Solid Waste

Bobby J.
wtm 5/29

ENGINEERING TECTONICS, P.A.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
P.O. Box I, Winston-Salem, NC 27108 (910) 724-6994

MAY 27 1997

06-01
3-4-97

May 22, 1997

North Carolina Department of Environment, Health and Natural Resources
Solid Waste Division
PO Box 27687
Raleigh, North Carolina 27611-7687

Attention: Mr. Bill Myers

Subject: Groundwater Sampling Report
Avery County Landfill
Newland, North Carolina
Project No. 90-247.01-E

Mr. Myers:

On March 4, 1997 Engineering Tectonics, P.A. (ETPA) personnel mobilized to the Avery County Landfill in Newland, North Carolina to sample three (3) groundwater monitoring wells, MW-1, MW-2, and MW-3. A copy of the report for this sampling event is attached.

If you have any questions concerning the above, please contact me at (910) 724-6994 or (800) 394-8807. Thank you.

Sincerely,

ENGINEERING TECTONICS, P.A.

Joanna Hanson

Joanna Hanson
Staff Biologist

cc: Randall Fletcher, Avery County Manager

Enc.

Groundwater Sampling Report

Avery County Landfill

Newland, North Carolina

Project No. 90-247.01-E

Prepared for:

Avery County
PO Box 356
Newland, North Carolina 28657

Prepared by:

Engineering Tectonics, P.A.
Winston-Salem, North Carolina

May 22, 1997

Groundwater Monitoring Well Sampling

On March 4, 1997, Engineering Tectonics, P.A. (ETPA) personnel mobilized to the Avery County Landfill to sample three groundwater monitoring wells (MW-1 through MW-3). Groundwater monitoring wells MW-1, MW-2, and MW-3 were located and sampled as per the subject site's North Carolina Department of Environment Health and Natural Resource (NCDEHNR) permit. Depth to water was measured in each monitoring well, and each well was developed prior to sampling with a new disposable Teflon bailer. A minimum of three volumes of water was purged from each well, and water samples collected according to EPA sampling protocols. The samples were packed on ice, and sent to an analytical laboratory, using EPA approved chain of custody procedures. The samples were submitted for analysis using EPA method 8270, EPA method 8240, BOD, COD, specific conductance, chloride, fluoride, nitrate, pH, TDS, TOC, TOX, sulfate, arsenic, barium, cadmium, chromium, copper, iron , lead, mercury, selenium, manganese, silver, and zinc.

Water Levels

Static water levels were measured as 3.85, 5.95, and 7.37 feet for monitoring wells MW-1, MW-2, and MW-3 respectively.

Laboratory Results

Laboratory results for groundwater samples are presented in Tables 1, 2, and 3. Copies of the laboratory results are included in Attachment A. No organic compounds were detected in any of the monitoring wells at concentrations above the method detection limit. Iron and manganese exceeded the 2L groundwater standards in all three wells. Typical background concentrations in the Piedmont and surrounding areas range from 0.6 to 1.3 parts per million (Mundorff 1948).

Limitations

This report has been prepared for the exclusive use of **Avery County** for specific application to the subject site. The report was prepared in accordance with generally accepted standards of practice for environmental services. No other warranty, either expressed or implied, is made. This report is not to be reproduced, either in whole or in part, without written consent from ENGINEERING TECTONICS, P.A.

Our on-site observations pertain only to specific locations, at specific times, on specific dates. Our observations and conclusions do not reflect variations in unverified and/or subsurface conditions that may exist at or between sampling and/or observation locations, or at times other than those represented by our observations.

In providing this report, ENGINEERING TECTONICS, P.A. does not assume any responsibilities of the party, or parties, deemed legally responsible for the subject site. It is not the responsibility of ENGINEERING TECTONICS, P.A. to report our findings to any other person or persons, including conditions that may present a potential danger to public health, safety, or the environment, as may be required by law.

Certification

I certify this 22nd day of May, 1997 this report was prepared by me or under my direct supervision.

by: Joanna Hanson
Joanna Hanson
Staff Biologist

reviewed by: Alan Barry Nelson
Alan Barry Nelson, P.G.
Chief Geologist

NORTH CAROLINA LICENSED SEAL 165 GEOLOGIST ALAN BARRY NELSON

REFERENCES

Mundorff, M.J. 1948. Geology and Ground Water in the Greensboro Area, North Carolina. North Carolina Department of Conservation and Development. Bulletin Number 55, pp. 68,100.

Tables

Table 1

Avery County Landfill
Groundwater Monitoring Well Laboratory Results

Analysis	MW-1 *	MW-2*	MW-3*	2L Standard*
BOD, 5 day	<.8	<1.7	<1.6	
COD	17.0	11.0	8.0	
Specific Conductivity	29 umhos/cm	19.5 umhos/cm	42 umhos/cm	
Chloride	2.5	1.3	1.8	**250**
Fluoride	0.1	<0.1	<0.1	**2.0**
Nitrate	0.53	.36	0.32	**10.0**
pH	**6.1 standard units**	**5.8 standard units**	**6.2 standard units**	**6.5-8.5**
TDS	80	60	160	**na**
TOC	1.5	.51	<0.1	**na**
TOX	<0.05	<0.05	<0.05	**na**
Sulfate	<10	<10	<10	**250**
Arsenic	<0.0100	<0.010	<0.010	**0.05**
Barium	.239	0.635	0.241	**2.0**
Cadmium	0.002	<0.002	<0.002	**0.005**
Chromium	<0.005	<0.005	<0.005	**0.05**
Copper	0.007	0.006	0.008	**1.0**
Iron	**1.49**	**.349**	**.570**	**0.3**
Lead	0.010	0.010	0.010	**0.015**
Mercury	0.0002	<0.0002	<0.0002	**0.0011**
Selenium	<0.010	<0.010	<0.010	**0.05**
Manganese	**.337**	**.565**	**.890**	**0.05**
Silver	<0.005	<0.005	<0.005	**0.018**
Zinc	0.021	0.023	0.031	**2.1**

*Results are presented in parts per million (ppm) unless specified

Table 2

Avery County Landfill
EPA Method 8240

Compound	MW-1	MW-2	MW-3	2l Standard
Acetone	BDL	BDL	BDL	700 ppb
Acrolein	BDL	BDL	BDL	
Acrylonitrile	BDL	BDL	BDL	
Benzene	BDL	BDL	BDL	1 ppb
Bromodichloromethane	BDL	BDL	BDL	
Bromoform	BDL	BDL	BDL	
Bromomethane	BDL	BDL	BDL	-
2-Butanone	BDL	BDL	BDL	
Carbon Disulfide	BDL	BDL	BDL	
Carbon tetrachloride	BDL	BDL	BDL	0.3 ppb
Chlorobenzene	BDL	BDL	BDL	50 ppb
Chloroethane	BDL	BDL	BDL	
2-Chloro ethyl vinyl ether	BDL	BDL	BDL	
Chloroform	BDL	BDL	BDL	.19 ppb
Chloromethane	BDL	BDL	BDL	
Dibromochloromethane	BDL	BDL	BDL	
Dibromomethane	BDL	BDL	BDL	
1,4-Dichloro-2-Butane	BDL	BDL	BDL	
Dichlorodifluoromethane	BDL	BDL	BDL	1400 ppb
1,2-Dichlorobenzene	BDL	BDL	BDL	
1,3-Dichlorobenzene	BDL	BDL	BDL	
1,4-Dichlorobenzene	BDL	BDL	BDL	
1,1-Dichloroethane	BDL	BDL	BDL	700 ppb
1,2-Dichloroethane	BDL	BDL	BDL	.38 ppb
1,1-Dichloroethene	BDL	BDL	BDL	
cis-1,2-Dichloroethene	BDL	BDL	BDL	
trans-1,2-Dichloroethene	BDL	BDL	BDL	
1,2-Dichloropropane	BDL	BDL	BDL	.56 ppb
cis-1,3-Dichloropropene	BDL	BDL	BDL	
Trans-1,3-Dichloropropene	BDL	BDL	BDL	
Ethanol	BDL	BDL	BDL	
Ethylbenzene	BDL	BDL	BDL	29 ppb
Ethyl Methacrylate	BDL	BDL	BDL	
2-Hexanone	BDL	BDL	BDL	
Iodomethane	BDL	BDL	BDL	
Methylene Chloride	BDL	BDL	BDL	5 ppb

BDL = below detectable limit

Table 2 (cont.)

Avery County Landfill
EPA Method 8240

Compound	MW-1	MW-2	MW-3	2l Standard
4-Methyl-2-Pentanone	BDL	BDL	BDL	
Styrene	BDL	BDL	BDL	100 ppb
1,1,2,2-tetrachloroethane	BDL	BDL	BDL	
Tetrachloroethylene	BDL	BDL	BDL	
Toluene	BDL	BDL	BDL	1000 ppb
1,1,1-Trichloroethane	BDL	BDL	BDL	
1,1,2-Trichloroethane	BDL	BDL	BDL	-
Trichloroethylene	BDL	BDL	BDL	
Trichlorofluoromethane	BDL	BDL	BDL	2100 ppb
Vinyl Chloride	BDL	BDL	BDL	.015 ppb
Xylene (total)	BDL	BDL	BDL	530 ppb

BDL = below detectable limit

Table 3

Avery County Landfill
EPA Method 8270

Compound	MW-1	MW-2	MW-3	2l Standard
Acenaphthene	BDL	BDL	BDL	
Acenaphthylene	BDL	BDL	BDL	
Aniline	BDL	BDL	BDL	
Anthracene	BDL	BDL	BDL	
Benzidine	BDL	BDL	BDL	
Benzoic Acid	BDL	BDL	BDL	
Benzo(a)Anthracene	BDL	BDL	BDL	
Benzo(b)Fluoranthene	BDL	BDL	BDL	
Benzo(k)Fluoranthene	BDL	BDL	BDL	
Benzo(g,h,i)Perylene	BDL	BDL	BDL	
Benzo(a)Pyrene	BDL	BDL	BDL	
Benzyl Alcohol	BDL	BDL	BDL	
Bis(2-Chloroethoxy)Methane	BDL	BDL	BDL	
Bis(2-Chloroethyl)Ether	BDL	BDL	BDL	
Bis(2-Chloroisopropyl)Ether	BDL	BDL	BDL	
[redacted]	[redacted]	[redacted]	BDL	
4-Bromophenyl Phenyl Ether	BDL	BDL	BDL	
Butyl Benzyl Phthalate	BDL	BDL	BDL	100 ppb
4-Chloroaniline	BDL	BDL	BDL	
1-Chloronapthalene	BDL	BDL	BDL	
2-Chloronaphthalene	BDL	BDL	BDL	
4-Chloro-3-Methyl Phenol	BDL	BDL	BDL	
2-Chlorophenol	BDL	BDL	BDL	.1 ppb
4-Chlorophenol Phenyl Ether	BDL	BDL	BDL	
Chrysene	BDL	BDL	BDL	
Dibenz(a,h)Anthracene	BDL	BDL	BDL	
Dibenzofuran	BDL	BDL	BDL	
Di-N-Butylphthalate	BDL	BDL	BDL	
1,3-Dichlrobenzene	BDL	BDL	BDL	620 ppb
1,4-Dichlrobenzene	BDL	BDL	BDL	75 ppb
1,2-Dichlrobenzene	BDL	BDL	BDL	620 pppb
3,3-Dichlorobenzidine	BDL	BDL	BDL	
2,4-Dichorophenol	BDL	BDL	BDL	
2,6-Dichorophenol	BDL	BDL	BDL	
Diethylphthalate	BDL	BDL	BDL	5000 ppb

BDL = below detectable limit

Table 3(cont.)

Avery County Landfill
EPA Method 8270

Compound	MW-1	MW-2	MW-3	2l Standard
A, A-Dimethylphenethylamine	BDL	BDL	BDL	
2,4-Dimethylphenol	BDL	BDL	BDL	
Dimethylphthalate	BDL	BDL	BDL	
4,6-Dinitro-2-Mehtylphenol	BDL	BDL	BDL	
2,4-Dinitrophenol	BDL	BDL	BDL	
2,4-Dinitrotoluene	BDL	BDL	BDL	
2,6-Dinitrotoluene	BDL	BDL	BDL	
Diphenylamine	BDL	BDL	BDL	
Di-N-Octylphthalate	BDL	BDL	BDL	
Fluoranthene	BDL	BDL	BDL	
Fluorene	BDL	BDL	BDL	280 ppb
Hexachlrobenzene	BDL	BDL	BDL	.02 ppb
Hexachlorobutadiene	BDL	BDL	BDL	
Hexachlorocyclopentadiene	BDL	BDL	BDL	
Hexachloroethane	BDL	BDL	BDL	
Indeno(1,2,3-od)Pyrene	BDL	BDL	BDL	
Isophorone	BDL	BDL	BDL	
2-Mehylnaphthalene	BDL	BDL	BDL	
2-Methylphenol	BDL	BDL	BDL	
4-Methylphenol	BDL	BDL	BDL	
Naphthalene	BDL	BDL	BDL	21 ppb
2-Nitroaniline	BDL	BDL	BDL	
3-Nitroaniline	BDL	BDL	BDL	
4-Nitroaniline	BDL	BDL	BDL	
Nitrobenzene	BDL	BDL	BDL	
2-Nitrophenol	BDL	BDL	BDL	
4-Nitrophenol	BDL	BDL	BDL	
N-Nitroso-Di-N-Butylamine	BDL	BDL	BDL	
N-Nitrosodimethylamine	BDL	BDL	BDL	
N-Nitrosodiphenylamine	BDL	BDL	BDL	

BDL = below detectable limit

Table 3(cont.)

Avery County Landfill
EPA Method 8270

Compound	MW-1	MW-2	MW-3	2l Standard
N-Nitrosodipropylamine	BDL	BDL	BDL	
Pentachlorophenol	BDL	BDL	BDL	
Phenanthrene	BDL	BDL	BDL	**210 ppb**
Phenol	BDL	BDL	BDL	**300 ppb**
Pyrene	BDL	BDL	BDL	
1,2,4,5-Tetrachlorobenzene	BDL	BDL	BDL	
2,3,4,6-Tetrachlorophenol	BDL	BDL	BDL	
1,2,4-Trichlorobenzene	BDL	BDL	BDL	
2,4,5-Trichlorophenol	BDL	BDL	BDL	
2,4,6-Trichlorophenol	BDL	BDL	BDL	

BDL=below detectable limit

Attachment A
Laboratory Results

WATER TECHNOLOGY AND CONTROLS, INC.

Water Treatment Chemistries & Environmental Laboratory

May 13, 1997

Mr. Paul Kallam
Engineering Tectonics
P.O. Box I
Winston-Salem, North Carolina 27108

Dear Mr. Kallam:

Enclosed are results for your Monitoring Well (1,2,3) samples taken taken on April 16, 1997 from the New Avery Co. Landfill facility.

If you have any questions concerning these data please contact me.

Sincerely,

Mike Vaughan

Mike Vaughan
Laboratory Supervisor

Offices: 106-A South Walnut Circle • P.O. Box 8808 • Greensboro, N.C. 27419 • (910) 852-0802
Laboratory: 642 Tamco Road • Reidsville, N.C. 27320 • (910) 342-4748

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/12/97
WT&C Number:	04179703A
Sample:	MW-1 New Avery Co. Landfill 4/16/97 11:00AM

PARAMETER	RESULTS	
BOD, 5Day	<0.8	mg/l
COD	17	mg/l
pH	6.1	
Total Dissolved Solids	80	mg/l
Chloride	2.5	mg/l
Fluoride	0.1	mg/l
Total Organic Carbon (TOC)	1.5	mg/l
Total Organic Halide (TOX)	*	
Sulfate	<10	mg/l
Arsenic, total	<0.010	mg/l
Barium, total	0.239	mg/l
Cadmium, total	<0.002	mg/l
Chromium, total	<0.005	mg/l
Copper, total	0.007	mg/l
Iron, total	1.49	mg/l
Lead, total	<0.010	mg/l
Manganese, total	0.337	mg/l
Mercury, total	<0.0002	mg/l
Selenium, total	<0.010	mg/l
Silver, total	<0.005	mg/l
Zinc, total	0.021	mg/l
Conductivity	29	umhos/cm
Nitrate	0.53	mg/l
8270		attached
8240		attached

* Results will follow as soon as possible.

Water Technology and Controls, Inc.
Water Treatment Chemistries and Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179703
Project:	New Avery Co. Landfill	Analysis:	05/05/97
Client Sample ID:	MW-1	Extraction:	04/22/97
Sample Collection:	04/16/97 1100	Analyst:	FAP

SW846-8270 SEMIVOLATILE ORGANICS

Parameter	Result	Parameter	Result
Acenaphthene	< 10 ug/L	Naphthalene	< 10 ug/L
Acenaphthylene	< 10 ug/L	Nitrobenzene	< 10 ug/L
Anthracene	< 10 ug/L	N-Nitrosodimethylamine	< 10 ug/L
Benzidine	< 50 ug/L	N-Nitrosodi-n-propylamine	< 10 ug/L
Benzo(a)anthracene	< 10 ug/L	N-Nitrosodiphenylamine	< 10 ug/L
Benzo(a)pyrene	< 10 ug/L	Phenanthrene	< 10 ug/L
Benzo(b)fluoranthene	< 10 ug/L	Pyrene	< 10 ug/L
Benzo(k)fluoranthene	< 10 ug/L	Pyridine	< 20 ug/L
Benzo(g,h,i)perylene	< 10 ug/L	1,2,4-Trichlorobenzene	< 10 ug/L
Benzyl butyl phthalate	< 10 ug/L		
Bis(2-chloroethoxy)methane	< 10 ug/L	4-Chloro-3-methylphenol	< 10 ug/L
Bis(2-chloroethyl)ether	< 10 ug/L	2-Chlorophenol	< 10 ug/L
Bis(2-chloroisopropyl)ether	< 10 ug/L	2,4-Dichlorophenol	< 10 ug/L
Bis(2-ethylhexyl)phthalate	**17 ug/L**	2,4-Dimethylphenol	< 10 ug/L
4-Bromophenyl phenyl ether	< 10 ug/L	2,4-Dinitrophenol	< 10 ug/L
2-Chloronaphthalene	< 10 ug/L	4,6-Dinitro-2-methylphenol	< 10 ug/L
4-Chlorophenyl phenyl ether	< 10 ug/L	2-Methylphenol (o-cresol)	< 10 ug/L
Chrysene	< 10 ug/L	3-Methylphenol (m-cresol)	< 10 ug/L
Dibenzo(a,h)anthracene	< 10 ug/L	4-Methylphenol (p-cresol)	< 10 ug/L
1,2-Dichlorobenzene	< 10 ug/L	2-Nitrophenol	< 50 ug/L
1,3-Dichlorobenzene	< 10 ug/L	4-Nitrophenol	< 50 ug/L
1,4-Dichlorobenzene	< 10 ug/L	Pentachlorophenol	< 50 ug/L
3,3'-Dichlorobenzidine	< 50 ug/L	Phenol	< 10 ug/L
Diethyl phthalate	< 10 ug/L	2,4,5-Trichlorophenol	< 10 ug/L
Dimethyl phthalate	< 10 ug/L	2,4,6-Trichlorophenol	< 10 ug/L
Di-n-butyl phthalate	< 10 ug/L		
2,4-Dinitrotoluene	< 10 ug/L		
2,6-Dinitrotoluene	< 10 ug/L		
Di-n-octyl phthalate	< 10 ug/L		
1,2-Diphenylhydrazine	< 10 ug/L		
Fluoranthene	< 10 ug/L		
Fluorene	< 10 ug/L		
Hexachlorobenzene	< 10 ug/L		
Hexachlorobutadiene	< 10 ug/L		
Hexachlorocyclopentadiene	< 10 ug/L		
Hexachloroethane	< 10 ug/L		
Indeno(1,2,3-cd)pyrene	< 10 ug/L		
Isophorone	< 10 ug/L		

Water Technology and Controls, Inc.
Water Treatment Chemistries Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179703
Project:	8240	Analysis:	04/26/97
Client Sample ID:	MW-1	Analyst:	FAP
Sample Collection:	04/16/97 1100		

SW846-8240 VOLATILE ORGANICS

Parameter	Result		
Benzene	<1.0 ug/L	cis-1,3-Dichloropropene	<1.0 ug/L
Bromobenzene	<1.0 ug/L	trans-1,3-Dichloropropene	<1.0 ug/L
Bromodichloromethane	<1.0 ug/L	Ethyl benzene	<1.0 ug/L
Bromoform	<1.0 ug/L	Hexachlorobutadiene	<1.0 ug/L
Bromomethane	<1.0 ug/L	Isopropylbenzene	<1.0 ug/L
2-Butanone (MEK)	< 10 ug/L	p-Isopropyltoluene	<1.0 ug/L
n-Butylbenzene	<1.0 ug/L	Methylene chloride	<1.0 ug/L
sec-Butylbenzene	<1.0 ug/L	Naphthalene	<1.0 ug/L
tert-Butylbenzene	<1.0 ug/L	n-Propylbenzene	<1.0 ug/L
Carbon Tetrachloride	<1.0 ug/L	Styrene	<1.0 ug/L
Chlorobenzene	<1.0 ug/L	1,1,1,2-Tetrachloroethane	<1.0 ug/L
Chloroethane	<1.0 ug/L	1,1,2,2-Tetrachloroethane	<1.0 ug/L
Chloroform	<1.0 ug/L	Tetrachloroethene	<1.0 ug/L
Chloromethane	<1.0 ug/L	Toluene	<1.0 ug/L
2-Chlorotoluene	<1.0 ug/L	1,1,1-Trichloroethane	<1.0 ug/L
4-Chlorotoluene	<1.0 ug/L	1,1,2-Trichloroethane	<1.0 ug/L
Dibromochloromethane	<1.0 ug/L	Trichloroethene	<1.0 ug/L
1,2-Dibromo-3-chloropropane	<1.0 ug/L	1,2,3-Trichlorobenzene	<1.0 ug/L
1,2-Dibromoethane (EDB)	<1.0 ug/L	1,2,4-Trichlorobenzene	<1.0 ug/L
Dibromomethane	<1.0 ug/L	1,2,3-Trichloropropane	<1.0 ug/L
Dichlorodifluoromethane	<1.0 ug/L	Trichlorofluoromethane	<1.0 ug/L
1,1-Dichloroethane	<1.0 ug/L	1,2,4-Trimethylbenzene	<1.0 ug/L
1,2-Dichloroethane	<1.0 ug/L	1,3,5-Trimethylbenzene	<1.0 ug/L
1,4-Dichlorobenzene	<1.0 ug/L	Vinyl chloride	<1.0 ug/L
1,2-Dichlorobenzene	<1.0 ug/L	Xylenes (total)	<1.0 ug/L
1,3-Dichlorobenzene	<1.0 ug/L		
1,1-Dichloroethene	<1.0 ug/L		
cis-1,2-Dichloroethene	<1.0 ug/L		
trans-1,2-Dichloroethene	<1.0 ug/L		
1,2-Dichloropropane	<1.0 ug/L		
1,3-Dichloropropane	<1.0 ug/L		
2,2-Dichloropropane	<1.0 ug/L		
1,1-Dichloropropene	<1.0 ug/L		
1,2-Dichloropropene	<1.0 ug/L		

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/12/97
WT&C Number:	04179704A
Sample:	MW-2 New Avery Co. Landfill 4/16/97 12:00PM

PARAMETER	RESULTS	
BOD, 5Day	<1.7	mg/l
COD	11	mg/l
pH	5.8	
Total Dissolved Solids	60	mg/l
Chloride	1.3	mg/l
Fluoride	<0.1	mg/l
Total Organic Carbon (TOC)	0.51	mg/l
Total Organic Halide (TOX)		*
Sulfate	<10	mg/l
Arsenic, total	<0.010	mg/l
Barium, total	0.635	mg/l
Cadmium, total	<0.002	mg/l
Chromium, total	<0.005	mg/l
Copper, total	0.006	mg/l
Iron, total	0.349	mg/l
Lead, total	0.010	mg/l
Manganese, total	0.565	mg/l
Mercury, total	<0.0002	mg/l
Selenium, total	<0.010	mg/l
Silver, total	<0.005	mg/l
Zinc, total	0.023	mg/l
Conductivity	19.5	umhos/cm
Nitrate	0.36	mg/l
8270		attached
8240		attached

* Results will follow as soon as possible.

Water Technology and Controls, Inc.
Water Treatment Chemistries and Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179704
Project:	New Avery Co. Landfill	Analysis:	05/05/97
Client Sample ID:	MW-2	Extraction:	04/22/97
Sample Collection:	04/16/97 1200	Analyst:	FAP

SW846-8270 SEMIVOLATILE ORGANICS

Parameter	Result	Parameter	Result
Acenaphthene	<10 ug/L	Naphthalene	<10 ug/L
Acenaphthylene	<10 ug/L	Nitrobenzene	<10 ug/L
Anthracene	<10 ug/L	N-Nitrosodimethylamine	<10 ug/L
Benzidine	<50 ug/L	N-Nitrosodi-n-propylamine	<10 ug/L
Benzo(a)anthracene	<10 ug/L	N-Nitrosodiphenylamine	<10 ug/L
Benzo(a)pyrene	<10 ug/L	Phenanthrene	<10 ug/L
Benzo(b)fluoranthene	<10 ug/L	Pyrene	<10 ug/L
Benzo(k)fluoranthene	<10 ug/L	Pyridine	<20 ug/L
Benzo(g,h,i)perylene	<10 ug/L	1,2,4-Trichlorobenzene	<10 ug/L
Benzyl butyl phthalate	<10 ug/L		
Bis(2-chloroethoxy)methane	<10 ug/L	4-Chloro-3-methylphenol	<10 ug/L
Bis(2-chloroethyl)ether	<10 ug/L	2-Chlorophenol	<10 ug/L
Bis(2-chloroisopropyl)ether	<10 ug/L	2,4-Dichlorophenol	<10 ug/L
Bis(2-ethylhexyl)phthalate	**13 ug/L**	2,4-Dimethylphenol	<10 ug/L
4-Bromophenyl phenyl ether	<10 ug/L	2,4-Dinitrophenol	<10 ug/L
2-Chloronaphthalene	<10 ug/L	4,6-Dinitro-2-methylphenol	<10 ug/L
4-Chlorophenyl phenyl ether	<10 ug/L	2-Methylphenol (o-cresol)	<10 ug/L
Chrysene	<10 ug/L	3-Methylphenol (m-cresol)	<10 ug/L
Dibenzo(a,h)anthracene	<10 ug/L	4-Methylphenol (p-cresol)	<10 ug/L
1,2-Dichlorobenzene	<10 ug/L	2-Nitrophenol	<50 ug/L
1,3-Dichlorobenzene	<10 ug/L	4-Nitrophenol	<50 ug/L
1,4-Dichlorobenzene	<10 ug/L	Pentachlorophenol	<50 ug/L
3,3'-Dichlorobenzidine	<50 ug/L	Phenol	<10 ug/L
Diethyl phthalate	<10 ug/L	2,4,5-Trichlorophenol	<10 ug/L
Dimethyl phthalate	<10 ug/L	2,4,6-Trichlorophenol	<10 ug/L
Di-n-butyl phthalate	<10 ug/L		
2,4-Dinitrotoluene	<10 ug/L		
2,6-Dinitrotoluene	<10 ug/L		
Di-n-octyl phthalate	<10 ug/L		
1,2-Diphenylhydrazine	<10 ug/L		
Fluoranthene	<10 ug/L		
Fluorene	<10 ug/L		
Hexachlorobenzene	<10 ug/L		
Hexachlorobutadiene	<10 ug/L		
Hexachlorocyclopentadiene	<10 ug/L		
Hexachloroethane	<10 ug/L		
Indeno(1,2,3-cd)pyrene	<10 ug/L		
Isophorone	<10 ug/L		

Water Technology and Controls, Inc.
Water Treatment Chemistries Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179704
Project:	8240	Analysis:	04/26/97
Client Sample ID:	MW-2	Analyst:	FAP
Sample Collection:	04/16/97 1200		

SW846-8240 VOLATILE ORGANICS

Parameter	Result		
Benzene	< 1.0 ug/L	cis-1,3-Dichloropropene	< 1.0 ug/L
Bromobenzene	< 1.0 ug/L	trans-1,3-Dichloropropene	< 1.0 ug/L
Bromodichloromethane	< 1.0 ug/L	Ethyl benzene	< 1.0 ug/L
Bromoform	< 1.0 ug/L	Hexachlorobutadiene	< 1.0 ug/L
Bromomethane	< 1.0 ug/L	Isopropylbenzene	< 1.0 ug/L
2-Butanone (MEK)	< 10 ug/L	p-Isopropyltoluene	< 1.0 ug/L
n-Butylbenzene	< 1.0 ug/L	Methylene chloride	< 1.0 ug/L
sec-Butylbenzene	< 1.0 ug/L	Naphthalene	< 1.0 ug/L
tert-Butylbenzene	< 1.0 ug/L	n-Propylbenzene	< 1.0 ug/L
Carbon Tetrachloride	< 1.0 ug/L	Styrene	< 1.0 ug/L
Chlorobenzene	< 1.0 ug/L	1,1,1,2-Tetrachloroethane	< 1.0 ug/L
Chloroethane	< 1.0 ug/L	1,1,2,2-Tetrachloroethane	< 1.0 ug/L
Chloroform	< 1.0 ug/L	Tetrachloroethene	< 1.0 ug/L
Chloromethane	< 1.0 ug/L	Toluene	< 1.0 ug/L
2-Chlorotoluene	< 1.0 ug/L	1,1,1-Trichloroethane	< 1.0 ug/L
4-Chlorotoluene	< 1.0 ug/L	1,1,2-Trichloroethane	< 1.0 ug/L
Dibromochloromethane	< 1.0 ug/L	Trichloroethene	< 1.0 ug/L
1,2-Dibromo-3-chloropropane	< 1.0 ug/L	1,2,3-Trichlorobenzene	< 1.0 ug/L
1,2-Dibromoethane (EDB)	< 1.0 ug/L	1,2,4-Trichlorobenzene	< 1.0 ug/L
Dibromomethane	< 1.0 ug/L	1,2,3-Trichloropropane	< 1.0 ug/L
Dichlorodifluoromethane	< 1.0 ug/L	Trichlorofluoromethane	< 1.0 ug/L
1,1-Dichloroethane	< 1.0 ug/L	1,2,4-Trimethylbenzene	< 1.0 ug/L
1,2-Dichloroethane	< 1.0 ug/L	1,3,5-Trimethylbenzene	< 1.0 ug/L
1,4-Dichlorobenzene	< 1.0 ug/L	Vinyl chloride	< 1.0 ug/L
1,2-Dichlorobenzene	< 1.0 ug/L	Xylenes (total)	< 1.0 ug/L
1,3-Dichlorobenzene	< 1.0 ug/L		
1,1-Dichloroethene	< 1.0 ug/L		
cis-1,2-Dichloroethene	< 1.0 ug/L		
trans-1,2-Dichloroethene	< 1.0 ug/L		
1,2-Dichloropropane	< 1.0 ug/L		
1,3-Dichloropropane	< 1.0 ug/L		
2,2-Dichloropropane	< 1.0 ug/L		
1,1-Dichloropropene	< 1.0 ug/L		
1,2-Dichloropropene	< 1.0 ug/L		

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/12/97
WT&C Number:	04179705A
Sample:	MW-3 New Avery Co. Landfill 4/16/97 1:00PM

PARAMETER	RESULTS	
BOD,5Day	<1.6	mg/l
COD	8	mg/l
pH	6.2	
Total Dissolved Solids	160	mg/l
Chloride	1.8	mg/l
Fluoride	<0.1	mg/l
Total Organic Carbon (TOC)	<0.1	mg/l
Total Organic Halide (TOX)	*	
Sulfate	<10	mg/l
Arsenic, total	<0.010	mg/l
Barium, total	0.241	mg/l
Cadmium, total	<0.002	mg/l
Chromium, total	<0.005	mg/l
Copper, total	0.008	mg/l
Iron, total	0.570	mg/l
Lead, total	0.010	mg/l
Manganese, total	0.890	mg/l
Mercury, total	<0.0002	mg/l
Selenium, total	<0.010	mg/l
Silver, total	<0.005	mg/l
Zinc, total	0.031	mg/l
Conductivity	42	umhos/cm
Nitrate	0.32	mg/l
8270		attached
8240		attached

* Results will follow as soon as possible.

Water Technology and Controls, Inc.
Water Treatment Chemistries Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179705
Project:	8240	Analysis:	04/26/97
Client Sample ID:	MW-3	Analyst:	FAP
Sample Collection:	04/16/97 1300		

SW846-8240 VOLATILE ORGANICS

Parameter	Result		
Benzene	<1.0 ug/L	cis-1,3-Dichloropropene	<1.0 ug/L
Bromobenzene	<1.0 ug/L	trans-1,3-Dichloropropene	<1.0 ug/L
Bromodichloromethane	<1.0 ug/L	Ethyl benzene	<1.0 ug/L
Bromoform	<1.0 ug/L	Hexachlorobutadiene	<1.0 ug/L
Bromomethane	<1.0 ug/L	Isopropylbenzene	<1.0 ug/L
2-Butanone (MEK)	< 10 ug/L	p-Isopropyltoluene	<1.0 ug/L
n-Butylbenzene	<1.0 ug/L	Methylene chloride	<1.0 ug/L
sec-Butylbenzene	<1.0 ug/L	Naphthalene	<1.0 ug/L
tert-Butylbenzene	<1.0 ug/L	n-Propylbenzene	<1.0 ug/L
Carbon Tetrachloride	<1.0 ug/L	Styrene	<1.0 ug/L
Chlorobenzene	<1.0 ug/L	1,1,1,2-Tetrachloroethane	<1.0 ug/L
Chloroethane	<1.0 ug/L	1,1,2,2-Tetrachloroethane	<1.0 ug/L
Chloroform	<1.0 ug/L	Tetrachloroethene	<1.0 ug/L
Chloromethane	<1.0 ug/L	Toluene	<1.0 ug/L
2-Chlorotoluene	<1.0 ug/L	1,1,1-Trichloroethane	<1.0 ug/L
4-Chlorotoluene	<1.0 ug/L	1,1,2-Trichloroethane	<1.0 ug/L
Dibromochloromethane	<1.0 ug/L	Trichloroethene	<1.0 ug/L
1,2-Dibromo-3-chloropropane	<1.0 ug/L	1,2,3-Trichlorobenzene	<1.0 ug/L
1,2-Dibromoethane (EDB)	<1.0 ug/L	1,2,4-Trichlorobenzene	<1.0 ug/L
Dibromomethane	<1.0 ug/L	1,2,3-Trichloropropane	<1.0 ug/L
Dichlorodifluoromethane	<1.0 ug/L	Trichlorofluoromethane	<1.0 ug/L
1,1-Dichloroethane	<1.0 ug/L	1,2,4-Trimethylbenzene	<1.0 ug/L
1,2-Dichloroethane	<1.0 ug/L	1,3,5-Trimethylbenzene	<1.0 ug/L
1,4-Dichlorobenzene	<1.0 ug/L	Vinyl chloride	<1.0 ug/L
1,2-Dichlorobenzene	<1.0 ug/L	Xylenes (total)	<1.0 ug/L
1,3-Dichlorobenzene	<1.0 ug/L		
1,1-Dichloroethene	<1.0 ug/L		
cis-1,2-Dichloroethene	<1.0 ug/L		
trans-1,2-Dichloroethene	<1.0 ug/L		
1,2-Dichloropropane	<1.0 ug/L		
1,3-Dichloropropane	<1.0 ug/L		
2,2-Dichloropropane	<1.0 ug/L		
1,1-Dichloropropene	<1.0 ug/L		
1,2-Dichloropropene	<1.0 ug/L		

Water Technology and Controls, Inc.
Water Treatment Chemistries and Environmental Laboratory
Reidsville, North Carolina 27320
(910) 342-4748

Client:	Engineering Tectonics	WT&C ID:	04179705
Project:	New Avery Co. Landfill	Analysis:	05/02/97
Client Sample ID:	MW-3	Extraction:	04/22/97
Sample Collection:	04/16/97 1300	Analyst:	FAP

SW846-8270 SEMIVOLATILE ORGANICS

Parameter	Result	Parameter	Result
Acenaphthene	<10 ug/L	Naphthalene	<10 ug/L
Acenaphthylene	<10 ug/L	Nitrobenzene	<10 ug/L
Anthracene	<10 ug/L	N-Nitrosodimethylamine	<10 ug/L
Benzidine	<50 ug/L	N-Nitrosodi-n-propylamine	<10 ug/L
Benzo(a)anthracene	<10 ug/L	N-Nitrosodiphenylamine	<10 ug/L
Benzo(a)pyrene	<10 ug/L	Phenanthrene	<10 ug/L
Benzo(b)fluoranthene	<10 ug/L	Pyrene	<10 ug/L
Benzo(k)fluoranthene	<10 ug/L	Pyridine	<20 ug/L
Benzo(g,h,i)perylene	<10 ug/L	1,2,4-Trichlorobenzene	<10 ug/L
Benzyl butyl phthalate	<10 ug/L		
Bis(2-chloroethoxy)methane	<10 ug/L	4-Chloro-3-methylphenol	<10 ug/L
Bis(2-chloroethyl)ether	<10 ug/L	2-Chlorophenol	<10 ug/L
Bis(2-chloroisopropyl)ether	<10 ug/L	2,4-Dichlorophenol	<10 ug/L
Bis(2-ethylhexyl)phthalate	<10 ug/L	2,4-Dimethylphenol	<10 ug/L
4-Bromophenyl phenyl ether	<10 ug/L	2,4-Dinitrophenol	<10 ug/L
2-Chloronaphthalene	<10 ug/L	4,6-Dinitro-2-methylphenol	<10 ug/L
4-Chlorophenyl phenyl ether	<10 ug/L	2-Methylphenol (o-cresol)	<10 ug/L
Chrysene	<10 ug/L	3-Methylphenol (m-cresol)	<10 ug/L
Dibenzo(a,h)anthracene	<10 ug/L	4-Methylphenol (p-cresol)	<10 ug/L
1,2-Dichlorobenzene	<10 ug/L	2-Nitrophenol	<50 ug/L
1,3-Dichlorobenzene	<10 ug/L	4-Nitrophenol	<50 ug/L
1,4-Dichlorobenzene	<10 ug/L	Pentachlorophenol	<50 ug/L
3,3'-Dichlorobenzidine	<50 ug/L	Phenol	<10 ug/L
Diethyl phthalate	<10 ug/L	2,4,5-Trichlorophenol	<10 ug/L
Dimethyl phthalate	<10 ug/L	2,4,6-Trichlorophenol	<10 ug/L
Di-n-butyl phthalate	<10 ug/L		
2,4-Dinitrotoluene	<10 ug/L		
2,6-Dinitrotoluene	<10 ug/L		
Di-n-octyl phthalate	<10 ug/L		
1,2-Diphenylhydrazine	<10 ug/L		
Fluoranthene	<10 ug/L		
Fluorene	<10 ug/L		
Hexachlorobenzene	<10 ug/L		
Hexachlorobutadiene	<10 ug/L		
Hexachlorocyclopentadiene	<10 ug/L		
Hexachloroethane	<10 ug/L		
Indeno(1,2,3-cd)pyrene	<10 ug/L		
Isophorone	<10 ug/L		

EnviroTech Mid-Atlantic Laboratories
1861 Pratt Dr. • Blacksburg, VA 24060
(540) 231-3983 • Fax (540) 231-3984

May 8, 1997

Client Contact

Attn.: Mike Vaughan
Fax No.: 910-342-1522

Report Information

ETMA Project #: 15106
Date ETMA Rec'd: 4/24/97

Client Information

Name: Water Technology & Controls, Inc
Address: 642 Tamco Road
Reidsville, NC 27320

Sample Information

Client Project: —
Client Project #: —
P.O. #: 6098

Sample Identification

Sample submitted and identified by client:

Sample	Field Identification	Matrix	Date	Time Collected
15106A	041703	Liquid	4/16/97	1130
15106B	04	Liquid	4/16/97	1200
15106C	05	Liquid	4/16/97	1230

All analyses were performed in accordance with EPA methods referenced in Code of Federal Regulations, Section 40 Part 136, "Methods for Chemical Analysis of Water and Wastes", EPA 600/4-79 revised March 1983 and/or "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 3rd Edition.

EnviroTech Mid-Atlantic Laboratories
An American Eco Company

Analytical Report

May 8, 1997

Client Project: –
Client Project #: –
P.O. #: 6098

Analysis	QL	15106A *041703*	15106B *04*	15106C *05*
Total Organic Carbon (mg/L)	**0.1**	1.5	0.51	BQL

Quality Control Data

Analysis	%STD	%Spike	%RD	EPA #	Analyst	Date Analyzed
Total Organic Carbon	89	86	<1.0	415.1	S. Cecil	5/5/97

C. Brian Kidd
Laboratory Director

QA/QC

5/8/97
Date

QL - Quantitation Limit BQL - Below Quantitation Limit BDL - Below Method Detection Limit J - Estimated Value
Soil results are reported on a dry weight basis unless otherwise noted.

Water Technology and Controls, Inc.
642 Tamco Road
Reidsville, NC 27320
tel. (910)342-4748
fax. (910)342-1522

Chain of Custody Record

New Avery Co. Landfill

Client: Engineering Tectonics	Tel: 910-724-6994
Address: 1720 Vargrave St. W-S	Fax: ext 121
Attention: Paul Kallam	P.O.#:
Person Taking Sample (signature): Paul Kallam	Project #

If Composite?

Lab Use Only

Sample Location/ID#	Date 1	Time 1	Date 2	Time 2	Comp? Grab?	# of Conts.	Tests Required	On Ice?	pH OK?
mw-1	4/16/97	11:00Am					TOX, TOC, COD, 8270	Yes	Yes
mw-2	4/16/97	12:00 pm					8240, cond. CL, FL,		
mw-3	4/16/97	1:00 pm					NO_3, ph, TDS, sulfate,		
							metals, BOD		
							all three samples		

Method of Shipment:
- ☐ UPS
- ☐ FED EX
- ☐ Hand Delivery
- ☐ Other _____

Comments: call (910) 724-6994 if problems
a ext 121

Relinquished by:	Date:	Time:	Recieved by:	Date:	Time:
Paul Kallam	4/16/97	5:00pm	Joshua Cathy	4-17-97	9:50 am

WATER TECHNOLOGY AND CONTROLS, INC.

Water Treatment Chemistries & Environmental Laboratory

May 16, 1997

Mr. Paul Kallam
Engineering Tectonics
P.O. Box I
Winston-Salem, North Carolina 27108

Dear Mr. Kallam:

Enclosed are TOX results for your New Avery Co. Landfill samples taken on April 16, 1997.

If you have any questions concerning these data please contact me.

Sincerely,

Mike Vaughan

Mike Vaughan
Laboratory Supervisor

Offices: 106-A South Walnut Circle • P.O. Box 8808 • Greensboro, N.C. 27419 • (910) 852-0802
Laboratory: 642 Tamco Road • Reidsville, N.C. 27320 • (910) 342-4748

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/16/97
WT&C Number:	04179703A
Sample:	MW-1 New Avery Co. Landfill 4/16/97 11:00AM

PARAMETER	RESULTS
Total Organic Halogens (TOX)	<0.05 mg/l

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/16/97
WT&C Number:	04179704A
Sample:	MW-2 New Avery Co. Landfill 4/16/97 12:00PM

PARAMETER	RESULTS
Total Organic Halogens (TOX)	<0.05 mg/l

WATER TECHNOLOGY AND CONTROLS, INC.
Environmental Laboratory
642 Tamco Rd., Reidsville, N.C. 27320
(919) 342-4748

Customer:	Engineering Tectonics
Contact Person:	Mr. Paul Kallam
Date Sample Rcvd:	04/17/97
Report Date:	05/16/97
WT&C Number:	04179705A
Sample:	MW-3 New Avery Co. Landfill 4/16/97 1:00PM

PARAMETER	RESULTS
Total Organic Halogens (TOX)	<0.05 mg/l

GUILFORD LABORATORIES, INC.
P.O. Box 9735/Greensboro, NC 27429/910-274-2907
2006 N. Church St./Greensboro, NC 27405/910-379-1004

5-16-1997

EPORT OF ANALYSIS

istomer : WATER TECH.& CONT. RDSVILLE
642 TAMCO ROAD
RIEDSVILLE NC 27320
TTN: MIKE VAUGHN

Job # : WTC70421

P.O. # : 6097

imples : # 1974 WTC# 041703 4/16/97
1975 WTC# 041704 4/16/97
1976 WTC# 041705 4/16/97

ESULTS

		1974	1975	1976
otal Organic Halogens	(ppm)	<0.05	<0.05	<0.05

uilford Laboratories, Inc.

. P. Rayburn