report. hw828076.
1990-5-21. Phase II
80 Rockwood

NORTH STATE

North State Consultants, P.C.
Environmental Engineering, Planning and Management

300 State Street
Rochester, New York 14614

Telephone: 716 262-2320
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May 21, 1990

Ms. Terry Richman
Attorney and Counselor at Law
1600 Crossroads Building
Two State Street
Rochester, New York 14614-1397

Re: Phase II Environmental Site Investigation
80 Rockwood Place
90570

Dear Ms. Richman:

This letter is to report the findings of the investigation conducted at the above referenced Site.

OBJECTIVE

The objective of this investigation was to determine, in our reasonable judgment, by means of the Intensity of Effort Hereafter described:

1. Whether the above-described Site (hereinafter referred to as the "Site") may be materially contaminated with hazardous and toxic substances currently defined in the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the Hazardous Materials Transportation Act, as amended, the New York State Environmental Conservation Law, the Resource Conservation and Recovery Act, as amended ("Statutes", which would require removal or remedial action by the foregoing Statutes.

2. Whether further evaluation of the site would be required based on the presence or probable presence of such hazardous substances.

INTENSITY OF EFFORT

The intensity of effort used in this Phase II environmental site investigation is comprised of the following:

1. Conduct a sub-surface soil augering program to identify potential environmental concerns relating to an adjacent NYSDEC listed inactive hazardous waste disposal site (IHWDS). Laboratory analysis will be utilized to specifically identify both the type of contaminants present, and the magnitude of the contamination.

2. Perform geological review to characterize groundwater flow and determine soil and bedrock characteristics in the area.

3. Select four sample locations to obtain representative soil samples for laboratory analysis and soil characterization. These samples will be taken from the top of bedrock to identify and quantify contaminants of concern.

Prepared for Litigation
PRIVILEGED AND CONFIDENTIAL

4. Retain the services of a specialized drilling contractor to conduct the augering operation.

5. Provide oversight of the augering operation.

6. Perform air monitoring of excavated soils and the boring zone with hnu photoionization detector (PID).

7. Perform soil vapor analysis for volatile organics using a hnu photoionization detector on the soil samples collected during the augering operation.

8. Any sample with a PID meter reading greater than five (5) ppm above background levels will be retained for possible chemical analysis. Samples to be analyzed will be delivered under chain of custody control to a certified laboratory.

9. Retain the services of a state approved analytical laboratory to analyze soil samples for:

   - o Volatile organics, (EPA method 8240)
   - o Pesticides/PCB's (EPA method 8080)
   - o EP toxic-metals (EPA method 1310)
   - o Herbicides (EPA method 8150)

   These sample methods allow for the correlation of contaminants of concern to actual concentrations found.

10. Return bore holes to original condition as best as possible.

11. Monitoring well installation & sampling was not conducted during the investigation.

12. Prepare a written report containing the findings and recommendations of North State Consultants, P.C. based on the Phase II investigation performed by same.

    a. Whether the Site may be materially contaminated with hazardous and toxic substances, namely hazardous materials, hazardous wastes, hazardous or toxic substances or related materials defined in or pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the New York State Environmental Conservation Law, the Resource Conservation and Recovery Act, as amended ("Statutes") in such quantity which may require removal or remedial action by the foregoing Statutes; and,

    b. Whether further evaluation of the Site would be required based on the presence or probable presence of such hazardous and toxic substances.

Based on the intensity of effort used on this Phase II environmental site investigation, the following information has been obtained.

SITE HISTORY

GENERAL DESCRIPTION

The site is located at 80 Rockwood Place, City of Rochester, Monroe county, New York. The site consists of a two story building and a smaller one story building. There is an asphalt parking lot to the south. The total combined area of the first floor of both buildings is approximately 28,500 square feet. Both buildings rest on a concrete slab surface.

The site is bordered by a NYSDOT property, One Rockwood Place to the east. The NYSDOT property was previously owned by Scobell Chemical. The NYSDOT/Scobell property is listed in the NYSDEC listings of Inactive Hazardous Waste Disposal Facilities. Various hazardous substances have been discovered on the NYSDOT property. Some of these substances have contaminated the soils, bedrock, and groundwater underlying the One Rockwood Place property. Known contaminants at the site include pesticides, herbicides, solvents, and heavy metals.

METHODOLOGY AND TESTING

Four subsurface investigation boreholes were drilled along the eastern side of the 80 Rockwood Place property. The borehole locations were picked to determine if contamination is migrating from the One Rockwood Place property over to the 80 Rockwood Place property. Figure 1 shows approximate borehole locations. All boreholes were drilled to top of bedrock.

It must be noted that borehole number B1 was inadvertently drilled approximately two feet over the adjacent property line. Therefore, the B1 sample was taken from property owned by the NYSDOT.

Two inch (outer diameter) by twenty-four inch length split spoons were used, in accordance with ASTM method D-1586, to sample the soils from the boreholes. The split spoons were decontaminated prior to each usage to avoid cross-contamination of soil samples from sampling equipment.

Drilling was performed using two different methods. A truck mounted drill rig was used to drill and sample borehole B1. B2, B3, and B4 were sampled using a tripod rig due to the small amount of working space around the boreholes. The tripod rig drives the split spoon samples and retrieves them. No augering is necessary when using the tripod rig.

An HNU photoionization detector, with a 10.2 ev bulb, was used to monitor the breathing zone, soil samples, and downhole during drilling and sampling activities. The HNU is sensitive to volatile organic compounds that might be present on the site. The instrument is used for health and safety purposes, as well as an indicator of volatile contamination.

FINDINGS AND RESULTS

GEOLOGY

During soil sampling and augering operations, the general geological characteristics for the area were noted:

- The overburden is a lacustrine deposit mostly consisting of sandy silts.
- The basal gravel zone, consisting of sand, gravel, and fragmented bedrock, was noticed at the overburden/bedrock interface.
- The bedrock underlying the overburden is a dolostone of marine origin.
- The water table was encountered between four and seven feet below grade, during augering operations.
- Groundwater flows to the northeast.

SOIL SAMPLES

North State Consultants, P.C. obtained four soil samples for chemical analysis. A soil sample from each borehole, at or near the top of bedrock was collected. Boreholes, sample points, and their corresponding photoionization detector (PID) readings and depths are noted below:

Borehole	Sample Designation	Depth	PID Reading
BH-1	Sample #1	7.0'-8.8'	None
BH-2	Sample #2	5.0'-7.0'	10 ppm (peak)
BH-3	Sample #3	5.0'-6.9'	2 ppm (peak)
BH-4	Sample #4	5.0'-6.9'	None

LABORATORY ANALYSIS

The laboratory analysis, performed on each sample, included:

- Volatile organic compounds (USEPA method 8240)
- EP toxicity metals (USEPA method 1310)
- Herbicides (USEPA method 8150)
- PCB's/pesticides (USEPA method 8080).

Lab analysis results were below detection limits for PCB's, pesticides, herbicides, and EP toxicity metals in all four samples trace amounts of xylene, toluene and tetrachloroethene were detected during the HSL volatiles fingerprint scan (EPA method 8240). The laboratory analysis can be found in Appendix B, attached to this report.

The materials indicated by the laboratory analysis (with the exception of tetrachloroethene) are normally present in gasoline and other fuels.

Borehole locations and their corresponding HSL volatile readings are listed below.

Location	Analyte	Constituent	Concentration
B-1	HSL volatiles	Tetrachloroethene	.00259 ppm
B-2	HSL volatiles	Ethylbenzene	2.93 ppm
		M-xylene	9.10 ppm
		O + P xylene	8.16 ppm
B-3	HSL volatiles	Acetone	.061 ppm
		M-xylene	.00236 ppm
B-4	HSL volatiles	Toluene	1.350 ppm
		O + P xylene	1.040 ppm

SITE BY SITE RISK ASSESSMENTS (Background)

Currently there are no established concentration limits for chemical constituents in soil. Therefore, each site where constituents are identified at concentrations exceeding background levels is evaluated on a site-specific basis.

Site by site evaluations are often complex. Factors determining the need for clean-up and specific target levels include, but are not limited to the following:

- Chemical constituents present and their toxicity, persistence in the environment, mobility, and concentration.
- Site geology and hydrogeology.
- Predicted effects of chemical constituents found on human health and the environment based on various potential migration pathways such as; groundwater (including use as drinking water), air, and surface water.

o Estimated exposure concentrations, current health advisories, and drinking water, and drinking water and other applicable relevant and appropriate regulations.

* Information supplied by the Superfund Public Health Evaluation Manual (USEPA/540/1-86/060).

BASELINE RISK ASSESSMENT

When evaluating the 80 Rockwood property under the forementioned site assessment guidelines, it must first be noted that although groundwater was present at the sample location depths, no formal groundwater monitoring was performed.

INDICATOR CHEMICALS

Indicator chemicals are used during risk assessments to identify the "highest risk" chemicals at a site in order to focus on chemicals of the greatest concern.

Two important factors for ranking chemicals in the indicator selection process are the measured chemical concentrations at the site and their toxicity. Although trace amounts of other volatiles were found in soil samples taken, m-xylene and o & p xylene were chosen as indicator chemicals for this assessment based on the factors noted above.

XYLENE

Xylene isomers are important commercial compounds used in the blending of gasoline and chemical synthesis. In soils and surface water xylene is readily biodegradable. In groundwater xylene's moderate K_{oc} indicates that migration is moderately retarded relative to groundwater flow.

Westrick et al (1984) reported the results of a USEPA groundwater supply survey, in which 2% of the groundwaters sampled contained one or more of the xylene isomers. Background concentrations for xylene in soils in the vicinity of the 80 Rockwood site were not available at the time of this investigation. Toxicity information for xylene compounds is attached as exhibit 1.

Site geology and hydrogeology: see previous section page 3.

EXPOSURE PATHWAYS

Human exposure pathways in the area surrounding the 80 Rockwood property are minimal. Drinking water for the area is supplied by the City of Rochester. On-site air monitoring with an hnu (PID 101) did not indicate signs of volatiles in breathing air above background. Surface water at this location is virtually non-existent.

In addition, Potential vapor entry points to the buildings would be limited due to the construction of the buildings on a concrete slab surface.

CURRENT REGULATIONS AND HEALTH ADVISORIES

A copy of a DRAFT version of drinking water and health advisories from the USEPA Office of Drinking Water is attached. The proposed standards for xylenes (10,000 ppb) is highlighted for the readers convenience. It should be noted that these standards are proposed only and are also established for drinking water not soils as tested during the scope of North State Consultants' Phase II investigation.

CONCLUSION

Information gathered and documented during the course of this investigation indicates that chemical constituents exist in soils at the 80 Rockwood property.

It is believed that these constituents are a result of migration from the Scobel Chemical IHWDS via surface run off or groundwater.

The baseline risk assessment indicates that the concentrations of chemicals encountered in soils appears to be no more of a health concern than other similar industrial setting. Accordingly, there were no instances during the course of this investigation when OSHA air concentration limits were exceeded.

However, limited information regarding specific concentrations of chemical constituents in groundwater underlying the site prohibits North State Consultants, P.C. from drawing final conclusions regarding the extent of groundwater compromise.

In a situation where groundwater remediation would be necessary at the site, active ventilation is one technology that could be used as an effective clean up measure. This remediation technique is cost effective, as well as technically compatible with the materials present on-site. Active ventilation is a technology that is often used as a remediation method at sites with similar chemical constituents (i.e. gasoline stations).

CERTIFICATION

North State Consultants, P.C. certifies the accuracy of this report, to the best of our knowledge, based on the information collected as described in the Intensity of Effort of this investigation.

LIMITATION OF LIABILITY

You have agreed to the fullest extent permitted by law, that North State Consultants, P.C.'s total liability to you for any and all damages arising out of or in any way related to the Site or this engagement, which results from anything which North State Consultants, P. C. may in good faith do or refrain from doing, in connection herewith, except as a result of its own negligence or willful misconduct, shall not exceed the total compensation received by North State Consultants, P.C. under this agreement.

In addition, you have agreed that the Intensity of Effort described under the Scope of Work is acceptable to you and that to the fullest extent permitted by law, North State Consultants, P.C. shall not be liable to you for limiting its investigation to the intensity of effort described.

A copy of all information collected during this investigation, including photographs, maps, notes, and other material will be kept on file at the offices of North State Consultants, P.C. This information is available at your request.

Respectfully submitted,

NORTH STATE CONSULTANTS, P.C.

John P. Osterberg

By John P. Osterberg, P.E.
Vice President

Attachments

JPO/JAD/ls

APPENDIX A

Drilling Logs

80 Rockwood Place

Rochester, New York

March, 1990

DATE	TIME	DRILLED FROM	DRILLED TO
3/6/90	1035	0.0'	8.8'

NORTH STATE CONSULTANTS, P.C.
300 State Street
Rochester, New York 14614

HOLE NO. B1
GRD. ELEV. _____

PROJECT Tucker Printers
LOCATION 80 Rockwood Place Rochester Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA PID	TIME	WELL DETAILS
0-2	-	-	-	-	-					-	-		
5-7	1	7	7	8	17		m		18"	Reddish brown sandy s.lt	0.0	1040	
7-8.8	2	45	23	100	-		m		15	Sand & Gravel-trace silt / obvious bedrock fragments. Top of Rock 8.8	0.0	1045	

NOTATION: SIZE AUGERS / CASING 2 1/4 SIZE SPOON 2" x 24"
SIZE THIN-WALLED TUBE _____ SIZE CORE _____

N = NO. OF BLOWS TO DRIVE "SPOON "WITH lb. WEIGHT FALLING PER BLOW
C = NO. OF BLOWS TO DRIVE "CASING " WITH lb. WEIGHT FALLING PER BLOW

Truck mounted Rig

S. Campbell

DATE	TIME	DRILLED FROM	DRILLED TO
3/7/90	1330	0.0'	8.9'

NORTH STATE CONSULTANTS, P.C.
300 State Street
Rochester, New York 14614

HOLE NO. B2
GRD. ELEV. _____

PROJECT Tucker Tractors
LOCATION 80 Rockwood Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA PID	OTHER DATA TIME	WELL DETAILS
0-2	1	4	7	7	9		D		15"	Black sandy Topsoil trace organics	0.0	1340	
2-5	2	2 3	3 5	3	4		M		33"	Brownish Gray sandy silt	0.0	1345	
5-7	3	7	7	11	9		S		16"	grayish sandy silt – trace gravel Black streaked Staining	10.0	1350	
7-8.9	4	11	14	32	100		S		14"	grayish sandy silt Rock Fragments Top of Rock 8.9 Water table ~ 7'	5.0	1460	

NOTATION: SIZE AUGERS/CASING _____ SIZE SPOON 2" X 24"
SIZE THIN-WALLED TUBE _____ SIZE CORE _____

Tripod Rig

N = NO. OF BLOWS TO DRIVE "SPOON "WITH lb. WEIGHT FALLING PER BLOW
C = NO. OF BLOWS TO DRIVE "CASING " WITH lb. WEIGHT FALLING PER BLOW

A. Campbell

DATE	TIME	DRILLED FROM	DRILLED TO
3/6/90	11:30	0.0'	6.9'

NORTH STATE CONSULTANTS, P.C.
300 State Street
Rochester, New York 14614

HOLE NO. B3
GRD. ELEV. ____

PROJECT Tucker Printing
LOCATION 10 Rockwood Pittsford, NY Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA PID	T, m C	WELL DETAILS
1-3	1	4	3	4	5		M		22	Blackish Topsoil Top 6" Brown Sandy silt bottom 14"	0.0	1425	
3-5	2	10	9	10	11		S		18"	Water at ~4' Reddish brown sand - trace silt	1.0	1430	
5-6.9	3	9	10	15			S		20	Black & Reddish brown sand / Rock Fragments Top of Bedrock 6.9	2.0	1440	

NOTATION: Tripod Rig

SIZE AUGERS / CASING ____ SIZE SPOON 2" x 24"
SIZE THIN-WALLED TUBE ____ SIZE CORE ____

N = NO. OF BLOWS TO DRIVE "SPOON "WITH lb. WEIGHT FALLING PER BLOW
C = NO. OF BLOWS TO DRIVE "CASING " WITH lb. WEIGHT FALLING PER BLOW

A. Campbell

DATE	TIME	DRILLED FROM	DRILLED TO
3/6/90	1445	0.0'	6.9'

NORTH STATE CONSULTANTS, P.C.
300 State Street
Rochester, New York 14614

HOLE NO. B4
GRD. ELEV. _____

PROJECT Tueller Property
LOCATION 80 Rockwood Rochester, NY Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA PID	OTHER DATA Time	WELL DETAILS
1-3	1	4	5	6	8		M		12"	Topsoil top 6"		1445	
										Brown sandy silt bottom 6"	0.0		
3-5	2	7	7	8	12		S		19"	Reddish brown sand-trace silt & fragments of gravel with at 4'	0.0	1450	
5-6.9	3	11	12	17	107		S		11"	Black sand trace Rock Fragments Top of rock at 6.9'	0.0	1455	

NOTATION:
Tripod Rig

SIZE AUGERS/CASING _____ SIZE SPOON _____
SIZE THIN-WALLED TUBE _____ SIZE CORE _____

N = NO. OF BLOWS TO DRIVE "SPOON "WITH lb. WEIGHT FALLING PER BLOW
C = NO. OF BLOWS TO DRIVE "CASING " WITH lb. WEIGHT FALLING PER BLOW

A. Campbell

APPENDIX B

Laboratory Analysis

80 Rockwood Place

Rochester, New York

March, 1990

General Testing Corporation

CASE NARRATIVE

NORTHSTATE R90/845

8240 HSL ANALYSIS

Due to the presence of heavy volatiles late eluting organics present in Samples 2 and 4, methanolic extractions and subsequent 1/500 dilutions were performed on these samples prior to anlaysis. More concentrated analyses were attempted but saturation of the mass selective detector and interference with internal standards and surrogates prevented acceptable quantitation and qualitation. Dilutions resulted in proportionately adjusted detection limits.

General Testing Corporation

CASE NARRATIVE

NORTHSTATE R90/845

8080/8150 (SW-846)

For the pesticide (8080) scan, the primary surrogate standard Dibutylchlorendate showed recoveries outside Q.C. limits (t) for Samples 1 and 2. The secondary surrogate Tetra-chloro-m-xylene was within Q.C. limits for these samples. All samples were analyzed for herbicides (8150) at a 1/10 dilution due to matrix interferences that could not be removed by cleanup methods and Samples 2 and 4 required a 1/100 dilution when reanalyzed at which the Surrogate 2,4 DB is diluted out (D).

General Testing Corporation

GTC REPORT# R90/845

REPORT INDEX

SECTION A: Analytical Results

SECTION B: Chronology

SECTION C: Documentation

General Testing Corporation

DATA AND QUALITY CONTROL QUALIFIERS

U - Indicates compound was analyzed but was not observed at a quantifiable concentration.

J - Indicates an estimated value

J Qualifiers (used in conjunction with J and/or QC page or chronology)

S - Surrogate recoveries outside of control limits

St - Surrogate recoveries outside of control limits, analysis repeated, same results obtained, matrix interference suspected

r - Laboratory replicates outside of laboratory advisory limits

t - Matrix interference suspected

h - Holding time exceeded for analysis

M - Matrix spike and/or matrix spike duplicate outside control limits

Mt - same as M
ORGANIC PARAMETERS: Matrix interference suspected, Organic reference standard was acceptable.

INORGANIC PARAMETERS: Matrix interference suspected, Repeat analysis still unacceptable

Mr - INORGANICS PARAMETERS: Matrix interference suspected, repeat analysis not conducted due to holding time limitations

B - Indicates that the analyte was found in the associated laboratory or field blank

B Qualifiers (used in conjunction with B)

l - Contamination in lab or method blank

t - Contamination in trip blank

x - Contamination in two or more types of blanks (i.e. Lab or Method, Trip, Equipment, or Field Filtration Blank)

e - Contamination in equipment blank

f - Contamination in field filtration blank

d - Results multiplied by dilution factor

MISCELLANEOUS QC AND DATA QUALIFIERS

ND - Not Detectable

NS - No Sample

NA - Not Analyzed

** - No limits currently established

** - See Attached Data

I - Insufficient sample to re-analyze

D - Surrogate standard diluted out

R - Sample re-analyzed outside of holding time

UP - Unable to perform analysis due to sample matrix

V - Spiked recovery cannot be determined, sample value >4 times spike concentration

++ - Outside Laboratory acceptance limits (Blank Spikes, Ref. Spikes)

RC - Results confirmed via repeat analysis

NC - Not Calculable

LE - Lab Error: No data available

t - Surrogate Matrix Interference

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference

Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-006	-007
Location:	Lab Mthod Blank	Lab Mthod Blank
Date Collected:	--	--
Time Collected:	--	--
Date Analyzed:	03/17/90	03/19/90
Ethylbenzene	2 U	2 U
Styrene	2 U	2 U
m-Xylene	2 U	2 U
o + p-Xylene	2 U	2 U
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4 (Acceptance limits: 74-122%)	98%	91%
Toluene d8 (Acceptance limits 90-107%)	98%	100%
4-Bromofluorobenzene (Acceptance limits 81-113%)	101%	100%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry

Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference

Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-006	-007						
Location:	Lab Mthod Blank	Lab Mthod Blank						
Date Collected:	--	--						
Time Collected:	--	--						
Date Analyzed:	03/17/90	03/19/90						
Chloromethane	2 U	2 U						
Bromomethane	2 U	2 U						
Vinyl Chloride	2 U	2 U						
Chloroethane	2 U	2 U						
Methylene Chloride	1.6	2 U						
Acetone	20 U	20 U						
Carbon Disulfide	10 U	10 U						
Trichlorofluoromethane	2 U	2 U						
Vinyl Acetate	10 U	10 U						
1,1-Dichloroethene	2 U	2 U						
1,1-Dichloroethane	2 U	2 U						
Trans-1,2-Dichloroethene	2 U	2 U						
Chloroform	2 U	2 U						
2-Butanone (MEK)	10 U	10 U						
1,2-Dichloroethane	2 U	2 U						
1,1,1-Trichloroethane	2 U	2 U						
Carbon Tetrachloride	2 U	2 U						
Bromodichloromethane	2 U	2 U						
1,2-Dichloropropane	2 U	2 U						
1,3-Dichloropropene (Trans)	2 U	2 U						
Trichloroethene	2 U	2 U						
Dibromochloromethane	2 U	2 U						
1,1,2-Trichloroethane	2 U	2 U						
Benzene	2 U	2 U						
1,3-Dichloropropene(Cis)	2 U	2 U						
2-Chloroethylvinyl Ether	5 U	5 U						
Bromoform	2 U	2 U						
4-Methyl-2-pentanone(MIBK)	10 U	10 U						
2-Hexanone	10 U	10 U						
Tetrachloroethene	2 U	2 U						
1,1,2,2-Tetrachloroethane	2 U	2 U						
Toluene	2 U	2 U						
Chlorobenzene	2 U	2 U						

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference

Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-005							
Location:	Lab Mthod Blank							
Date Collected:	--							
Time Collected:	--							
Date Analyzed:	03/17/90							
Ethylbenzene	2 U							
Styrene	2 U							
m-Xylene	2 U							
o + p-Xylene	2 U							
Surrogate Standard Recoveries								
1,2-Dichloroethane-d4	97%							
(Acceptance limits: 73-123%)								
Toluene d8	101%							
(Acceptance limits 88-110%)								
4-Bromofluorobenzene	103%							
(Acceptance limits 83-113%)								

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.

NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry

Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference
Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-005
Location:	Lab Mthod Blank
Date Collected:	--
Time Collected:	--
Date Analyzed:	03/17/90
Chloromethane	2 U
Bromomethane	2 U
Vinyl Chloride	2 U
Chloroethane	2 U
Methylene Chloride	1.6
Acetone	20 U
Carbon Disulfide	10 U
Trichlorofluoromethane	2 U
Vinyl Acetate	10 U
1,1-Dichloroethene	2 U
1,1-Dichloroethane	2 U
Trans-1,2-Dichloroethene	2 U
Chloroform	2 U
2-Butanone (MEK)	10 U
1,2-Dichloroethane	2 U
1,1,1-Trichloroethane	2 U
Carbon Tetrachloride	2 U
Bromodichloromethane	2 U
1,2-Dichloropropane	2 U
1,3-Dichloropropene (Trans)	2 U
Trichloroethene	2 U
Dibromochloromethane	2 U
1,1,2-Trichloroethane	2 U
Benzene	2 U
1,3-Dichloropropene(Cis)	2 U
2-Chloroethylvinyl Ether	5 U
Bromoform	2 U
4-Methyl-2-pentanone(MIBK)	10 U
2-Hexanone	10 U
Tetrachloroethene	2 U
1,1,2,2-Tetrachloroethane	2 U
Toluene	2 U
Chlorobenzene	2 U

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8150	ANALYTICAL RESULTS - ug/kg Wet Wt.
Sample:	-008
Location:	Lab Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	03/12/90
Date Analyzed:	03/15/90
2,4-D	1.0 U
2,4,5-TP (Silvex)	1.0 U
2,4,5-T	--
SURROGATE STANDARD RECOVERIES	
% Recovery	
2,4-DB (Acceptance Limits *+)	77%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

*+ Limits currently not established

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8080		ANALYTICAL RESULTS - %						
Sample:	-008							
Location:	Lab Blank							
Date Collected:	--							
Time Collected:	--							
SURROGATE STANDARD RECOVERY								
% Recovery								
Dibutylchlorendate (Acceptance Limits: 24-154%)	109%							
Tetrachloro-meta-xylene (Acceptance Limits: 24-122%)	66%							

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
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client:
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Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference

Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8080 ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-008
Location:	Lab Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	03/12/90
Date Analyzed:	03/14/90
alpha-BHC	2.0 U
beta-BHC	2.0 U
gamma-BHC (Lindane)	2.0 U
Heptachlor	2.0 U
delta-BHC	2.0 U
Aldrin	2.0 U
Heptachlorepoxide	2.0 U
alpha-Endosulfan	2.0 U
4,4'-DDE	2.0 U
Dieldrin	2.0 U
Endrin	2.0 U
4,4'-TDE (DDD)	2.0 U
beta-Endosulfan	4.0 U
4,4'-DDT	4.0 U
Endrin Aldehyde	4.0 U
Endosulfan Sulfate	4.0 U
Mirex	8.0 U
Methoxychlor	8.0 U
Endrin Ketone	4.0 U
Chlordane	8.0 U
Toxaphene	40.0 U
PCB 1016	20.0 U
PCB 1221	20.0 U
PCB 1232	20.0 U
PCB 1242	20.0 U
PCB 1248	20.0 U
PCB 1254	20.0 U
PCB 1260	20.0 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145 NY ID# in Hackensack: 10801
NJ ID# in Rochester: 73331 NJ ID# in Hackenseck: 02317

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300 State St.
Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8150 ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
Date Extracted:	03/12/90	03/12/90	03/12/90	03/12/90
Date Analyzed:	03/23/90	03/23/90	03/23/90	03/23/90
2,4-D	10.0 U	100 U	10.0 U	100 U
2,4,5-TP (Silvex)	10.0 U	100 U	10.0 U	100 U
2,4,5-T	--	--	--	--
SURROGATE STANDARD RECOVERIES				
% Recovery				
2,4-DB	146%	D	132%	D
(Acceptance Limits *+)				

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NY ID# in Rochester: 10145
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NY ID# in Hackensack: 10801

*+ Limits currently not established

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Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8080 ANALYTICAL RESULTS - %

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
SURROGATE STANDARD RECOVERY				
% Recovery				
Dibutylchlorendate (Acceptance Limits: 24-154%)	t	t	114%	131%
Tetrachloro-meta-xylene (Acceptance Limits: 24-122%)	74%	58%	59%	66%

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Client:
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Rochester, NY 14614

Sample(s) Reference
Rockwood

Received : 03/07/90 P.O. #:

ANALYSIS * BY GC METHOD 8080 ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
Date Extracted:	03/12/90	03/12/90	03/12/90	03/12/90
Date Analyzed:	03/16/90	03/16/90	03/16/90	03/17/90
alpha-BHC	2.0 U	2.0 U	2.0 U	2.0 U
beta-BHC	2.0 U	2.0 U	2.0 U	2.0 U
gamma-BHC (Lindane)	2.0 U	2.0 U	2.0 U	2.0 U
Heptachlor	2.0 U	2.0 U	2.0 U	2.0 U
delta-BHC	2.0 U	2.0 U	2.0 U	2.0 U
Aldrin	2.0 U	2.0 U	2.0 U	2.0 U
Heptachlorepoxide	2.0 U	2.0 U	2.0 U	2.0 U
alpha-Endosulfan	2.0 U	2.0 U	2.0 U	2.0 U
4,4'-DDE	2.0 U	2.0 U	2.0 U	2.0 U
Dieldrin	2.0 U	2.0 U	2.0 U	2.0 U
Endrin	2.0 U	2.0 U	2.0 U	2.0 U
4,4'-TDE (DDD)	2.0 U	2.0 U	2.0 U	2.0 U
beta-Endosulfan	4.0 U	4.0 U	4.0 U	4.0 U
4,4'-DDT	4.0 U	4.0 U	4.0 U	4.0 U
Endrin Aldehyde	4.0 U	4.0 U	4.0 U	4.0 U
Endosulfan Sulfate	4.0 U	4.0 U	4.0 U	4.0 U
Mirex	8.0 U	8.0 U	8.0 U	8.0 U
Methoxychlor	8.0 U	8.0 U	8.0 U	8.0 U
Endrin Ketone	4.0 U	4.0 U	4.0 U	4.0 U
Chlordane	8.0 U	8.0 U	8.0 U	8.0 U
Toxaphene	40.0 U	40.0 U	40.0 U	40.0 U
PCB 1016	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1221	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1232	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1242	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1248	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1254	20.0 U	20.0 U	20.0 U	20.0 U
PCB 1260	20.0 U	20.0 U	20.0 U	20.0 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145 NY ID# in Hackensack: 10801
NJ ID# in Rochester: 73331 NJ ID# in Hackensack: 02317

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LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
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300 State St.
Rochester, NY 14614

Sample(s) Reference
Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004				
Location:	B-1	B-2	B-3	B-4				
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90				
Time Collected:	10:45	13:50	14:40	14:55				
Date Analyzed:	03/17/90	03/17/90	03/19/90	03/17/90				
Ethylbenzene	2 U	2930	2 U	1000 U				
Styrene	2 U	1000 U	2 U	1000 U				
m-Xylene	2 U	9100	2.36	1000 U				
o + p-Xylene	2 U	8160	2 U	1040				
Surrogate Standard Recoveries								
1,2-Dichloroethane-d4 (Acceptance limits: 74-122%)	93%	92%	97%	92%				
Toluene d8 (Acceptance limits 90-107%)	97%	101%	102%	102%				
4-Bromofluorobenzene (Acceptance limits 81-113%)	97%	103%	100%	110%				

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Michael K. Peng
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Sample(s) Reference

Rockwood

Received : 03/07/90 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
Date Analyzed:	03/17/90	03/17/90	03/19/90	03/17/90
Chloromethane	2 U	1000 U	2 U	1000 U
Bromomethane	2 U	1000 U	2 U	1000 U
Vinyl Chloride	2 U	1000 U	2 U	1000 U
Chloroethane	2 U	1000 U	2 U	1000 U
Methylene Chloride	4.01 BI	1000 U	3.17 BI	1000 U
Acetone	20 U	10,000 U	61.2	10,000 U
Carbon Disulfide	10 U	5000 U	10 U	5000 U
Trichlorofluoromethane	2 U	1000 U	2 U	1000 U
Vinyl Acetate	10 U	5000 U	10 U	5000 U
1,1-Dichloroethene	2 U	1000 U	2 U	1000 U
1,1-Dichloroethane	2 U	1000 U	2 U	1000 U
Trans-1,2-Dichloroethene	2 U	1000 U	2 U	1000 U
Chloroform	2 U	1000 U	2 U	1000 U
2-Butanone (MEK)	10 U	5000 U	13.5	5000 U
1,2-Dichloroethane	2 U	1000 U	2 U	1000 U
1,1,1-Trichloroethane	2 U	1000 U	2 U	1000 U
Carbon Tetrachloride	2 U	1000 U	2 U	1000 U
Bromodichloromethane	2 U	1000 U	2 U	1000 U
1,2-Dichloropropane	2 U	1000 U	2 U	1000 U
1,3-Dichloropropene (Trans)	2 U	1000 U	2 U	1000 U
Trichloroethene	2 U	1000 U	2 U	1000 U
Dibromochloromethane	2 U	1000 U	2 U	1000 U
1,1,2-Trichloroethane	2 U	1000 U	2 U	1000 U
Benzene	2 U	1000 U	2 U	1000 U
1,3-Dichloropropene(Cis)	2 U	1000 U	2 U	1000 U
2-Chloroethylvinyl Ether	5 U	2500 U	5 U	2500 U
Bromoform	2 U	1000 U	2 U	1000 U
4-Methyl-2-pentanone(MIBK)	10 U	5000 U	10 U	5000 U
2-Hexanone	10 U	5000 U	10 U	5000 U
Tetrachloroethene	2.59	1000 U	2 U	1000 U
1,1,2,2-Tetrachloroethane	2 U	1000 U	2 U	1000 U
Toluene	2 U	1000 U	2 U	1350
Chlorobenzene	2 U	1000 U	2 U	1000 U

General Testing Corporation

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Job No: R90/00845 Date: APR. 4 1990

Client:
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Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

EP TOX EXTRACT, METALS ANALYTICAL UNITS - mg/l

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
EP TOX Extract,Metals	***	***	***	***
Arsenic	0.020 U	0.020 U	0.020 U	0.020 U
Barium	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	0.10 U	0.10 U	0.10 U	0.10 U
Chromium	0.50 U	0.50 U	0.50 U	0.50 U
Lead	0.50 U	0.50 U	0.50 U	0.50 U
Mercury	0.0020 U	0.0020 U	0.0020 U	0.0020 U
Selenium	0.020 U	0.020 U	0.020 U	0.020 U
Silver	0.10 U	0.10 U	0.10 U	0.10 U

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NY ID# in Rochester: 10145
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NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

***EP TOX Extraction in accordance with Federal Register, Volume 54, No. 188, Sept. 29, 1989, Rules and Regulations.

Michael K. Peng
Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R90/00845 Date: APR. 4 1990

Client:
Mr. Steve Campbell
Northstate Consultants
300 State St.
Rochester, NY 14614

Sample(s) Reference:
Rockwood

Received : 03/07/90 P.O. #:

ANALYTICAL UNITS - As Specified

Sample:	-001	-002	-003	-004
Location:	B-1	B-2	B-3	B-4
Date Collected:	03/05/90	03/06/90	03/06/90	03/06/90
Time Collected:	10:45	13:50	14:40	14:55
EP TOX Extract, Metals	**	**	**	**
8080 Scan (Pest./PCB's)	**	**	**	**
GC Method 8150	**	**	**	**
HSL Volatiles	**	**	**	**

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

**See Attached Data

Michael K. Peng
Laboratory Director

General Testing Corporation

GTC REPORT # R90/845

SECTION A

ANALYTICAL DATA

Presented in this section is analytical data for the parameters requested. The following references concerning units and analytical methodology apply to the data herein.

Units:

EP Tox Metals - mg/l

Organics - ug/kg

Analytical Methodology Obtained From:

( ) Federal Register, 40 CFR Part 136, Guidelines Establishing Test Procedures for the analyses of Pollutants under the Clean Water Act, 10/26/84.

(x) SW-846, Test Methods for Evaluating Solid Waste, 3rd Edition, 9/86.

( ) Other

APPENDIX C

NYSDEC Inactive Hazardous Waste Disposal Report

Scobell Chemical - NYSDOT Site

Rochester, New York

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2 REGION: 8 SITE CODE: 828076
EPA ID:

NAME OF SITE : Scobell Chemical - NYSDOT Site
STREET ADDRESS: 1 Rockwood Place

TOWN/CITY:	COUNTY:	ZIP:
Rochester	Monroe	14610

SITE TYPE: Open Dump-X Structure- Lagoon- Landfill- Treatment Pond-
ESTIMATED SIZE: 2 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: NYS Dept. of Transportation
CURRENT OWNER ADDRESS.: Harriman State Office Campus, Albany, NY
OWNER(S) DURING USE...: Scobell Chemical/RAECO
OPERATOR DURING USE...: ** Multi - Site Operators **
OPERATOR ADDRESS.....: * * * * *
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1920's To 1987

SITE DESCRIPTION:
The site was discovered during NYSDOT I490/I590 Interchange reconstruction project implementation phase. Drums and containers of volatile and halogenated organic compounds, pesticides and herbicides (including 2,4,5 TP) and other lab chemicals were found in the former Scobell Chemical building required to be demolished under the DOT project. Further sampling in and around the building indicated elevated levels of trichloroethene, tetrachloroethene, 1,2-dichloroethene, and toluene. DOT had retained Sevenson Environmental Services for building demolition and hazardous waste cleanup in the project affected areas. This clean-up has been completed.
Contaminated floors and subsurface soils north of the "Limit of excavation"were not removed during the DOT project and have remained in place.A leachate collection line and storage tank have been installed. The DOT is considering the possibility of providing a reasonably impervious cap to minimize infiltration in the contaminated floor and soil areas. In addition to the known and unknown spills that occurred during its operations, Scobell reported that they have disposed hazardous waste at this location. This information was reported in an RTK questionnaire report from April of 1985. DEE and the AG's office are negotiating the removal of a contaminated rock stock pile, and for an RI/FS with the PRP's.

There are several drums of banned pesticides that are still being stored in an on-site trailer.

HAZARDOUS WASTE DISPOSED: Confirmed-X TYPE	Suspected- QUANTITY (units)
Halogenated and volatile organics Pesticides and Herbicides.	unknown

SITE CODE: 828076

ANALYTICAL DATA AVAILABLE
Air- Surface Water- Groundwater- Soil-X Sediment-

CONTRAVENTION OF STANDARDS:
Groundwater- Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE..: State- Federal-
STATUS: Negotiation in Progress- Order Signed-

REMEDIAL ACTION:

Proposed- Under design- In Progress-X Completed-
NATURE OF ACTION: cleanup in areas affected by DOT project

GEOTECHNICAL INFORMATION:
SOIL TYPE:
GROUNDWATER DEPTH: in bedrock, more than 10ft.

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Further sampling, source removal, and groundwater assessment are needed. This site poses a significant threat to the environment.

ASSESSMENT OF HEALTH PROBLEMS:

Low levels of octachlorinated dibenzodioxins and elevated levels of volatile organic compounds, were found in on-site soil samples. Further information and sampling are needed to define existing hydrogeologic conditions, the extent and nature of contamination, and to evaluate groundwater and surface water runoff as potential exposure routes of concern. Field investigation/remediation may be complicated due to DOT construction activities at the site.

TABLE 1

HSL Volatile Compound Contamination in Boreholes

80 Rockwood Place

Borehole	HSL Volatile Compound	Concentration
B1	tetrachloro ethene	2.59 ug/kg
B2	M-xylene	9100,00 ug/kg
B2	O + P-xylene	8160.00 ug/kg
B2	ethylbenzene	2930.00 ug/kg
B3	acetone	61.20 ug/kg
B3	2-butanone	13.50 ug/kg
B3	M-xylene	2.36 ug/kg
B4	toluene	1350.00 ug/kg
B4	O + P-xylene	1040.00 ug/kg

EXHIBIT 1

XYLENE

Xylene may occur as the orth (o-), meta (m-), or para (p-) isomers; or as a mixture of isomers. Xylenes are important commercial compounds used in the blending of gasolines and in chemical synthesis. Xylenes have been detected in drinking waters, groundwaters, surface waters, leachates, and industrial effluents. Vestrick et al. (1984) reported the results of a United States Environmental Protection Agency (USEPA) groundwater supply survey in which 2% of the groundwaters sampled contained one or more of the xylene isomers. The median and maximum concentrations reported in the survey are 0.42 and 2.5 µg/L (ppb), respectively. Xylene has been monitored extensively in ambient air throughout the United States. Indoor concentrations have been often found to exceed those found outdoors. Seifert and Abraham (1982) compared the levels of m- and p- xylene measured indoors in various situations to concentrations outdoors next to dwellings. Concentration ranges of 4 to 10 and 2 to 11 ppb of m- and p- xylene, respectively, were reported for kitchens and other rooms. The xylene range outdoors was 0.9-7 $\mu g/m^3$. Xylene concentration downvind of a hazardous vaste remedial action site in Ohio was 30 to 48 $\mu g/m^3$ (EPA 1986).

Environmental Transport and Fate

The relevant physical and chemical properties and environmental fate of xylene (CAS No. 1330-20-7) are summarized below (EPA 1985, 1986):

Molecular Weight	106 g/mole
Water Solubility	198 mg/L (25°C)
Vapor Pressure	10 mm Hg (25°C)
Henry's Law Constant	7.0×10^{-4} atm·m^3/mole (___°C)
Octanol-Water Partition Coefficient (Log K_{ow})	3.26
Organic Carbon Partition Coefficient (K_{oc})	240 mL/g
Bioconcentration Factor (BCF)	23

Based on its vapor pressure and Henry's Law Constant, xylene re-

leased to surface waters rapidly volatilizes to the air. Based on its K_{oc}, xylene in surface soils bind moderately to soil. In surficial soils, volatilization to air is an important fate mechanism, and based on K_{oc} and moderate water solubility, xylene will slowly migrate via rain infiltration from unsaturated zone soils to groundwater. Xylene is rapidly biodegraded in soils and surface water. In groundwater, the moderate K_{oc} indicates that migration of xylene will be moderately retarded relative to groundwater flow.

Toxicokinetics

Xylene is readily absorbed following inhalation. In human volunteers, approximately 64% of the dose inhaled over 8 hours was retained. No specific information on the absorption of xylene following oral exposure was found in the available literature. However, if xylene behaves like other low-molecular-weight aromatic hydrocarbons, greater than 90% will be absorbed. Dermal absorption also appears to be a significant exposure route for this class of compounds (EPA 1987).

Once absorbed, xylene distributes throughout the body. Following inhalation, the highest concentrations are found in the lungs, liver, kidneys, brain, and adipose tissue (EPA 1987).

Metabolism of xylene proceeds via oxidation of the methyl groups and hydroxylation of the aromatic ring. Methyl hippuric acid appears to be the predominant metabolite and is excreted mainly in the urine (EPA 1987).

Noncarcinogenic Effects

At high airborne concentrations, xylene produces central nervous system (CNS) effects, as evidenced by changes in encephalographic pattern and reduction in numerative ability and short-term memory (Gamberale et al. 1978). Savolainen et al. (1980) reported reduction in psychophysiological functions in eight male students following inhalation of m-xylene at 391 mg/m^3 for 5 consecutive days and 1 day after a weekend. Impairment of body balance and manual coordination was reported; however, tolerance against the impaired functions developed during one working week.

In rats, the oral median lethal dose (LD_{50}) ranges from 4,300 to

5,000 mg/kg (NIOSH 1983); the inhalation median lethal concentration (LC_{50}) (4 hours) ranges from 20,600 to 29,000 mg/kg. Carpenter et al. (1975) exposed rats to mixed xylenes at 770, 2,000, or 3,500 mg/m^3 for 6 hours/day, 5 days/week over 13 weeks. No effects were noted on body weight gain, hematology, blood chemistry, kidney or liver weights, or tissue histology at either 777 or 2,000 mg/kg. At the highest concentration, one rat exposed for 7 weeks showed slight kidney tubular degeneration, and at 13 weeks the response was noted in rats in a nonconcentration-related manner.

Jenkins et al. (1970) subjected rats, guinea pigs, monkeys, and dogs to 30 repeated exposures of 3,358 mg/m^3, or to continuous inhalation exposure of 337 mg/m^3 for 90 days. One of the dogs exhibited tremors of varying severity throughout exposure. No significant changes occurred in body weight, hematology, or histopathological examination in the animals exposed to 337 mg/m^3.

Bovers et al. (1982) reported ultrastructural liver effects in rats receiving xylene at 200 mg/kg in the diet for 6 months.

Hudak and Ungvary (1978) reported increased incidences of fused sternebrae and extra ribs in offspring of CFY rats exposed to 1,000 mg/m^3 of mixed xylenes during days 9 to 14 of gestation. No signs of maternal toxicity were noted. No signs of teratogenicity were noted in offspring of Charles River rats exposed to 0, 430, or 1,720 mg/m^3 of xylene during days 6 to 15 of gestation (Litton Bionetics 1979, as cited in EPA 1987).

Carcinogenicity and Mutagenicity

A limited amount of data is available on the carcinogenicity of xylene. One study examined the dermal effects of xylene and concluded that xylene was not a skin tumorigen. A long-term carcinogenicity bioassay is being conducted by the National Toxicology Program (NTP). Pending the findings of this study, EPA has classified xylene according to its weight-of-evidence carcinogenicity criteria in Category D, "not classified" (EPA 1990a); o-xylene, m-xylene, or p-xylene were not mutagenic in a limited number of in vivo and in vitro assays.

Quantitative Indices of Toxicity

An oral reference dose (RFD) of 2.0 mg/kg/day was derived based on a study by the National Toxicology Program (NTP) which identified a NOAEL of 250 mg/kg/day for mice. The NTP (1986) study was given a medium confidence level because, although supporting data exist for mice and fetotoxicity and teratogenicity data are available with positive results at high oral doses--a LOAEL for chronic oral exposure has not yet been defined. Quantitative indices of toxicity are summarized in Table 1.

Standards and Criteria

Standards and criteria applicable to xylene are listed in Table 2.

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Table 2

STANDARDS AND CRITERIA
FOR XYLENE

Standard or Criterion	Value	Reference
Drinking Water		
National Primary Drinking Water Regulations		
Proposed MCLG*	10 mg/L	EPA 1989
Proposed MCL*	10 mg/L	EPA 1989
Occupational Air Concentrations		
OSHA PEL TWA	435 mg/m^3	OSHA 1989
ACGIH TLV TWA	435 mg/m^3	ACGIH 1989

MCL - Maximum contaminant level
MCLG - Maximum contaminant level goal

Table 1

INDICES OF TOXICITY
FOR XYLENE

Oral Route	
Chronic Reference Dose (RfD) mg/kg/day	2.0
Subchronic RfD (RfDs) mg/kg/day	4.0
Confidence Level	Medium
Critical Effect	Hyperactivity, decreased body weight, increased mortality
Test Species for Critical Effect	Rat
RfD Basis	Gavage
RfD Source	IRIS, HEAST
Uncertainty Factor	
- Chronic RfD	100
- Subchronic RfD	100
Modifying Factor	
- Chronic RfD	1
- Subchronic RfD	1
Inhalation Route	
Chronic Reference Dose (RfD) mg/kg/day	8.6×10^{-2}
Subchronic RfD (RfDs) mg/kg/day	8.6×10^{-2}
Confidence Level	NS
Critical Effect	CNS effects, eyes and nose irritation
Test Species for Critical Effect	Rat
RfD Basis	Inhalation
RfD Source	HEAST
Uncertainty Factor	
- Chronic RfD	100
- Subchronic RfD	100

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Health Advisc

DRINKING WATER REGULATIONS AND HEALTH ADVISORIES

U. S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF DRINKING WATER

Legend for draft version of Drinking Water Standards and Health Advisories table.

Abbreviations column descriptions are:

NIPDWR - National Interim Primary Drinking Water Regulation. Interim enforceable drinking water regulations first established under the Safe Drinking Water Act that are protective of public health to the extent feasible.

MCLG - Maximum Contaminant Level Goal. A non-enforceable concentration of a drinking water contaminant that is protective of adverse human health effects and allows an adequate margin of safety.

MCL - Maximum Contaminant Level. Maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

RfD - Reference Dose. An estimate of a daily exposure to the human population that is likely to be without appreciable risk of deleterious effects over a lifetime.

DWEL - Drinking Water Equivalent Level. A lifetime exposure concentration protective of adverse, non-cancer health effects, that assumes all of the exposure to a contaminant is from a drinking water source.

(*) The codes for the Status Reg and Status HA columns are as follows:

F - final

D - draft

L - listed for regulation

P - proposed (Phase II draft proposal)

T - tentative (Phase V)

Other codes found in the table include the following:

NA - not applicable

PS - performance standard 0.5 NTU - 1.0- NTU

TT - treatment technique

** - No more than 5% of the samples may be positive. For systems collecting fewer than 40 samples/month, no more than 1% may be positive.

*** - guidance

† - Large discrepancies between Lifetime and Longer term HA values may occur because of the Agency's conservative policies, especially with regard to carcinogenicity, relative source contribution, and less than lifetime exposures in chronic toxicity testing. These factors can result in a cumulative UF (uncertainty factor) of 10 to 1000 when calculating a Lifetime HA.

Chemicals	Standards				Health Advisories								
						10-kg Child			70-kg Adult				
	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD, ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	Cancer Group
Organics														
Acenaphthylene	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Acifluorfen	-	-	-	-	F	2000	200	100	400	13	400	-	100	B2
Acrylamide	P	-	zero	TT	F	150	300	20	70	0.2	7	-	1	B2
Acrylonitrile	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Adipates	T	-	zero	-	-	-	-		-	-	-	-	-	-
Alachlor	P	-	zero	2	F	100	100	-	-	10	400	-	40	B2
Aldicarb	P	-	10	10	F	10	10	10	40	1.3	40	10	-	D
Aldicarb sulfone	P	-	40	40	F	60	60	60	200	6.0	200	40	-	D
Aldicarb sulfoxide	P	-	10	10	F	10	10	10	40	1.3	40	10	-	D
Ametryn	-	-	-	-	F	9000	9000	900	3000	9	300	60	-	D
Ammonia	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Ammonium Sulfamate	-	-	-	-	F	20000	20000	20000	80000	250	8000	2000	-	D
Anthracene	L	-	-	-	-	-	-	-	-	-	-	-	-	D
Atrazine	P	-	3	3	F	100	100	50	200	5	200	3	-	C
Baygon	-	-	-	-	F	40	40	40	100	4	100	3	-	C
Bentazon	-	-	-	-	F	300	300	300	900	2.5	90	20	-	D
Benz(a)anthracene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Benzene	F	-	zero	5	F	200	200	-	-	-	-	-	100	A
Benzo(a)pyrene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Benzo(b)fluoranthene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Benzo(g,h,i)perylene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	D
Benzo(k)fluoranthene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
bis-2-Chloroisopropyl ether	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Bromacil	-	-	-	-	F	5000	5000	3000	9000	130	5000	90	-	C
Bromobenzene	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Bromochloroacetonitrile	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Bromodichloromethane (THM)	L	100	-	-	D	-	-	-	-	2	-	-	-	-
Bromoform (THM)	L	100	-	-	D	-	-	-	-	20	-	-	-	-
Bromomethane	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butyl benzyl phthalate (BBP)	T	zero	-	-	-	-	-	-	-	200	-	-	-	C
Butylate	-	-	-	-	F	2000	2000	1000	1000	50	2000	350	-	D
Butylbenzene n-	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene sec-	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene tert-	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Carbaryl	-	-	-	-	F	1000	1000	1000	1000	100	4000	700	-	D
Carbofuran	P	-	40	40	F	50	50	50	200	5	200	40	-	E
Carbon Tetrachloride	F	-	zero	5	F	4000	200	70	300	0.7	30	-	30	B2

Chemicals	Standards				Health Advisories								
						10-kg Child			70-kg Adult				
	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	Cancer Group
Carboxin	-	-	-	-	F	1000	1000	1000	4000	100	4000	700	-	D
Chloramben	-	-	-	-	F	3000	3000	200	500	15	500	100	-	D
Chloramine	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chlorate	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chlordane	P	-	zero	2	F	60	60	0.5	0.5	0.045	2	-	3	B2
Chlorine	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chlorine dioxide	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chlorite	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chloroacetaldehyde	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorodibromomethane (THM)	L	100	-	-	D	-	-	-	-	2	-	-	-	-
Chloroethane	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chloroform (THM)	L	100	-	-	D	-	-	-	-	10	-	-	600	B2
Chloromethane	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Chlorophenol (2,4,6-)	L	-	-	-	D	-	-	-	-	-	-	-	300	B2
Chlorophenol (2,4-)	L	-	-	-	D	-	-	-	-	3	100	-	-	-
Chlorophenol (2-)	L	-	-	-	D	-	-	-	-	5	200	-	-	-
Chloropicrin	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorothalonil	-	-	-	-	F	200	200	200	500	15	500	-	200	B2
Chlorotoluene o-	L	-	-	-	D	-	-	-	-	20	-	-	-	D
Chlorotoluene p-	L	-	-	-	D	-	-	-	-	0.1	-	-	-	D
Chrysene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Cyanazine	L	-	zero	-	F	100	100	20	70	2	70	10	-	D
Cyanogen Chloride	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Cymene p-	-	-	-	-	D	-	-	-	-	-	-	-	-	-
2,4-D	P	100	70	70	F	1000	300	100	400	10	400	70	-	D
Dacthal (DCPA)	-	-	-	-	F	80000	80000	5000	20000	500	20000	4000	-	D
Malapon	T	-	200	-	F	3000	3000	300	900	26	900	200	-	D
DCE (cis-1,2-)	P	-	70	70	F	4000	1000	1000	1000	10	400	70	-	D
DCE (trans-1,2-)	P	-	100	100	F	20000	2000	2000	6000	20	600	100	-	D
Diazinon	-	-	-	-	F	20	20	5	20	0.09	3	0.6	-	E
Dibenz(a,h)anthracene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Dibromoacetonitrile	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dibromochloropropane (DBCP)	P	-	zero	0.2	F	200	50	-	-	-	-	-	3	B2
Dibromomethane	L	-	-	-	D	-	-	-	-	-	-	-	-	D
Dibutyl phthalate (DBP)	T	-	zero	-	-	-	-	-	-	100	-	-	-	D
Dicamba	L	-	-	-	F	300	300	300	1000	30	1000	200	-	D
Dichloroacetaldehyde	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroacetic acid	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroacetonitrile	L	-	-	-	D	-	-	-	-	8	-	-	-	C

	Standards				Health Advisories								
						10-kg Child			70-kg Adult				
Chemicals	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	Cancer Group
Dichlorobenzene p- †	F	-	75	75	F	10000	10000	10000	40000	100	4000	75	-	C
Dichlorobenzene o-,m-	P	-	600	600	F	9000	9000	9000	30000	89	3000	600	-	D
Dichlorodifluoromethane	-	-	-	-	D	-	-	-	-	20	-	-	-	-
Dichloroethane (1,1-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroethane (1,2-)	F	-	zero	5	F	700	700	700	2600	-	-	-	40	B2
Dichloroethylene (1,1-)	F	-	7	7	F	2000	1000	1000	4000	9	400	7	-	C
Dichloromethane	T	-	zero	-	F	10000	2000	-	-	60	2000	-	500	B2
Dichloropropane (1,1-)	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropane (1,2-)	P	-	zero	5	F	-	90	-	-	-	-	-	60	B2
Dichloropropane (1,3-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropane (2,2-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,1-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,3-)	L	-	-	-	F	30	30	30	100	0.3	10	-	20	B2
Dieldrin	L	-	-	-	F	0.5	0.5	0.5	2	0.05	2	-	0.2	B2
Diethyl phthalate (DEP)	T	-	zero	-	D	-	-	-	-	800	-	-	-	D
Diethylhexyl phthalate (DEHP)	T	-	zero	-	D	-	-	-	-	20	-	-	-	B2
Dimethrin	-	-	-	-	F	10000	10000	10000	40000	300	10000	2000	-	D
Dimethyl phthlate (DMP)	L	-	-	-	-	-	-	-	-	-	-	-	-	D
Dinitrotoluene (2,4-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Dinoseb	T	-	7	-	F	300	300	10	40	1	40	7	-	-
Dioxane p-	-	-	-	-	F	4000	400	-	-	-	-	-	700	B2
Diphenamid	-	-	-	-	F	300	300	300	1000	30	1000	200	-	D
Diquat	T	-	20	-	-	-	-	-	-	2.2	-	-	-	-
Disulfoton	-	-	-	-	F	10	10	3	9	0.04	1	0.3	-	E
Diuron	-	-	-	-	F	1000	1000	300	900	2	70	10	-	D
Endothall	T	-	100	-	F	800	800	200	200	20	700	100	-	D
Endrin	T	0.2	2	-	F	20	20	3	10	3	9	2	-	D
Epichlorohydrin	P	-	zero	TT	F	100	100	70	70	2	70	-	400	B2
Ethylbenzene	P	-	700	700	F	30000	3000	1000	3000	100	3000	700	-	D
Ethylene dibromide (EDB)	P	-	zero	0.05	F	8	8	-	-	-	-	-	0.04	B2
Ethylene glycol	-	-	-	-	F	20000	6000	6000	20000	2000	40000	7000	-	D
ETU	L	-	-	-	F	300	300	100	400	0.03	1	-	20	B2
Fenamiphos	-	-	-	-	F	9	9	5	20	0.25	9	2	-	D
Fluometuron	-	-	-	-	F	2000	2000	2000	5000	13	400	90	-	D
Fluorene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	D
Fluorotrichloromethane	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Fenolos	-	-	-	-	F	20	20	20	70	2	70	10	-	D
Formaldehyde	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Gasoline	-	-	-	-	D	-	-	-	-	-	-	-	-	-

Chemicals	Standards				Health Advisories								
						10-kg Child			70-kg Adult				
	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	Cancer Group
Glyphosate	T	-	700	-	F	20000	20000	1000	1000	100	4000	700	-	D
Heptachlor	P	-	zero	0.4	F	10	10	5	5	0.5	20	-	0.8	B2
Heptachlor epoxide	P	-	zero	0.2	F	10	-	0.1	0.1	0.013	0.4	-	0.4	B2
Hexachlorobenzene	T	-	zero	-	F	50	50	50	200	0.8	30	-	2	B2
Hexachlorobutadiene	-	-	-	-	D	-	-	-	-	2	-	-	50	C
Hexachlorocyclopentadiene	T	-	50	-	-	-	-	-	-	7	200	-	-	-
Hexane (n-)	-	-	-	-	F	10000	4000	4000	10000	-	-	-	-	D
Hexazinone	-	-	-	-	F	3000	3000	3000	9000	30	1000	200	-	D
Hypochlorite	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypochlorous acid	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3,-c,d)pyrene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	B2
Isophorone	L	-	-	-	D	-	-	-	-	150	-	-	-	-
Isopropylbenzene	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Lindane	P	4	0.2	0.2	F	1000	1000	30	100	0.3	10	0.2	3	C
Maleic hydrazide	-	-	-	-	F	10000	10000	5000	20000	500	20000	4000	-	D
MCPA †	-	-	-	-	F	100	100	100	400	0.5	20	4	-	E
Methomyl	-	-	-	-	F	300	300	300	300	25	900	200	-	D
Methoxychlor	P	100	400	400	F	6000	2000	500	2000	50	2000	400	-	D
Methyl ethyl ketone	-	-	-	-	F	60000	6000	3000	9000	50	900	200	-	D
Methyl parathion	-	-	-	-	F	300	300	30	100	0.25	9	2	-	D
Methyl tert butyl ether	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Metolachlor	L	-	-	-	F	2000	2000	2000	5000	150	5000	100	-	C
Metribuzin	L	-	-	-	F	5000	5000	300	900	25	900	200	-	D
Monochloroacetic acid	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Monochlorobenzene	P	-	100	100	F	2000	2000	2000	7000	20	700	100	-	D
Naphthalene	-	-	-	-	D	-	-	-	-	410	-	-	-	-
Oxamyl (Vydate)	T	-	200	-	F	200	200	200	900	25	900	200	-	E
Ozone by-products	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Paraquat	-	-	-	-	F	100	100	50	200	4.5	200	30	-	E
Pentachloroethane	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Pentachlorophenol	P	-	0/200	0/200	F	1000	300	300	1000	30	1000	0/200	-	B2/D
Phenanthrene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	D	-	-	-	-	600	-	-	-	-
Picloram	T	-	500	-	F	20000	20000	700	2000	70	2000	500	-	D
Polychlorinated byphenols (PCBs)	P	-	zero	0.5	P	-	-	1	4	-	-	-	0.5	B2
Prometon	-	-	-	-	F	200	200	200	500	15	500	100	-	D
Pronamide	-	-	-	-	F	800	800	800	3000	75	3000	50	-	C
Propachlor	-	-	-	-	F	500	500	100	500	13	500	90	-	D
Propazine	-	-	-	-	F	1000	1000	500	2000	20	700	10	-	C

Chemicals	Standards				Health Advisories								
						10-kg Child			70-kg Adult				
	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	Cancer Group
Propham	-	-	-	-	F	5000	5000	5000	20000	20	600	100	-	D
Propylbenzene n-	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Pyrene (PAH)	T	-	zero	-	-	-	-	-	-	-	-	-	-	D
Simazine	T	-	4	-	F	500	500	50	200	5	200	4	-	C
Styrene	P	-	zero/100	5/100	F	20000	2000	2000	7000	200	7000	0/100	1	B2/C
2,4,5-T	L	-	-	-	F	800	800	800	1000	10	350	70	-	D
2,3,7,8-TCDD (Dioxin)	T	-	zero	-	F	0.001	1E-04	1E-05	4E-05	1E-06	4E-05	-	2E-05	B2
Tebuthiuron	-	-	-	-	F	3000	3000	700	2000	70	2000	500	-	D
Terbacil	-	-	-	-	F	300	300	300	900	13	400	90	-	E
Terbufos	-	-	-	-	F	5	5	1	5	0.13	5	0.9	-	D
Tetrachloroethane (1,1,1,2-)	L	-	-	-	D	-	-	-	-	30	-	-	-	-
Tetrachloroethane (1,1,2,2-)	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	P	-	zero	5	F	2000	2000	1000	5000	10	500	-	70	B2
Toluene	P	-	2000	2000	F	20000	3000	3000	10000	300	10000	2000	-	-
Toxaphene	P	5	zero	5	F	500	40	-	-	100	-	-	3	B2
2,4,5-TP	P	10	50	50	F	200	200	70	300	7.5	300	50	-	-
Trichloroacetaldehyde	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichloroacetic acid	L	-	-	-	D	-	-	-	-	600	-	-	-	-
Trichloroacetonitrile	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichlorobenzene (1,2,4-)	T	-	9	-	D	-	-	-	-	-	-	-	-	-
Trichlorobenzene (1,3,5-)	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichloroethane (1,1,1-) †	F	-	200	200	F	100000	40000	40000	100000	90	1000	200	-	D
Trichloroethane (1,1,2-)	T	-	3	-	D	-	-	-	-	30	-	-	-	C
Trichloroethanol (2,2,2-)	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	F	-	zero	5	F	-	-	-	-	7	300	-	300	B2
Trichloropropane (1,1,1-)	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichloropropane (1,2,3-)	-	-	-	-	D	-	-	-	-	6	-	-	-	-
Trifluralin	L	-	-	-	F	30	30	30	30	3	100	2	-	C
Trimethylbenzene (1,2,4-)	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Trimethylbenzene (1,3,5-)	-	-	-	-	D	-	-	-	-	-	-	-	-	-
Vinyl chloride	F	-	zero	2	F	3000	3000	10	50	-	-	-	1.5	A
Xylenes	P	-	10000	10000	F	40000	40000	40000	10000	2000	60000	10000	-	D

Chemicals	Standards				Health Advisories									Cancer Group
						10-kg Child			70-kg Adult					
	Status Reg.*	NIPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	
Inorganics														
Aluminum	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Antimony	T	-	3	-	D	-	-	-	-	0.4	-	-	-	-
Arsenic	T	50	zero	-	D	-	-	-	-	1	-	-	3	A
Asbestos (fibers/l > 10um)	P	-	7E+06	7E+06	-	-	-	-	-	-	-	-	-	-
Barium	P	1000	5000	5000	F	5000	5000	5000	5000	-	-	5000	-	D
Beryllium	T	-	zero	-	D	-	-	-	-	5	-	-	-	B2
Boron	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Cadmium	P	10	5	5	F	40	40	5	20	0.5	20	5	-	D
Chromium (total)	P	50	100	100	F	1000	1000	200	800	5	200	100	-	D
Copper	P	-	1300	1300										
Cyanide	T	-	200	-	F	200	200	200	800	22	800	200	-	D
Fluoride	F	-	4000	4000	-	-	-	-	-	60	-	-	-	-
Lead (at source)	P	-	zero	5	-	-	-	-	-	-	-	-	-	-
Lead (at tap)	P	50	zero	TT	-	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	P	2	2	2	F	-	-	-	-	0.3	10	2	-	D
Molybdenum	L	-	-	-	D	20000	200	6	20	0.6	20	4	-	D
Nickel	T	-	100	-	F	1000	1000	100	600	20	600	100	-	D
Nitrate (as N)	P	10000	10000	10000	F	-	1000	-	-	-	-	-	-	D
Nitrite (as N)	P	-	1000	1000	F	-	1000	-	-	-	-	-	-	D
Nitrate + Nitrite	P	-	10000	10000	-	-	-	-	-	-	-	-	-	-
Selenium	P	10	50	50	-	-	-	-	-	-	-	-	-	-
Silver	L	50	-	-	D	-	-	-	-	3	-	-	-	-
Sodium	L	-	-	-	D	-	-	-	-	-	20000 ***	-	-	-
Strontium	L	-	-	-	D	-	-	-	-	-	-	-	-	-
Sulfate	T	-	300	-	-	-	-	-	-	-	-	-	-	-
Thallium	T	-	0.4	-	D	-	-	-	-	0.07	-	-	-	-
Vanadium	L	-	-	-	D	-	-	-	-	20	-	-	-	-
Zinc	L	-	-	-	D	-	-	-	-	-	-	-	-	-

Chemicals	Standards				Health Advisories									Cancer Group
						10-kg Child			70-kg Adult					
	Status Reg.*	NPDWR (ug/l)	MCLG (ug/l)	MCL (ug/l)	Status HA*	One-day ug/l	Ten-day ug/l	Longer-term ug/l	Longer-term ug/l	RfD ug/kg/day	DWEL ug/l	Lifetime ug/l	ug/l at 10-4 Cancer Risk	
Microbiology and Turbidity														
Cryptosporidium	L	-	-	-	-	-	-	-	-	-	-	-	-	-
Giardia lamblia	P	-	zero	TT	-	-	-	-	-	-	-	-	-	-
Legionella	P	-	zero	TT	F	-	-	-	-	-	-	-	-	-
Standard plate count	P	-	NA	TT	-	-	-	-	-	-	-	-	-	-
Total coliform (current MCL based on density)	P	<1/100 ml	zero	**	-	-	-	-	-	-	-	-	-	-
Turbidity	P	1 NTU	0.1 NTU	PS	-	-	-	-	-	-	-	-	-	-
Viruses	P	-	zero	TT	-	-	-	-	-	-	-	-	-	-
MOU Chemicals														
Diisopropyl methylphosphonate	-	-	-	-	F	8000	8000	8000	30000	80	3000	600	-	D
Fuel Oil	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HMX	-	-	-	-	F	5000	5000	5000	20000	50	2000	400	-	D
Nitrocellulose (non-toxic)	-	-	-	-	F	-	-	-	-	-	-	-	-	-
Nitroguanidine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RDX	-	-	-	-	F	100	100	100	400	3	100	2	30	C
Trinitroglycerol	-	-	-	-	F	5	5	5	5	-	-	5	-	-
Trinitrotoluene	-	-	-	-	F	20	20	20	20	0.5	20	2	100	C
White Phosphorus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radionuclides														
Beta particle and photon activity (formerly man-made radionuclides)	T	4mrem/yr	zero	-	-	-	-	-	-	-	-	-	4 mrem/yr	A
Gross alpha particle activity	T	15 pCi/l	zero	-	-	-	-	-	-	-	-	-	-	A
Radium 226/228	T	5 pCi/l	zero	-	-	-	-	-	-	-	-	-	29 pCi/l	A
Radon	T	-	zero	-	-	-	-	-	-	-	-	-	160 pCi/l	A
Uranium	T	-	zero	-	-	-	-	-	-	-	-	-	160 pCi/l	A

INSTRUMENT LOCATION MAP

WALTER R. MUERB

— Professional Land Surveyor —

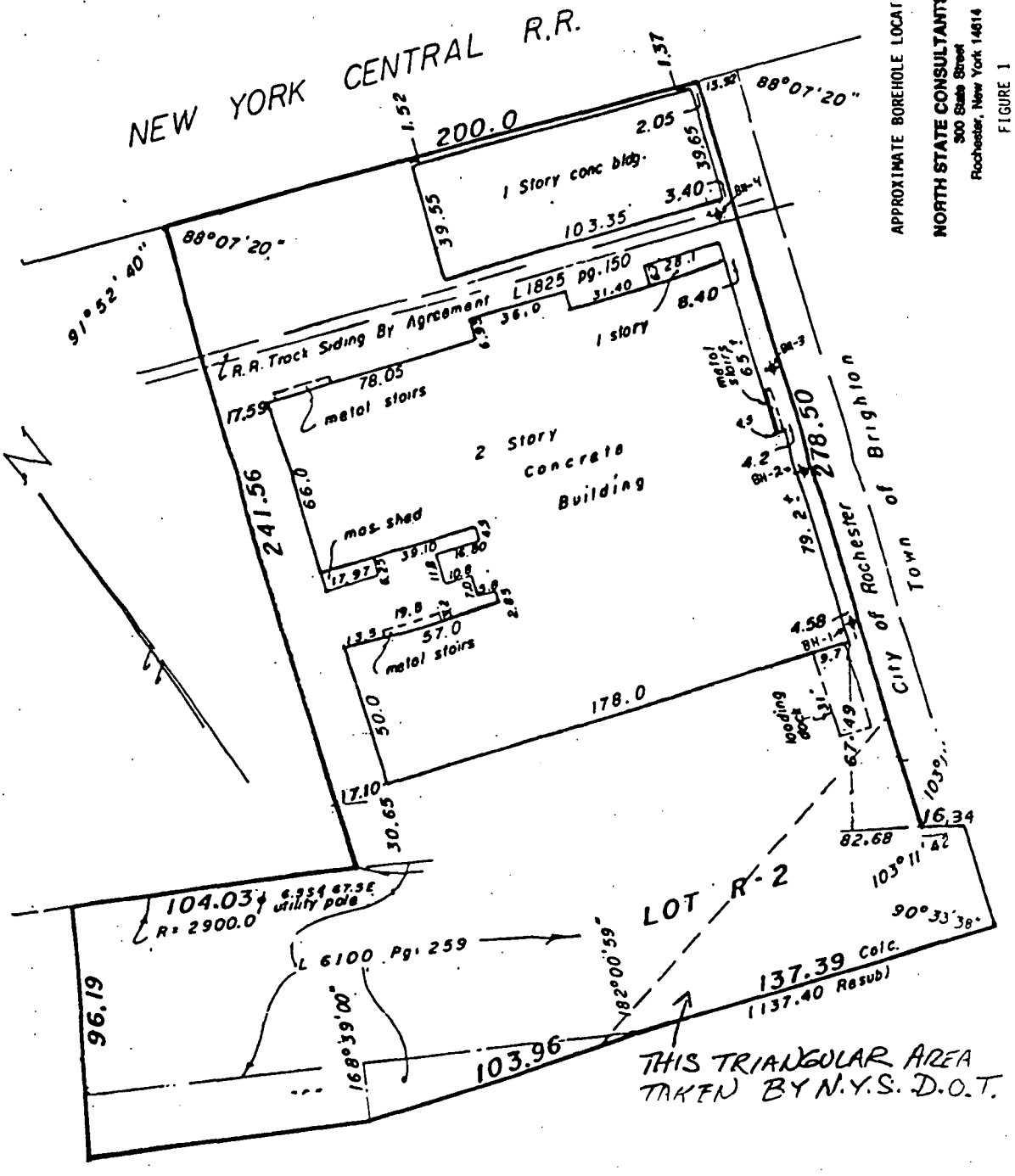
266 Lyell Ave., Rochester, N.Y. 14608 Phone 647-3553

STREET 80 ROCKWOOD PLACE - CITY OF ROCHESTER - MONROE CO

LOT NO. R-2 SUBDIVISION MUNICIPAL RESUBDIVISION 81-90

REFERENCE DATA, LIBER 219 OF MAPS, PAGE 52 LIBER _____ OF DEEDS, PAGE ____

SHOWING 2 Conc. Bldgs



APPROXIMATE BOREHOLE LOCATIONS

NORTH STATE CONSULTANTS, P.C.
300 State Street
Rochester, New York 14614

FIGURE 1