, New York.

SITE ADDRESS: 2 Badger Avenue
Endicott, New York
(See attached location map)

PROJECT SCHEDULE: The on-site work is scheduled to take place on June 17, 1993.

PROJECT STAFF: John H. Buck, P.E. - Project Director
Phillip W. Shaffner - On-site Manager
Eric Monsen - Staff Geologist and
Chairman of the Safety Committee

**PERSONNEL COVERED
BY PLAN:** This Health and Safety Plan is intended only for employees of Buck Engineering and Buck Environmental Laboratories, Inc. Contractor's retained to perform excavation or other activities at the site may, at their discretion, adopt this plan in whole or in part.

**TOUHEY ASSOCIATES
CONTACT:** Mr. Carl Touhey
Touhey Associates
Pine West Plaza, Building 2
Washington Avenue Extension
Albany, NY 12205

SITE DESCRIPTION: The building owned by Touhey Associates is located on the west side of Badger Avenue in the Village of Endicott. The site is approximately 1/2 mile north of Main Street and the building is at the north end of the street.

The exploratory excavation is to take place in a paved area near the north end of Badger Avenue in the general vicinity of Monitoring Well 6 that was previously installed at the site.

SITE ACTIVITIES: 1. Excavate several trenches, each 5 to 6 ft. deep, in the general area of Monitoring Well 6 which is located approximately 20 ft. northeast of the northeast corner of the building.
(Continued on next page)

**HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY**

Site Activities (Con't.)

2. In the event that contaminated soil (as indicated by HNu meter readings) is discovered, it is to be excavated and staged on plastic sheeting at the site for later disposal.
3. In possible, install a perforated PVC pipe in the bottom of the excavation to be used as a vent well for a soil vapor extraction remediation system to be installed at the site.
4. If contaminated soil is removed, backfill the excavation with virgin material.

**OVERALL SITE HAZARD
POTENTIAL:**

Moderate to Low

WORK AREA:

The designated work area is the paved area adjacent to the northeast corner of the building located at 2 Badger Avenue.

EXCLUSION ZONE:

None

**CONTAMINATION
REDUCTION ZONE:**

None

SUPPORT ZONE:

None

**DECONTAMINATION
PROCEDURES:**

None

POTENTIAL HAZARDS:

Physical - The work plan involves the use of a tracked excavator to perform the exploratory excavations. There is no intention of excavating to a depth that would require shoring of the excavation side walls. However, the presence of an excavation will present a physical hazard to persons working at the site.

Mechanical - The excavation activity will be accomplished with the use of a tracked excavator. The movement of this equipment will present a hazard to persons working at the site.

Chemical - Samples of sludge from the dry wells have been analyzed and found to be contaminated with trichloroethene (TCE), a chlorinated solvent. The ambient air concentration of this chemical is expected to be below the OSHA permissible exposure level (PEL) of 50 ppm. An
(Continued on next page)

HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY

Potential Hazards (Con't.)

Information sheet on TCE is attached.
It is assumed that general oil and grease
with trace levels of aromatic
hydrocarbons will also be encountered.

Confined Space Entry - None planned.

**FIELD MONITORING
EQUIPMENT:**

HNu meter calibrated for TCE

**PROTECTIVE
EQUIPMENT:**

Hard hats.

**PROTECTIVE
CLOTHING:**

No. Level D (normal work clothes)

**SPECIAL SAFETY
PROCEDURES:**

All personnel working at the site must
read and sign the Health and Safety Plan.
No visitors will be allowed within the
building while work is in progress.

RESPIRATORS:

All personnel working at the site will
have a respirator available equipped with
activated carbon canisters. Use of the
respirators is not required unless
elevated airborne contaminant levels
exceed the OSHA PEL of 50 ppm as measured
with an HNu meter.

**EMERGENCY ESCAPE
ROUTES:**

Exit from the east side of the building
towards Badger Avenue and proceed south
on Badger Avenue.

Note: In the event of an emergency, all
project staff are to meet in the parking
lot south of the building immediately
across the street from the 2 Badger
Avenue building. Personnel must not re-
enter the property until authorized to do
so.

**EMERGENCY
ASSISTANCE:**

Ambulance:	754-3555
Fire Department:	785-3385
Police:	785-3341
Village Engineer:	757-2425
Supt. Public Works	757-2423
Water Department	757-2443
NYSDEC	773-7763

HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY

**DIRECTIONS TO NEAREST
HOSPITAL:**

Take Badger Avenue south to Main street.
Turn left (east) on Main Street, which is
also NYS Route 17C. Proceed east on
Route 17C to Wilson Hospital located in
Johnson City.

**WHOM TO CONTACT IN CASE
OF EMERGENCY:**

Buck Engineering: Mr. John Buck 607-753-3403
Touhey Associates: Mr. Carl Touhey or
Mr. Tony Garufi 518-438-3521

**NAME OF PERSON THAT PREPARED
THE PLAN:** Phillip W. Shaffner

**DESIGNATED SAFETY
OFFICER:** Eric Monsen

**PLAN REVIEW AND
APPROVAL:**

<u>Eric Monsen</u>	<u>6/14/93</u>
Eric Monsen	Date
<u>Phillip W. Shaffner</u>	<u>6/14/93</u>
Phillip W. Shaffner	Date
<u>John H. Buck</u>	<u>6/14/93</u>
John H. Buck	Date

**PROJECT STAFF
ACKNOWLEDGMENTS:**

Please sign below indicating that you
have read the plan, that you understand
the plan, and that all safety related
questions you may have been addressed to
your satisfaction.

<u>John H. Buck</u>	<u>6/14/93</u>
John H. Buck	Date
<u>Phillip W. Shaffner</u>	<u>6/14/93</u>
Phillip W. Shaffner	Date
<u>Eric Monsen</u>	<u>6/14/93</u>
Eric Monsen	Date

Attachments: 1. Site location map.
2. Information sheet on TCE.

HEALTH AND SAFETY PLAN FOR SOIL EXCAVATION
2 BADGER AVE, ENDICOTT, NY

RECORD OF SAFETY MEETINGS

<u>Date</u>	Conducted <u>By</u>	<u>Names of persons attending</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

BUCK ENGINEERING

CONSULTING ENVIRONMENTAL ENGINEERS

3845 ROUTE 11 SOUTH,
CORTLAND, N.Y. 13045

P.O. BOX 5150
607-753-3403

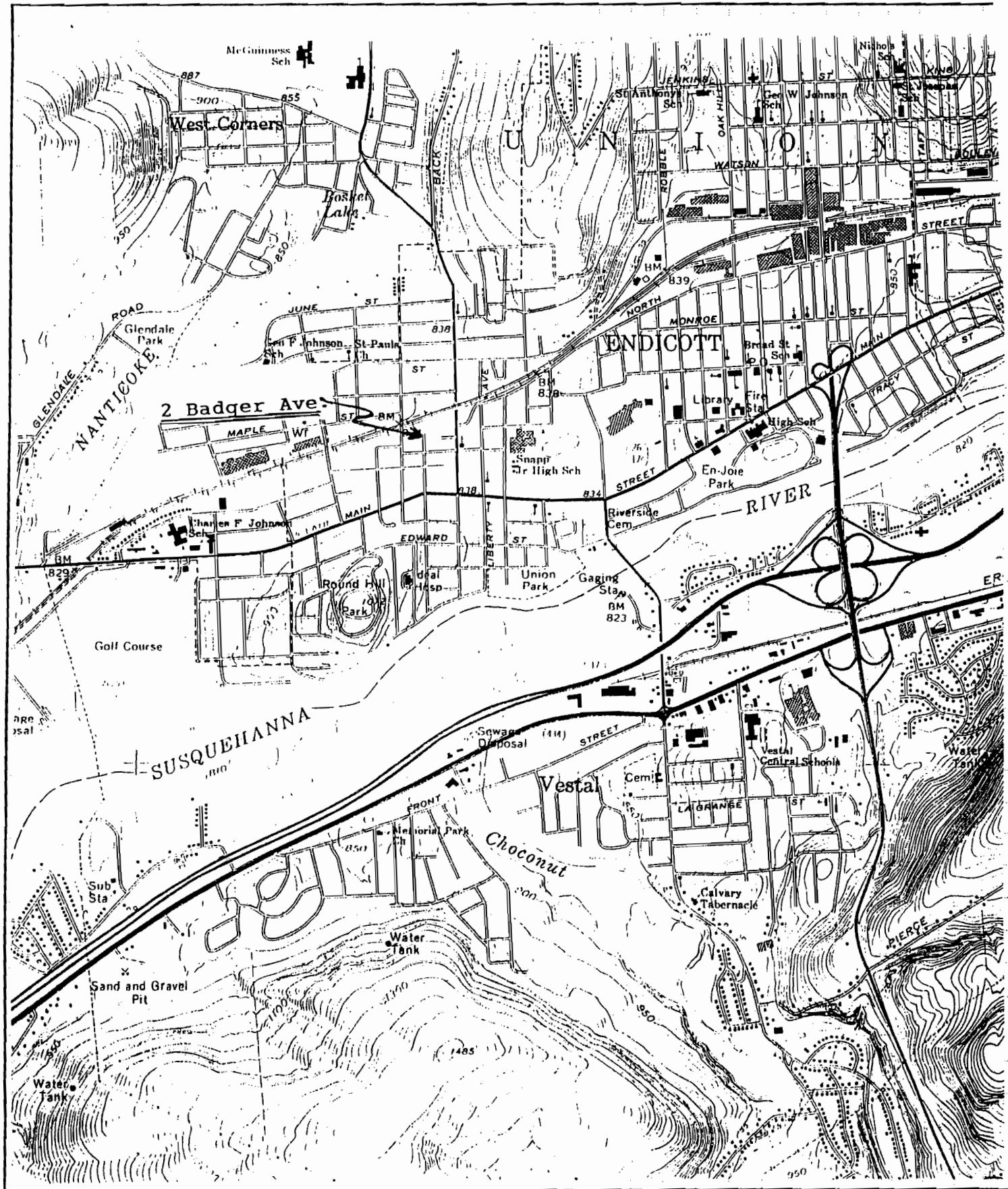
JOB Location Map - 2 Badger Ave.

SHEET NO. _____
Endicott, NY

CALCULATED BY _____ DATE _____

CHECKED BY _____ PWS DATE 9/21/92

SCALE Not To Scale



TRICHLOROETHYLENE

TCE

<p>Common Synonyms Trichloroethylene Triclene; Alkylen Chlorien Gemalene Tetralene Trichloro; Trilene</p>		<p>Watery liquid Colorless Sweet odor</p> <p>Sinks in water. Irritating vapor is produced.</p>																																					
<p>Stop discharge if possible. Keep people away. Avoid contact with liquid and vapor. Call fire department. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>																																							
<p>Fire</p>		<p>Combustible. POISONOUS GASES ARE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, carbon dioxide, or foam.</p>																																					
<p>Exposure</p>		<p>CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause nausea, vomiting, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Irritating to skin and eyes. If swallowed, will cause nausea, vomiting, difficult breathing, or loss of consciousness. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>																																					
<p>Water Pollution</p>		<p>Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>																																					
<p>1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Should be removed Chemical and physical treatment</p>		<p>2. LABEL 2.1 Category: None 2.2 Class: Not pertinent</p>																																					
<p>3. CHEMICAL DESIGNATIONS 3.1 CG Compatibility Class: Halogenated hydrocarbon 3.2 Formula: $\text{CHCl}_2 - \text{CCl}_2$ 3.3 IMO/UN Designation: 9.0/1710 3.4 DOT ID No.: 1710 3.5 CAS Registry No.: 79-01-6</p>		<p>4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Chloroform-like; ethereal</p>																																					
<p>5. HEALTH HAZARDS</p> <p>5.1 Personal Protective Equipment: Organic vapor-acid gas canister; self-contained breathing apparatus for emergencies; neoprene or vinyl gloves; chemical safety goggles; face shield; neoprene safety shoes; neoprene suit or apron for splash protection.</p> <p>5.2 Symptoms Following Exposure: INHALATION: symptoms range from irritation of the nose and throat to nausea, an attitude of irresponsibility, blurred vision, and finally disturbance of central nervous system resulting in cardiac failure. Chronic exposure may cause organic injury. INGESTION: symptoms similar to inhalation. SKIN: defatting action can cause dermatitis. EYES: slightly irritating sensation and lachrymation.</p> <p>5.3 Treatment of Exposure: Do NOT administer adrenalin or epinephrine; get medical attention for all cases of overexposure. INHALATION: remove victim to fresh air; if necessary, apply artificial respiration and/or administer oxygen. INGESTION: have victim drink water and induce vomiting; repeat three times; then give 1 tablespoon epsom salts in water. EYES: flush thoroughly with water. SKIN: wash thoroughly with soap and warm water.</p> <p>5.4 Threshold Limit Value: 50 ppm 5.5 Short Term Inhalation Limits: 200 ppm for 30 min. 5.6 Toxicity by Ingestion: Grade 3. LD₅₀ = 50 to 500 mg/kg 5.7 Late Toxicity: Data not available 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 5.11 LC_{50} Threshold: 50 ppm 5.12 LC_{50} Threshold: 50 ppm</p>																																							
<p>6. FIRE HAZARDS</p> <p>6.1 Flash Point: 90°F C.C.; practically nonflammable 6.2 Flammable Limits in Air: 8.0%-10.5% 6.3 Fire Extinguishing Agents: Water fog 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Toxic and irritating gases are produced in fire situations. 6.6 Behavior in Fire: Not pertinent 6.7 Ignition Temperature: 770°F 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: Not pertinent 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available</p>																																							
<p>7. CHEMICAL REACTIVITY</p> <p>7.1 Reactivity With Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 36</p>																																							
<p>8. WATER POLLUTION</p> <p>8.1 Aquatic Toxicity: 860 mg/l/40 hr/daphnia/kil/fresh water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): Data not available 8.4 Food Chain Concentration Potential: None</p>																																							
<p>9. SHIPPING INFORMATION</p> <p>9.1 Grades of Purity: Technical; dry cleaning; degreasing; extraction 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Pressure-vacuum</p>																																							
<p>10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook) A-X-Y</p>																																							
<p>11. HAZARD CLASSIFICATIONS</p> <p>11.1 Code of Federal Regulations: ORM-A 11.2 NAB Hazard Rating for Bulk Water Transportation:</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>Fire</td> <td>1</td> </tr> <tr> <td>Health</td> <td>1</td> </tr> <tr> <td>Vapor Irritant</td> <td>1</td> </tr> <tr> <td>Liquid or Solid Irritant</td> <td>1</td> </tr> <tr> <td>Poisons</td> <td>2</td> </tr> <tr> <td>Water Pollution</td> <td>1</td> </tr> <tr> <td>Human Toxicity</td> <td>2</td> </tr> <tr> <td>Aquatic Toxicity</td> <td>2</td> </tr> <tr> <td>Aesthetic Effect</td> <td>2</td> </tr> <tr> <td>Reactivity</td> <td>1</td> </tr> <tr> <td>Other Chemicals</td> <td>0</td> </tr> <tr> <td>Water</td> <td>0</td> </tr> <tr> <td>Self Reaction</td> <td>1</td> </tr> </tbody> </table> <p>11.3 NFPA Hazard Classification:</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>2</td> </tr> <tr> <td>Flammability (Red)</td> <td>1</td> </tr> <tr> <td>Reactivity (Yellow)</td> <td>0</td> </tr> </tbody> </table>				Category	Rating	Fire	1	Health	1	Vapor Irritant	1	Liquid or Solid Irritant	1	Poisons	2	Water Pollution	1	Human Toxicity	2	Aquatic Toxicity	2	Aesthetic Effect	2	Reactivity	1	Other Chemicals	0	Water	0	Self Reaction	1	Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	1	Reactivity (Yellow)	0
Category	Rating																																						
Fire	1																																						
Health	1																																						
Vapor Irritant	1																																						
Liquid or Solid Irritant	1																																						
Poisons	2																																						
Water Pollution	1																																						
Human Toxicity	2																																						
Aquatic Toxicity	2																																						
Aesthetic Effect	2																																						
Reactivity	1																																						
Other Chemicals	0																																						
Water	0																																						
Self Reaction	1																																						
Category	Classification																																						
Health Hazard (Blue)	2																																						
Flammability (Red)	1																																						
Reactivity (Yellow)	0																																						
<p>12. PHYSICAL AND CHEMICAL PROPERTIES</p> <p>12.1 Physical State at 18°C and 1 atm: Liquid 12.2 Molecular Weight: 131.39 12.3 Boiling Point at 1 atm: 188°F = 87°C = 360°K 12.4 Freezing Point: -123.6°F = -86.4°C = 186.8°K 12.5 Critical Temperature: Not pertinent 12.6 Critical Pressure: Not pertinent 12.7 Specific Gravity: 1.46 at 20°C (liquid) 12.8 Liquid Surface Tension: 29.3 dynes/cm = 0.0293 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 34.5 dynes/cm = 0.0345 N/m at 24°C 12.10 Vapor (Gas) Specific Gravity: 4.5 12.11 Ratio of Specific Heats of Vapor (Gas): 1.116 12.12 Latent Heat of Vaporization: 103 Btu/lb = 57.2 cal/g = 2.4 x 10⁵ J/kg 12.13 Heat of Combustion: Not pertinent 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: Data not available 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: 2.5 psia</p>																																							
<p>NOTES</p>																																							