Fac/Perm/Co ID #	Date	Doc ID#
BC	6/4/08	DIN

Groundwater and Surface Water Sampling Report

Avery County Landfill
Newland, North Carolina

ETPA Project No: 90-247

Prepared for:

County of Avery
PO Box 640
Newland, North Carolina 28657

Thursday, June 18, 1998

Engineering Tectonics, P.A.
Environmental Geotechnical and Drilling Services
1720 Vargrave Street
Winston-Salem, North Carolina 27107
(336) 724-6994

Groundwater Monitoring Well and Stream Sampling

On May 8, 1998, Engineering Tectonics, P.A. (ETPA) personnel mobilized to the Old Avery County Landfill to sample three (3) groundwater monitoring wells (MW-1 through MW-3) as well as two (2) stream samples (Stream 1 and Stream 2) per North Carolina Department of Environment and Natural Resources permit #06-02. Refer to Figure 1 for a site location map. Stream sample 1 was taken upstream of MW-3 from a branch of Brushy Creek immediately bordering the site. Stream 2 was taken downstream of the landfill from Brushy Creek. See Figure 2 for a site map of the landfill with sample locations.

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 8260, specific conductance, chloride, fluoride, nitrate, pH, TDS, sulfate, arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Standard Procedures for Groundwater Sampling are included in Appendix A.

Groundwater Static Levels

On May 8, 1998, Engineering Tectonics, P.A. (ETPA) personnel mobilized to the Avery County Landfill to survey three (3) groundwater monitoring wells (MW-1 through MW-3). Survey data is provided in Table 1. Static water levels were measured as 8.72, 5.60, and 4.82 feet for monitoring wells MW-1, MW-2, and MW-3, respectively. A groundwater contour map is included as Figure 3.

Laboratory Results

Laboratory results discussed below exceed North Carolina Department of Environment and Natural Resources 2L groundwater standards.

- Laboratory results indicate that pH readings for all three monitoring wells were out of the 2L allowable range.
- Levels of lead are 0.022 parts per million (ppm) in MW-1.
- Levels of Cadmium in MW-2 and MW-3, were reported to be 0.005 ppm, and 0.008 ppm respectively.
- Laboratory results indicated that levels of Chloroethane, and cis-1,2-Dichloroethene in MW-1 were reported as 1.11 parts per billion (ppb), and 1.55 ppb, respectively.
- In MW-2, levels of Chloroethane and 1,1-Dichloroethane were reported as .80 ppb and .59 ppb, respectively.
- In MW-3, levels of Chloroethane, and cis-1,2-Dichloroethene were reported as 92 ppb and 2.13 ppb, respectively.
- Laboratory results did not indicate the presence of contaminates or 2L violations in the stream samples collected.

Laboratory results are summarized in Tables 2, 3, and 4. Copies of the laboratory results are included in Appendix B.

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 in this region of the United States. 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 9th day of June, 1998 this report was prepared by me or under my direct supervision.

by: Kevin Puckett
Kevin Puckett
Staff Geologist

reviewed by: Daniel Bowser
Daniel Bowser, P.G. #1610
Project Geologist

NORTH CAROLINA LICENSED SEAL 1610 GEOLOGIST DANIEL PATRICK BOWSER

Tables

Table 1
Groundwater Elevations

MW-1	24	76.98	8.72	68.26
MW-2	15	79.29	5.60	73.69
MW-3	15	100.00	4.82	95.18

Note:
All measurments are in feet and are taken from each well's top of PVC casing (TOC),
with the exception of MW-2, measurements for this point were/are taken from the top of the metal outer casing of the well.
Survey conducted on 5/8/98
MW-3 was used as a temporay bench mark with an assumed elevaiton of 100.00 feet

Table 2

Groundwater Monitoring Well Laboratory Results

May 8, 1998

Analysis	MW-1	MW-2	MW-3	2L Standard
Specific Conductivity	206.0 umhos/cm	90.9 umhos/cm	178.1 umhos/cm	NA
Chloride	27.33	15.51	10.83	250
Fluoride	<0.1	<0.1	<0.1	2.0
Nitrate	<0.10	<0.10	<0.10	10.0
pH	**5.70**	**5.90**	**5.90**	6.5-8.5
TDS	97	35.0	77.0	NA
Sulfate	2.95	3.86	1.21	250
Arsenic	<0.003	0.023	<0.003	0.05
Barium	0.500	0.066	0.086	2.0
[illegible]	<0.005	[illegible]	**0.005**	0.005
Chromium	0.010	0.005	<0.005	0.05
[illegible]	[illegible]	0.014	<0.010	0.015
Mercury	0.0004	<0.0002	0.0003	0.0011
Selenium	<0.003	<0.003	<0.003	0.05
Silver	<0.001	<0.001	<0.001	0.018

Results are presented in parts per million (ppm) unless specified
Results presented in **BOLD** are in violation of 2L standards
NA not applicable

Table 3

Stream Sampling Laboratory Results

May 8, 1998

Analysis	Stream 1	Stream 2	2L Standard
Specific Conductivity	48.2 umhos/cm	31.5 umhos/cm	NA
Chloride	12.31	3.94	250
Fluoride	<0.1	<0.1	2.0
Nitrate	1.05	0.17	10.0
pH	6.6	6.8	6.5-8.5
TDS	36.0	18.0	NA
Sulfate	2.9	1.60	250
Arsenic	<0.003	<0.003	0.05
Barium	.014	0.010	2.0
Cadmium	<0.001	<0.001	0.005
Chromium	<0.005	<0.005	0.05
Lead	<.010	<0.010	0.015
Mercury	<0.0002	<0.0002	0.0011
Selenium	<0.003	<0.003	0.05
Silver	<0.001	<0.001	0.018

Results are presented in parts per million (ppm) unless specified
Results presented in **BOLD** are in violation of 2L standards
NA not applicable

Table 4

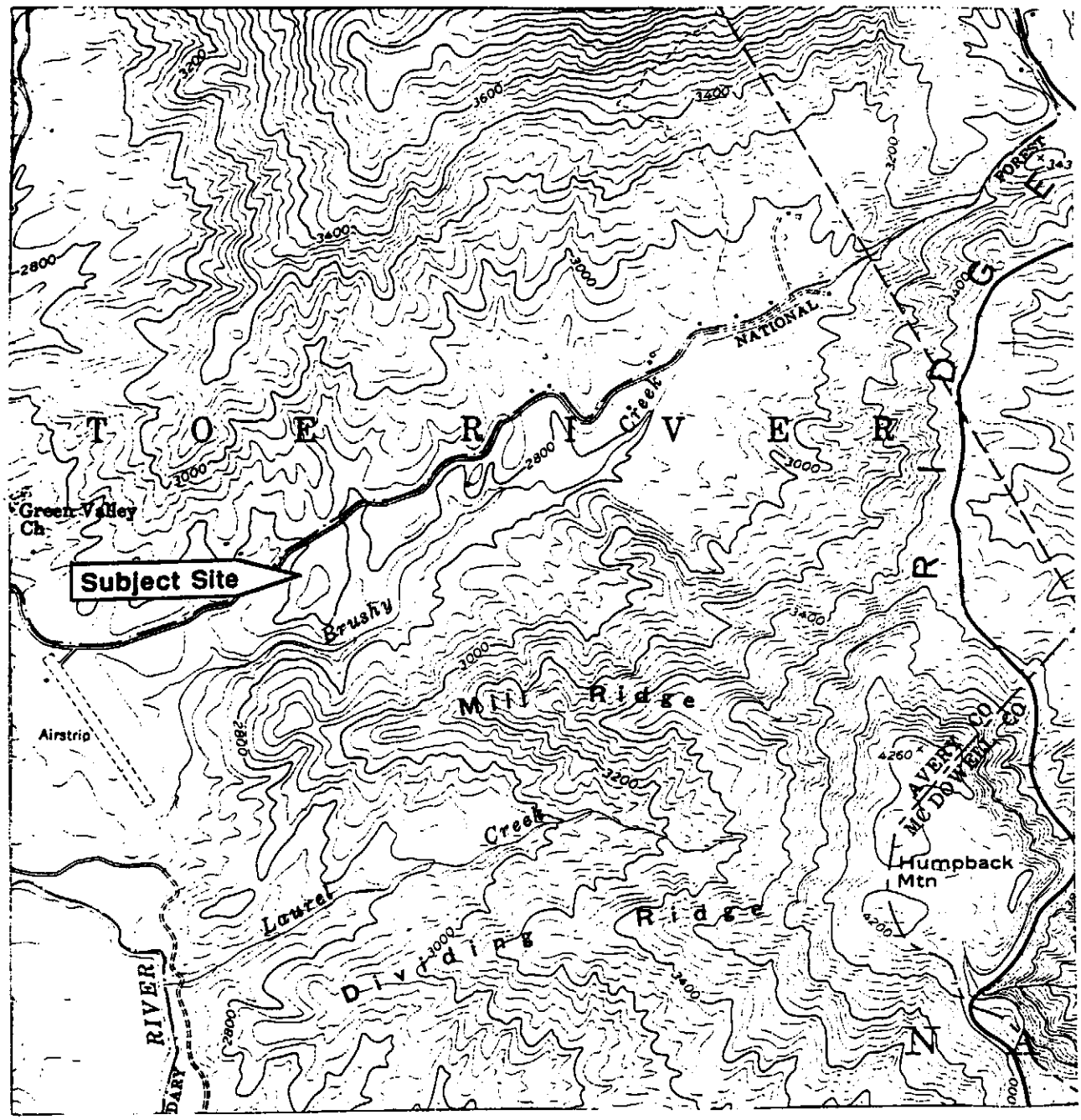
Volatile Organics
EPA Method 8260

May 8, 1998

Compound	MW-1	MW-2	MW-3	Sewer-1	Sewer-2	2L Standard
Benzene	.63	BDL	.85	BDL	BDL	1 ppb
Chloroethane	**1.11**	**.80**	**.92**	BDL	BDL	0.00
1,1 Dichloroethane	BDL	**.59**	BDL	BDL	BDL	0.00
cis-1,2-Dichloroethene	**1.55**	BDL	**2.13**	BDL	BDL	0.00

BDL = below detectable limit
Results in parts per billion (ppb)
Compounds that do not have an associated 2L Standard have a limit of zero.
Compounds not listed have a laboratory result of BDL for all samples.
Results presented in **BOLD** are in violation of 2L standards

Figures



Title: Site Location Map

Scale: 1"=2000'

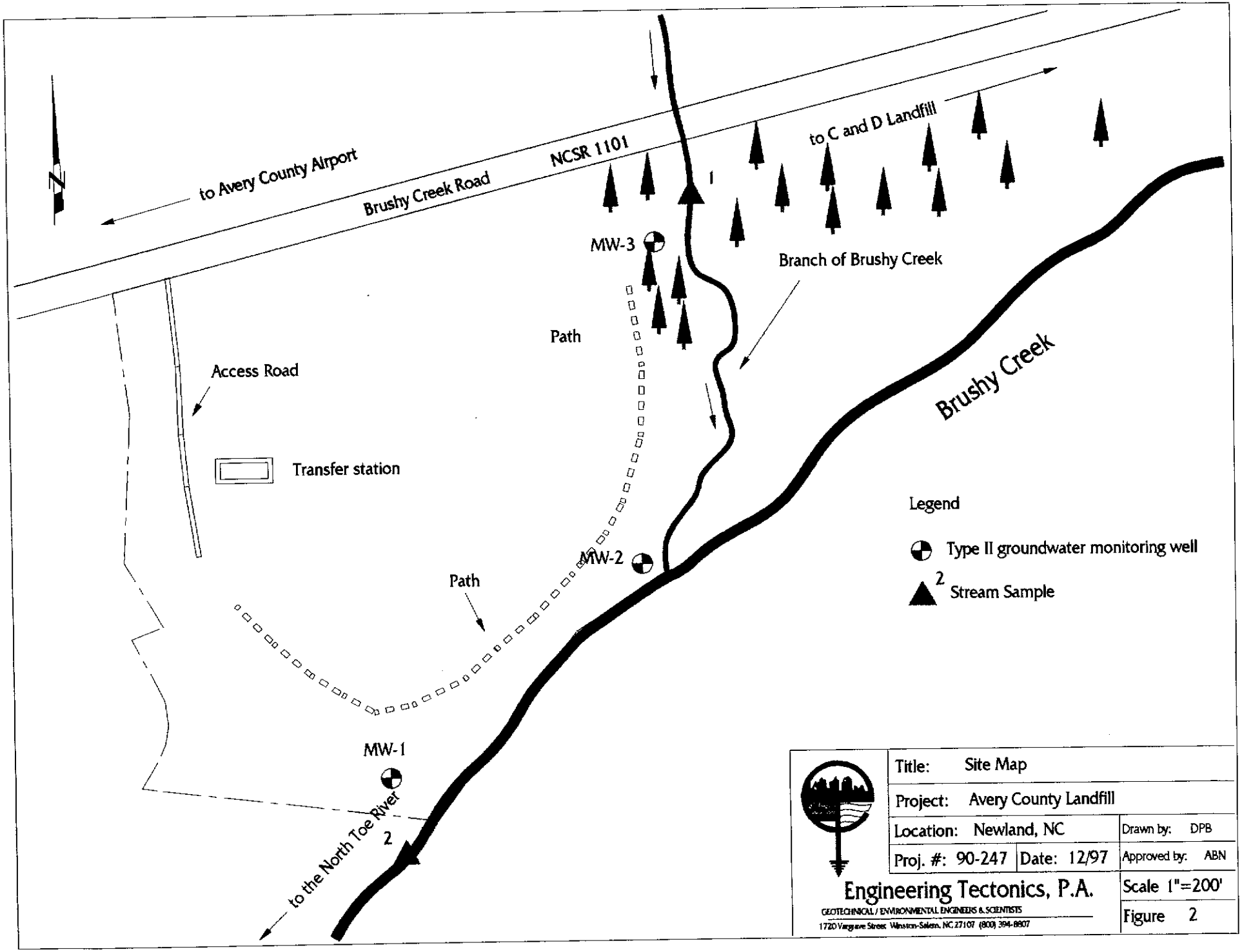
2000' 2000'

ENGINEERING TECTONICS, P.A.

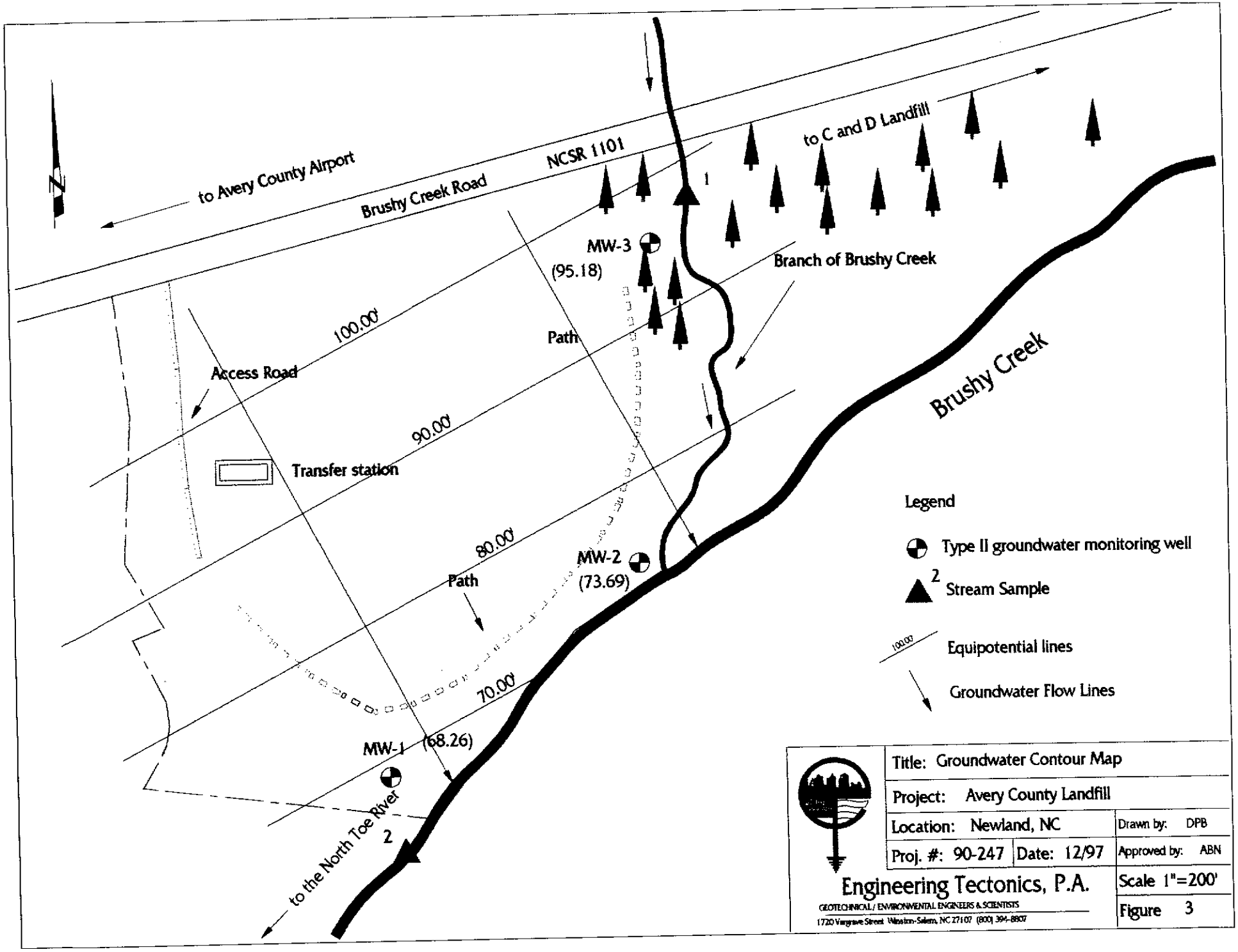
GEOTECHNICAL / ENVIRONMENTAL ENGINEERS & SCIENTISTS

1720 Vargrave Street Winston-Salem, NC 27107 (800) 394-8807

Figure 1



Title: Site Map		
Project: Avery County Landfill		
Location: Newland, NC		Drawn by: DPB
Proj. #: 90-247	Date: 12/97	Approved by: ABN
Engineering Tectonics, P.A.		Scale 1"=200'
GEOTECHNICAL / ENVIRONMENTAL ENGINEERS & SCIENTISTS		Figure 2
1720 Vargrave Street Winston-Salem, NC 27107 (800) 394-8807		


to Avery County Airport
Brushy Creek Road
NCSR 1101
to C and D Landfill
1
MW-3
(95.18)
Branch of Brushy Creek
100.00'
Path
Access Road
90.00'
Transfer station
Brushy Creek
80.00'
MW-2
(73.69)
Path
70.00'
MW-1
(68.26)
to the North Toe River
2
Legend
Type II groundwater monitoring well
2
Stream Sample
100.00'
Equipotential lines
Groundwater Flow Lines
Title: Groundwater Contour Map
Project: Avery County Landfill
Location: Newland, NC
Drawn by: DPB
Proj. #: 90-247
Date: 12/97
Approved by: ABN
Engineering Tectonics, P.A.
GEOTECHNICAL / ENVIRONMENTAL ENGINEERS & SCIENTISTS
1720 Virginia Street Winston-Salem, NC 27107 (800) 394-8807
Scale 1"=200'
Figure 3

Appendix A

ENGINEERING TECTONICS, PA

Standard Procedures SP-7

Field Procedures For Collection of Ground Water Samples

Engineering Tectonics, P.A.
Environmental, Geotechnical, and Drilling Services
1720 Vargrave Street
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Field Procedures for the Collection of Groundwater Samples

1.0 PURPOSE

To establish a standard procedure for collection of ground water samples.

2.0 SCOPE

The following procedure describes the logistics, collection techniques and documentation requirements for collecting ground water samples.

3.0 RESPONSIBILITY

Project Manager, Project Hydrogeologist, and Field Sampling Technicians.

4.0 SUPPORTING PROCEDURES

SP-3 Cleaning of Glassware and Equipment for Field Sampling Programs.

SP-2 Chain-of-Custody Procedures.

SP-4 Soil and Water Sample Preservation Procedures

SP-8 Filtering of Water for Dissolved Metals Analysis.

5.0 REQUIRED FORMS

Chain-of-Custody forms.

6.0 PROCEDURE

6.1 Selection of Sampling Locations

Groundwater sampling locations in and around a contaminated site are typically existing domestic, production, and groundwater monitoring wells. The location of new groundwater sampling points will be based upon the review of existing site geohydrological data, the results of preliminary site surveys, and the initial estimates of the extent of contamination. The groundwater sampling locations will be chosen by the project geologist/engineer. If

possible, one upgradient and three downgradient samples from the uppermost aquifer will be taken.

6.2 Equipment List

1. Latex gloves and any other personal safety equipment specified in the Site Health and Safety Plan.
2. Sample containers. Number and kind will depend on the analytical requirements.
3. Device to measure water levels in wells to within 0.01 feet. Typically a fiberglass tape with a "plopper" or chalk, or an electronic water level indicator, is used.
4. Field notebook.
5. Sample bottle labels.
6. A large volume bailer or pump to evacuate the wells.
7. Teflon or PVC bailer with polypropylene or stainless steel cable or a peristaltic pump with Teflon tubing, as appropriate.
8. 50-foot length of garden hose (needed only when sampling from domestic, production and other wells where the sample will be obtained from the existing well pump).

6.3 Sample Collection

Prior to the evacuation of groundwater from any well, the depth to water shall be measured to the nearest 0.01 feet. A fiberglass or steel tape marked with chalk or an electric water sensing device (e.g., Slope Indicator Water Mark) shall be used for this purpose. The device must be decontaminated to avoid contamination of the well. The depth to water is typically measured from a reference point established on the top of the inner well casing is recorded in the field notebook along with the length of casing stick-up above the ground surface. If both an inner and outer casing are present, the one used as the measurement reference point shall be identified and the vertical distance between the two measured and recorded as well as the stick-up of the outer casing. The depth of the well bottom shall be sounded and the depth recorded to ascertain the well's integrity and any siltation problems.

To introduce fresh formation water into the well, a minimum of three well volumes must be evacuated from the well prior to sampling. If a well is evacuated dry prior to removing four well volumes, the evacuation is considered complete and the well is allowed to recharge to at least 75% of its original volume prior to sampling. Field parameters (i.e., pH, specific conductance and temperature) may be measured periodically during well evacuation to aid in determining water stabilization. Evacuation is accomplished by bailing with a large volume (1.5 liter) bailer, or by pumping. Whichever method is used, it must be assured that any materials (hose, bailer, tubing, pumps, rope, etc.) entering the well be clean. If the same device is being used to evacuate a number of wells, the device must be cleaned with detergent, water, acetone and deionized water between each well to prevent cross-contamination.

The sampling procedure for groundwater is as follows:

Prior to collecting any water samples, place a waterproof sample label on each clean container with the following information:

- Project Number
- Project Name
- Sample No.
- Date
- Analysis Required
- Preservative:
- Collection Time
- Initials of Collector

Fill in the information with a waterproof ink pen. This will prevent difficulty in filling out labels on a wet jar after it is filled.

Collect the groundwater sample using a clean bailer. Latex gloves shall be worn during this procedure. The temperature, pH, and conductivity of the evacuated water should be determined immediately after sample collection. These measurements should not be taken from any sample bottles being sent to the analytical laboratory for chemical analysis.

The vials for volatile organic analysis should always be filled with the initial bailer of water. When filling the 40 ml septum vials, care should be exercised to eliminate the formation of air bubbles. Slightly over-fill the vial, and screw on the cap. Then turn the vial upside down and tap lightly to check for air bubbles. Air bubbles of any size should not rise to the bottom of the vial. (Tiny bubbles can introduce significant error.) If air bubbles are present, empty the vial and repeat the procedure with a fresh bailer of water.

Fill all the remaining containers directly from the bailer, unless the well is to be sampled in duplicate. If a duplicate water sample is required, the water should be composited in a large clean container, prior to filling the sample bottles. Samples requiring volatile organic analysis should not be composited, however, an attempt should be made to fill all the vials with the initial bailer of water.

Avoid overflow of the bottles or jars already containing preservative (pre-preserved). All samples should be gently mixed after collection and checked for proper preservation with indicator paper (i.e. pH paper).

If dissolved metals analysis are required, an extra bottle (no preservative) will be filled and the metals container (pre-preserved with nitric acid) will remain empty. After the water sample is field filtered through a 0.45 micron membrane filter, transfer the water into the pre-preserved metals container. This will constitute a sample for dissolved metals analysis. See Engineering Tectonics, PA Technical Standard No. 8, "Filtering of Water Samples for Dissolved Metals Analysis".

If samples have not been pre-preserved, preserve them as soon as possible after collection and preparation.

Place all sample containers into a shipping container, cool with ice packs and complete the Chain-of-Custody form.

Detail in the field notebook the following:

- sample identification number
- location of the sample (on the sketch map)
- time and date of sampling
- personnel performing task depth to water table, reference mark, casing(s) stick-up, and vertical distance between inner and outer casing
- Amount evacuated from well and device used for evacuation
- Visual or sensory description of the sample (color, odor, turbidity, etc.)
- Weather conditions both present and previous to sampling
- Other pertinent observations
- Sign the entry

Make sure the well is secured after sampling.

If sampling devices are to be dedicated to a particular sample location, they will be placed in a plastic bag after their use and marked or tagged:
DEDICATED TO PROJECT NO.
SAMPLE LOCATION NO.

The tags should also indicate that the dedicated equipment needs cleaning before next use. Alternatively, the sampling devices can be left hanging in the well.

Field investigations requiring more than one sampling event should include the use of a Master Sample Logbook and a Field Notebook. At the end of each day all samples shall be recorded in the Master Logbook. Calibration of field instruments and field chemistry measurements such as pH shall be recorded in the Field Notebook.

Appendix B

HYDROLOGIC, INC.

FINAL REPORT OF ANALYSES

ENGINEERING TECTONICS
1720 VARGRAVE STREET
WINSTON SALEM, NC 27107-
Attn: JOANNA HANSON

PROJECT NAME: ENG TECTONICS
REPORT DATE: 05/26/98

SAMPLE NUMBER- 120998 SAMPLE ID- 90-247 STREAM 1
DATE SAMPLED- 05/08/98
DATE RECEIVED- 05/09/98 SAMPLER- JH
TIME RECEIVED- 1100 DELIVERED BY- FED EX

SAMPLE MATRIX- WW
TIME SAMPLED- 1030
RECEIVED BY- APT

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	BY	RESULT	UNITS	DET. LIMIT
PH, LAB	EPA 150.1			05/21/98	KHJ	*6.6	std units	
TOTAL DISSOLVED SOLIDS	EPA160.1			05/14/98	MGN	36.0	mg/l	1.0
SPECIFIC CONDUCTIVITY	EPA 120.1			05/15/98	MGN	48.2	umhos	
CHLORIDE	EPA 325.3			05/20/98	KHJ	12.31	mg/l	0.50
FLUORIDE	EPA 340.2			05/26/98	KHJ	< 0.10	mg/l	0.10
NITRATE	EPA 352.1			05/09/98	APT	1.05	mg/l	0.10
SULFATE	EPA 375.4			05/19/98	KHJ	2.90	mg/l	1.0
ARSENIC, TOTAL	206.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
MERCURY, TOTAL	245.1			05/19/98	LJP	< 0.0002	mg/l	0.0002
SELENIUM, TOTAL	270.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
SILVER, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.001	mg/l	0.001
BARIUM, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.014	mg/l	0.005
CADMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	< 0.001	mg/l	0.001
CHROMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	< 0.005	mg/l	0.005
LEAD, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.010	mg/l	0.010

LABORATORY DIRECTOR

NC DEHNR DEM #47
NC DEHNR DW #37717
SC DEHC #99015

P.O. BOX 18029 ASHEVILLE NC 28814-0029
828-254-5169 FAX: 828-252-9711 / TOLL FREE: 800-344-5759

HYDROLOGIC, INC.

FINAL REPORT OF ANALYSES

ENGINEERING TECTONICS
1720 VARGRAVE STREET
WINSTON SALEM, NC 27107-
Attn: JOANNA HANSON

PROJECT NAME: ENG TECTONICS
REPORT DATE: 05/26/98

SAMPLE NUMBER- 120999 SAMPLE ID- 90-247 STREAM 2
DATE SAMPLED- 05/08/98
DATE RECEIVED- 05/09/98 SAMPLER- JH
TIME RECEIVED- 1100 DELIVERED BY- FED EX

SAMPLE MATRIX- WW
TIME SAMPLED- 1030
RECEIVED BY- APT

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	BY	RESULT	UNITS	DET. LIMIT
PH,LAB	EPA 150.1			05/21/98	KHJ	*6.8	std units	
TOTAL DISSOLVED SOLIDS	EPA160.1			05/14/98	MGN	18.0	mg/l	1.0
SPECIFIC CONDUCTIVITY	EPA 120.1			05/15/98	MGN	31.5	umhos	
CHLORIDE	EPA 325.3			05/20/98	KHJ	3.94	mg/l	0.50
FLUORIDE	EPA 340.2			05/26/98	KHJ	< 0.10	mg/l	0.10
NITRATE	EPA 352.1			05/09/98	APT	0.17	mg/l	0.10
SULFATE	EPA 375.4			05/19/98	KHJ	1.60	mg/l	1.0
ARSENIC, TOTAL	206.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
MERCURY, TOTAL	245.1			05/19/98	LJP	< 0.0002	mg/l	0.0002
SELENIUM, TOTAL	270.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
SILVER,TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.001	mg/l	0.001
BARIUM, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.010	mg/l	0.005
CADMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	< 0.001	mg/l	0.001
CHROMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	< 0.005	mg/l	0.005
LEAD, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.010	mg/l	0.010

LABORATORY DIRECTOR _____

NC DEHNR DEM #47
NC DEHNR DW #37717
SC DEHC #99016

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HYDROLOGIC, INC.

FINAL REPORT OF ANALYSES

ENGINEERING TECTONICS
1720 VARGRAVE STREET
WINSTON SALEM, NC 27107-
Attn: JOANNA HANSON

PROJECT NAME: ENG TECTONICS
REPORT DATE: 05/26/98

SAMPLE NUMBER- 121000 SAMPLE ID- 90-247 MW-1
DATE SAMPLED- 05/08/98
DATE RECEIVED- 05/09/98 SAMPLER- JH
TIME RECEIVED- 1100 DELIVERED BY- FED EX

SAMPLE MATRIX- WW
TIME SAMPLED- 1030
RECEIVED BY- APT

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	BY	RESULT	UNITS	DET. LIMIT
PH,LAB	EPA 150.1			05/21/98	KHJ	*5.7	std units	
TOTAL DISSOLVED SOLIDS	EPA160.1			05/14/98	MGN	97.0	mg/l	1.0
SPECIFIC CONDUCTIVITY	EPA 120.1			05/15/98	MGN	206.0	umhos	
CHLORIDE	EPA 325.3			05/20/98	KHJ	27.33	mg/l	0.50
FLUORIDE	EPA 340.2			05/26/98	KHJ	< 0.10	mg/l	0.10
NITRATE	EPA 352.1			05/09/98	APT	<0.10	mg/l	0.10
SULFATE	EPA 375.4			05/19/98	KHJ	2.95	mg/l	1.0
ARSENIC, TOTAL	206.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
MERCURY, TOTAL	245.1			05/19/98	LJP	0.0004	mg/l	0.0002
SELENIUM, TOTAL	270.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
SILVER,TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.001	mg/l	0.001
BARIUM, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.500	mg/l	0.005
CADMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	0.005	mg/l	0.001
CHROMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	0.010	mg/l	0.005
LEAD, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.022	mg/l	0.010

LABORATORY DIRECTOR Lou J Patton

NC DEHNR DEM #47
NC DEHNR DW #37717
SC DEHC #99015

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HYDROLOGIC, INC.

FINAL REPORT OF ANALYSES

ENGINEERING TECTONICS
1720 VARGRAVE STREET
WINSTON SALEM, NC 27107-
Attn: JOANNA HANSON

PROJECT NAME: ENG TECTONICS
REPORT DATE: 05/26/98

SAMPLE NUMBER- 121001 SAMPLE ID- 90-247 MW-2
DATE SAMPLED- 05/08/98
DATE RECEIVED- 05/09/98 SAMPLER- JH
TIME RECEIVED- 1100 DELIVERED BY- FED EX

SAMPLE MATRIX- WW
TIME SAMPLED- 1030
RECEIVED BY- APT

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	BY	RESULT	UNITS	DET. LIMIT
PH, LAB	EPA 150.1			05/21/98	KHJ	*5.9	std units	
TOTAL DISSOLVED SOLIDS	EPA160.1			05/14/98	MGN	35.0	mg/l	1.0
SPECIFIC CONDUCTIVITY	EPA 120.1			05/15/98	MGN	90.9	umhos	
CHLORIDE	EPA 325.3			05/20/98	KHJ	15.51	mg/l	0.50
FLUORIDE	EPA 340.2			05/26/98	KHJ	< 0.10	mg/l	0.10
NITRATE	EPA 352.1			05/09/98	APT	<0.10	mg/l	0.10
SULFATE	EPA 375.4			05/19/98	KHJ	3.86	mg/l	1.0
ARSENIC, TOTAL	206.2	05/08/98	LJP	05/18/98	LJP	0.023	mg/l	0.003
MERCURY, TOTAL	245.1			05/19/98	LJP	< 0.0002	mg/l	0.0002
SELENIUM, TOTAL	270.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
SILVER, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.001	mg/l	0.001
BARIUM, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.066	mg/l	0.005
CADMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	0.008	mg/l	0.001
CHROMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	0.005	mg/l	0.005
LEAD, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.014	mg/l	0.010

LABORATORY DIRECTOR Larry Patton

NC DEHNR DEM #47
NC DEHNR DW #37717
SC DEHC #99015

P.O. BOX 18029 ASHEVILLE NC 28814-0029
828-254-5169 FAX: 828-252-9711 / TOLL FREE: 800-344-5759

HYDROLOGIC, INC.

FINAL REPORT OF ANALYSES

ENGINEERING TECTONICS
1720 VARGRAVE STREET
WINSTON SALEM, NC 27107-
Attn: JOANNA HANSON

PROJECT NAME: ENG TECTONICS
REPORT DATE: 05/26/98

SAMPLE NUMBER- 121002 SAMPLE ID- 90-247 MW-3
DATE SAMPLED- 05/08/98
DATE RECEIVED- 05/09/98 SAMPLER- JH
TIME RECEIVED- 1100 DELIVERED BY- FED EX

SAMPLE MATRIX- WW
TIME SAMPLED- 1030
RECEIVED BY- APT

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	BY	RESULT	UNITS	DET. LIMIT
PH,LAB	EPA 150.1			05/21/98	KHJ	*5.9	std units	
TOTAL DISSOLVED SOLIDS	EPA160.1			05/14/98	MGN	77.0	mg/l	1.0
SPECIFIC CONDUCTIVITY	EPA 120.1			05/15/98	MGN	178.1	umhos	
CHLORIDE	EPA 325.3			05/20/98	KHJ	10.83	mg/l	0.50
FLUORIDE	EPA 340.2			05/26/98	KHJ	< 0.10	mg/l	0.10
NITRATE	EPA 352.1			05/09/98	APT	<0.10	mg/l	0.10
SULFATE	EPA 375.4			05/19/98	KHJ	1.21	mg/l	1.0
ARSENIC, TOTAL	206.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
MERCURY, TOTAL	245.1			05/19/98	LJP	0.0003	mg/l	0.0002
SELENIUM, TOTAL	270.2	05/08/98	LJP	05/18/98	LJP	< 0.003	mg/l	0.003
SILVER,TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.001	mg/l	0.001
BARIUM, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	0.086	mg/l	0.005
CADMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	0.005	mg/l	0.001
CHROMIUM, TOTAL	200.7	05/08/98	LJP	05/19/98	LJP	< 0.005	mg/l	0.005
LEAD, TOTAL	200.7	05/08/98	LJP	05/15/98	LJP	< 0.010	mg/l	0.010

LABORATORY DIRECTOR

NC DEHNR DEM #47
NC DEHNR DW #37717
SC DEHC #99016

P.O. BOX 18029 ASHEVILLE NC 28814-0029
828-254-5169 FAX: 828-252-9711 / TOLL FREE: 800-344-5759

ANALYTICAL AND QUALITY CONTROL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Enclosed is the Analytical and Quality Control Reports for the following samples submitted to HydroLogic - Frankfort for analysis:

Project Description: 90-247

Sample Number	Sample Description	Matrix	Date Sampled	Date Received
L6124	STREAM 1	WATER	05/08/1998	05/12/1998
L6125	STREAM 2	WATER	05/08/1998	05/12/1998
L6126	MW-1	WATER	05/08/1998	05/12/1998
L6127	MW-2	WATER	05/08/1998	05/12/1998
L6128	MW-3	WATER	05/08/1998	05/12/1998
L6129	CMW-1	WATER	05/08/1998	05/12/1998
L6130	CMW-2	WATER	05/08/1998	05/12/1998
L6131	CMW-3	WATER	05/08/1998	05/12/1998

The Quality Control report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed. All anlytical batch(es) are initiated at 8:00 a.m. unless otherwise flagged on report.

All samples were analyzed according to the RCRA guidelines described in SW-846, NPDES regulations, and Standard Methods for the Examination of Water and Wastewater.

Project Representative

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16124	STREAM 1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
8260B (AQ)	8260B					
Acetone		<50.0	50.0	ug/L		05/19/1998
Acrolein		<50.0	50.0	ug/L		05/19/1998
Acrylonitrile		<50.0	50.0	ug/L		05/19/1998
Benzene		<0.50	0.50	ug/L		05/19/1998
Bromobenzene		<0.50	0.50	ug/L		05/19/1998
Bromochloromethane		<0.50	0.50	ug/L		05/19/1998
Bromodichloromethane		<0.50	0.50	ug/L		05/19/1998
Bromoform		<0.50	0.50	ug/L		05/19/1998
Bromomethane		<0.50	0.50	ug/L		05/19/1998
n-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
sec-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
tert-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
Carbon disulfide		<0.50	0.50	ug/L		05/19/1998
Carbon tetrachloride		<0.50	0.50	ug/L		05/19/1998
Chlorobenzene		<0.50	0.50	ug/L		05/19/1998
Chlorodibromomethane		<0.50	0.50	ug/L		05/19/1998
Chloroethane		<0.50	0.50	ug/L		05/19/1998
Chloroform		<0.50	0.50	ug/L		05/19/1998
Chloromethane		<0.50	0.50	ug/L		05/19/1998
2-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
4-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
2-Chloroethyl vinyl ether		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromo-3-chloropropane		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromoethane		<0.50	0.50	ug/L		05/19/1998
Dibromomethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,3-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,4-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16124	STREAM 1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Dichlorodifluoromethane		<0.50	0.50	ug/L		05/19/1998
trans-1,4-Dichloro-2-butene		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
cis-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
trans-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,3-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
2,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
cis-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
trans-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
Ethanol		<1000	1000	ug/L		05/19/1998
Ethyl acetate		<20.0	20.0	ug/L		05/19/1998
Ethylbenzene		<0.50	0.50	ug/L		05/19/1998
Ethyl methacrylate		<10.0	10.0	ug/L		05/19/1998
2-Hexanone		<50.0	50.0	ug/L		05/19/1998
Hexachlorobutadiene		<0.50	0.50	ug/L		05/19/1998
Iodomethane		<10.0	10.0	ug/L		05/19/1998
Isopropylbenzene		<0.50	0.50	ug/L		05/19/1998
Isopropyl ether (IPE)		<0.50	0.50	ug/L		05/19/1998
p-Isopropyltoluene		<0.50	0.50	ug/L		05/19/1998
Methylene chloride		<0.50	0.50	ug/L		05/19/1998
2-Butanone (MEK)		<50.0	50.0	ug/L		05/19/1998
Methyl-tert-butyl ether (MTBE)		<0.50	0.50	ug/L		05/19/1998
4-Methyl-2-pentanone (MIBK)		<50.0	50.0	ug/L		05/19/1998
Naphthalene		<0.50	0.50	ug/L		05/19/1998
n-Propylbenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

AMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
6124	STREAM 1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
yrene		<0.50	0.50	ug/L		05/19/1998
1,1,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
1,2,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
trachloroethene		<0.50	0.50	ug/L		05/19/1998
luene		<0.50	0.50	ug/L		05/19/1998
2,3-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
2,4-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,1-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
1,2-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
ichloroethene		<0.50	0.50	ug/L		05/19/1998
ichlorofluoromethane		<0.50	0.50	ug/L		05/19/1998
2,3-Trichloropropane		<0.50	0.50	ug/L		05/19/1998
2,4-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
3,5-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
nyl acetate		<0.50	0.50	ug/L		05/19/1998
nyl chloride		<0.50	0.50	ug/L		05/19/1998
p-Xylenes		<0.50	0.50	ug/L		05/19/1998
Xylene		<0.50	0.50	ug/L		05/19/1998
RR: Toluene-d8		90.0		%		05/19/1998
RR: 1,2-Dichloroethane-d4		110		%		05/19/1998
RR: 4-Bromofluorobenzene		82.0		%		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16125	STREAM 2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
8260B (AQ)	8260B					
Acetone		<50.0	50.0	ug/L		05/19/1998
Acrolein		<50.0	50.0	ug/L		05/19/1998
Acrylonitrile		<50.0	50.0	ug/L		05/19/1998
Benzene		<0.50	0.50	ug/L		05/19/1998
Bromobenzene		<0.50	0.50	ug/L		05/19/1998
Bromochloromethane		<0.50	0.50	ug/L		05/19/1998
Bromodichloromethane		<0.50	0.50	ug/L		05/19/1998
Bromoform		<0.50	0.50	ug/L		05/19/1998
Bromomethane		<0.50	0.50	ug/L		05/19/1998
n-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
sec-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
tert-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
Carbon disulfide		<0.50	0.50	ug/L		05/19/1998
Carbon tetrachloride		<0.50	0.50	ug/L		05/19/1998
Chlorobenzene		<0.50	0.50	ug/L		05/19/1998
Chlorodibromomethane		<0.50	0.50	ug/L		05/19/1998
Chloroethane		<0.50	0.50	ug/L		05/19/1998
Chloroform		<0.50	0.50	ug/L		05/19/1998
Chloromethane		<0.50	0.50	ug/L		05/19/1998
2-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
4-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
2-Chloroethyl vinyl ether		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromo-3-chloropropane		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromoethane		<0.50	0.50	ug/L		05/19/1998
Dibromomethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,3-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,4-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16125	STREAM 2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Dichlorodifluoromethane		<0.50	0.50	ug/L		05/19/1998
trans-1,4-Dichloro-2-butene		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
cis-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
trans-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,3-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
2,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
cis-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
trans-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
Ethanol		<1000	1000	ug/L		05/19/1998
Ethyl acetate		<20.0	20.0	ug/L		05/19/1998
Ethylbenzene		<0.50	0.50	ug/L		05/19/1998
Ethyl methacrylate		<10.0	10.0	ug/L		05/19/1998
2-Hexanone		<50.0	50.0	ug/L		05/19/1998
Hexachlorobutadiene		<0.50	0.50	ug/L		05/19/1998
Iodomethane		<10.0	10.0	ug/L		05/19/1998
Isopropylbenzene		<0.50	0.50	ug/L		05/19/1998
Isopropyl ether (IPE)		<0.50	0.50	ug/L		05/19/1998
p-Isopropyltoluene		<0.50	0.50	ug/L		05/19/1998
Methylene chloride		<0.50	0.50	ug/L		05/19/1998
2-Butanone (MEK)		<50.0	50.0	ug/L		05/19/1998
Methyl-tert-butyl ether (MTBE)		<0.50	0.50	ug/L		05/19/1998
4-Methyl-2-pentanone (MIBK)		<50.0	50.0	ug/L		05/19/1998
Naphthalene		<0.50	0.50	ug/L		05/19/1998
n-Propylbenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16125	STREAM 2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
tyrene		<0.50	0.50	ug/L		05/19/1998
,1,1,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
etrachloroethene		<0.50	0.50	ug/L		05/19/1998
oluene		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,2,4-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,1,1-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
richloroethene		<0.50	0.50	ug/L		05/19/1998
richlorofluoromethane		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichloropropane		<0.50	0.50	ug/L		05/19/1998
,2,4-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
,3,5-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
inyl acetate		<0.50	0.50	ug/L		05/19/1998
inyl chloride		<0.50	0.50	ug/L		05/19/1998
&p-Xylenes		<0.50	0.50	ug/L		05/19/1998
-Xylene		<0.50	0.50	ug/L		05/19/1998
URR: Toluene-d8		102		%		05/19/1998
URR: 1,2-Dichloroethane-d4		121		%		05/19/1998
URR: 4-Bromofluorobenzene		87.0		%		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

AMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
6126	MW-1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
60B (AQ)	8260B					
etone		<50.0	50.0	ug/L		05/19/1998
rolein		<50.0	50.0	ug/L		05/19/1998
rylonitrile		<50.0	50.0	ug/L		05/19/1998
nzene		0.63	0.50	ug/L		05/19/1998
omobenzene		<0.50	0.50	ug/L		05/19/1998
omochloromethane		<0.50	0.50	ug/L		05/19/1998
omodichloromethane		<0.50	0.50	ug/L		05/19/1998
omoform		<0.50	0.50	ug/L		05/19/1998
omomethane		<0.50	0.50	ug/L		05/19/1998
-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
c-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
rt-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
rbon disulfide		<0.50	0.50	ug/L		05/19/1998
rbon tetrachloride		<0.50	0.50	ug/L		05/19/1998
lorobenzene		<0.50	0.50	ug/L		05/19/1998
lorodibromomethane		<0.50	0.50	ug/L		05/19/1998
loroethane		1.11	0.50	ug/L		05/19/1998
loroform		<0.50	0.50	ug/L		05/19/1998
loromethane		<0.50	0.50	ug/L		05/19/1998
-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
-Chloroethyl vinyl ether		<0.50	0.50	ug/L		05/19/1998
,2-Dibromo-3-chloropropane		<0.50	0.50	ug/L		05/19/1998
,2-Dibromoethane		<0.50	0.50	ug/L		05/19/1998
ibromomethane		<0.50	0.50	ug/L		05/19/1998
,2-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,3-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,4-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16126	MW-1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
ichlorodifluoromethane		<0.50	0.50	ug/L		05/19/1998
rans-1,4-Dichloro-2-butene		<0.50	0.50	ug/L		05/19/1998
,1-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
,2-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
,1-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
is-1,2-Dichloroethene		1.55	0.50	ug/L		05/19/1998
rans-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
,3-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
,1-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
is-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
rans-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
thanol		<1000	1000	ug/L		05/19/1998
thyl acetate		<20.0	20.0	ug/L		05/19/1998
thylbenzene		<0.50	0.50	ug/L		05/19/1998
thyl methacrylate		<10.0	10.0	ug/L		05/19/1998
-Hexanone		<50.0	50.0	ug/L		05/19/1998
exachlorobutadiene		<0.50	0.50	ug/L		05/19/1998
odomethane		<10.0	10.0	ug/L		05/19/1998
sopropylbenzene		<0.50	0.50	ug/L		05/19/1998
sopropyl ether (IPE)		<0.50	0.50	ug/L		05/19/1998
-Isopropyltoluene		<0.50	0.50	ug/L		05/19/1998
ethylene chloride		<0.50	0.50	ug/L		05/19/1998
-Butanone (MEK)		<50.0	50.0	ug/L		05/19/1998
ethyl-tert-butyl ether (MTBE)		<0.50	0.50	ug/L		05/19/1998
-Methyl-2-pentanone (MIBK)		<50.0	50.0	ug/L		05/19/1998
aphthalene		<0.50	0.50	ug/L		05/19/1998
-Propylbenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16126	MW-1	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Styrene		<0.50	0.50	ug/L		05/19/1998
,1,1,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
Tetrachloroethene		<0.50	0.50	ug/L		05/19/1998
Toluene		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,2,4-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,1,1-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
Trichloroethene		<0.50	0.50	ug/L		05/19/1998
Trichlorofluoromethane		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichloropropane		<0.50	0.50	ug/L		05/19/1998
,2,4-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
,3,5-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
Vinyl acetate		<0.50	0.50	ug/L		05/19/1998
Vinyl chloride		<0.50	0.50	ug/L		05/19/1998
m&p-Xylenes		<0.50	0.50	ug/L		05/19/1998
o-Xylene		<0.50	0.50	ug/L		05/19/1998
SURR: Toluene-d8		82.0		%		05/19/1998
SURR: 1,2-Dichloroethane-d4		107		%		05/19/1998
SURR: 4-Bromofluorobenzene		87.0		%		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

AMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
6127	MW-2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
60B (AQ)	8260B					
etone		<50.0	50.0	ug/L		05/19/1998
rolein		<50.0	50.0	ug/L		05/19/1998
rylonitrile		<50.0	50.0	ug/L		05/19/1998
nzene		<0.50	0.50	ug/L		05/19/1998
omobenzene		<0.50	0.50	ug/L		05/19/1998
omochloromethane		<0.50	0.50	ug/L		05/19/1998
omodichloromethane		<0.50	0.50	ug/L		05/19/1998
omoform		<0.50	0.50	ug/L		05/19/1998
omomethane		<0.50	0.50	ug/L		05/19/1998
Butylbenzene		<0.50	0.50	ug/L		05/19/1998
c-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
rt-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
rbon disulfide		<0.50	0.50	ug/L		05/19/1998
rbon tetrachloride		<0.50	0.50	ug/L		05/19/1998
lorobenzene		<0.50	0.50	ug/L		05/19/1998
lorodibromomethane		<0.50	0.50	ug/L		05/19/1998
loroethane		0.80	0.50	ug/L		05/19/1998
loroform		<0.50	0.50	ug/L		05/19/1998
loromethane		<0.50	0.50	ug/L		05/19/1998
Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
Chloroethyl vinyl ether		<0.50	0.50	ug/L		05/19/1998
2-Dibromo-3-chloropropane		<0.50	0.50	ug/L		05/19/1998
2-Dibromoethane		<0.50	0.50	ug/L		05/19/1998
bromomethane		<0.50	0.50	ug/L		05/19/1998
2-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
3-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
4-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16127	MW-2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Dichlorodifluoromethane		<0.50	0.50	ug/L		05/19/1998
trans-1,4-Dichloro-2-butene		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethane		0.59	0.50	ug/L		05/19/1998
1,2-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
cis-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
trans-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,3-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
2,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
cis-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
trans-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
Ethanol		<1000	1000	ug/L		05/19/1998
Ethyl acetate		<20.0	20.0	ug/L		05/19/1998
Ethylbenzene		<0.50	0.50	ug/L		05/19/1998
Ethyl methacrylate		<10.0	10.0	ug/L		05/19/1998
2-Hexanone		<50.0	50.0	ug/L		05/19/1998
Hexachlorobutadiene		<0.50	0.50	ug/L		05/19/1998
Iodomethane		<10.0	10.0	ug/L		05/19/1998
Isopropylbenzene		<0.50	0.50	ug/L		05/19/1998
Isopropyl ether (IPE)		<0.50	0.50	ug/L		05/19/1998
p-Isopropyltoluene		<0.50	0.50	ug/L		05/19/1998
Methylene chloride		<0.50	0.50	ug/L		05/19/1998
2-Butanone (MEK)		<50.0	50.0	ug/L		05/19/1998
Methyl-tert-butyl ether (MTBE)		<0.50	0.50	ug/L		05/19/1998
4-Methyl-2-pentanone (MIBK)		<50.0	50.0	ug/L		05/19/1998
Naphthalene		<0.50	0.50	ug/L		05/19/1998
n-Propylbenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16127	MW-2	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
tyrene		<0.50	0.50	ug/L		05/19/1998
,1,1,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
etrachloroethene		<0.50	0.50	ug/L		05/19/1998
oluene		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,2,4-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
,1,1-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
,1,2-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
richloroethene		<0.50	0.50	ug/L		05/19/1998
richlorofluoromethane		<0.50	0.50	ug/L		05/19/1998
,2,3-Trichloropropane		<0.50	0.50	ug/L		05/19/1998
,2,4-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
,3,5-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
inyl acetate		<0.50	0.50	ug/L		05/19/1998
inyl chloride		<0.50	0.50	ug/L		05/19/1998
&p-Xylenes		<0.50	0.50	ug/L		05/19/1998
-Xylene		<0.50	0.50	ug/L		05/19/1998
URR: Toluene-d8		90.0		%		05/19/1998
URR: 1,2-Dichloroethane-d4		111		%		05/19/1998
URR: 4-Bromofluorobenzene		81.0		%		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295 Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16128	MW-3	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
8260B (AQ)	8260B					
Acetone		<50.0	50.0	ug/L		05/19/1998
Acrolein		<50.0	50.0	ug/L		05/19/1998
Acrylonitrile		<50.0	50.0	ug/L		05/19/1998
Benzene		0.85	0.50	ug/L		05/19/1998
Bromobenzene		<0.50	0.50	ug/L		05/19/1998
Bromochloromethane		<0.50	0.50	ug/L		05/19/1998
Bromodichloromethane		<0.50	0.50	ug/L		05/19/1998
Bromoform		<0.50	0.50	ug/L		05/19/1998
Bromomethane		<0.50	0.50	ug/L		05/19/1998
n-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
sec-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
tert-Butylbenzene		<0.50	0.50	ug/L		05/19/1998
Carbon disulfide		<0.50	0.50	ug/L		05/19/1998
Carbon tetrachloride		<0.50	0.50	ug/L		05/19/1998
Chlorobenzene		<0.50	0.50	ug/L		05/19/1998
Chlorodibromomethane		<0.50	0.50	ug/L		05/19/1998
Chloroethane		0.92	0.50	ug/L		05/19/1998
Chloroform		<0.50	0.50	ug/L		05/19/1998
Chloromethane		<0.50	0.50	ug/L		05/19/1998
2-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
4-Chlorotoluene		<0.50	0.50	ug/L		05/19/1998
2-Chloroethyl vinyl ether		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromo-3-chloropropane		<0.50	0.50	ug/L		05/19/1998
1,2-Dibromoethane		<0.50	0.50	ug/L		05/19/1998
Dibromomethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,3-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,4-Dichlorobenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

05/20/1998

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

Hydrologic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16128	MW-3	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Dichlorodifluoromethane		<0.50	0.50	ug/L		05/19/1998
trans-1,4-Dichloro-2-butene		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloroethane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
cis-1,2-Dichloroethene		2.13	0.50	ug/L		05/19/1998
trans-1,2-Dichloroethene		<0.50	0.50	ug/L		05/19/1998
1,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,3-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
2,2-Dichloropropane		<0.50	0.50	ug/L		05/19/1998
1,1-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
cis-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
trans-1,3-Dichloropropene		<0.50	0.50	ug/L		05/19/1998
Ethanol		<1000	1000	ug/L		05/19/1998
Ethyl acetate		<20.0	20.0	ug/L		05/19/1998
Ethylbenzene		<0.50	0.50	ug/L		05/19/1998
Ethyl methacrylate		<10.0	10.0	ug/L		05/19/1998
2-Hexanone		<50.0	50.0	ug/L		05/19/1998
Hexachlorobutadiene		<0.50	0.50	ug/L		05/19/1998
Iodomethane		<10.0	10.0	ug/L		05/19/1998
Isopropylbenzene		<0.50	0.50	ug/L		05/19/1998
Isopropyl ether (IPE)		<0.50	0.50	ug/L		05/19/1998
p-Isopropyltoluene		<0.50	0.50	ug/L		05/19/1998
Methylene chloride		<0.50	0.50	ug/L		05/19/1998
2-Butanone (MEK)		<50.0	50.0	ug/L		05/19/1998
Methyl-tert-butyl ether (MTBE)		<0.50	0.50	ug/L		05/19/1998
4-Methyl-2-pentanone (MIBK)		<50.0	50.0	ug/L		05/19/1998
Naphthalene		<0.50	0.50	ug/L		05/19/1998
n-Propylbenzene		<0.50	0.50	ug/L		05/19/1998

ANALYTICAL REPORT

Joanna Hanson
ENGINEERING TECTONICS
1720 Vargrave Street
Winston Salem, NC 27108

05/20/1998

HydroLogic Job Number: 98.01295

Matrix Type: WATER

Client Project ID: 90-247

SAMPLE NO.	SAMPLE DESCRIPTION	DATE-TIME SAMPLED
16128	MW-3	05/08/1998 10:30

Analyte	Method	Result	Rep. Limit	Units	Flags	Date Analyzed
Styrene		<0.50	0.50	ug/L		05/19/1998
1,1,1,2 Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
1,1,2,2-Tetrachloroethane		<0.50	0.50	ug/L		05/19/1998
Tetrachloroethene		<0.50	0.50	ug/L		05/19/1998
Toluene		<0.50	0.50	ug/L		05/19/1998
1,2,3-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,2,4-Trichlorobenzene		<0.50	0.50	ug/L		05/19/1998
1,1,1-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
1,1,2-Trichloroethane		<0.50	0.50	ug/L		05/19/1998
Trichloroethene		<0.50	0.50	ug/L		05/19/1998
Trichlorofluoromethane		<0.50	0.50	ug/L		05/19/1998
1,2,3-Trichloropropane		<0.50	0.50	ug/L		05/19/1998
1,2,4-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
1,3,5-Trimethylbenzene		<0.50	0.50	ug/L		05/19/1998
Vinyl acetate		<0.50	0.50	ug/L		05/19/1998
Vinyl chloride		<0.50	0.50	ug/L		05/19/1998
m&p-Xylenes		<0.50	0.50	ug/L		05/19/1998
o-Xylene		<0.50	0.50	ug/L		05/19/1998
SURR: Toluene-d8		89.0		%		05/19/1998
SURR: 1,2-Dichloroethane-d4		107		%		05/19/1998
SURR: 4-Bromofluorobenzene		81.0		%		05/19/1998

Chain of Custody Record

HYDROLOGIC, INC.

Page 1 of 1

☒ Asheville, NC (704) 254-5169 ☐ Norcross, GA (770) 368-0636 ☐ Charlotte, NC (704) 392-1164 ☐ Frankfort KY (502) 223-0251 ☐ Morrisville, NC (919) 380-9699

☐ Lumberton, NC (910) 738-6190 ☐ Lexington, SC (803) 796-8989 ☐ Brighton, CO (303) 659-0497 ☐ Macon, GA (912) 757-0811 ☐ Orlando, FL (407) 851-2560

Client: Engineering Tect.
Report Address: 1720 Yarmouth St
Salem, NC 27107
Attn: Donna Hanson
Phone No.: 336-724-[redacted]
Fax No.: 336-724-7095

Project No.: 90-247
Invoice Address: Same
Attn:
Sampled By: JH
P.O. No: 90-247
State Samples Collected: JH

TURNAROUND TIME
☐ 24 Hours ☐ 48 Hours
☐ 5 Days ☒ 10 Days Date Needed:

REQUESTED PARAMETERS

LAB CODE I.D.
A = Asheville, NC
C = Charlotte, NC
D = Denver, CO
E = Lexington, SC
G = Macon, GA
K = Frankfort, KY
L = Lumberton, NC
M = Morrisville, NC
N = Norcross, GA
O = Orlando, FL
S = Subcontracted

Sample ID	Date	Time	Comp/Grab	Matrix	Containers	EPA method 8260	Specific conductance	Chloride, Fluoride	Nitrate, pH, TDS	Sulfate, Arsenic	Barium, Cadmium	Chromium, Lead	Mercury, Selenium	Silver	← Preserv.	REMARKS
Stream 1	5/8/98	10:30	grab	H2O	3	X	X	X	X	X	X	X	X	X		
Stream 2					4											Watch holding times on Nitrates (11)
MW-1																
MW-2																
MW-3																
CMW-1																Omits!
CMW-2																
CMW-3																

COMMENTS:

Relinquished By:	Date	Time	Received By:	Date	Time
[signature]	5/8/98	5:20	[signature]	5/8/98	1:03
Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time

ID: MAY 28'98 7:17 No.003 P.09

WBM
6/23

ENGINEERING TECTONICS, P.A.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
P.O. Box I, Winston-Salem, NC 27108 (336) 724-6994

JUN 1998
Received
Waste Management
Division

Friday, June 19, 1998

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 Reports
Avery County C and D and former sanitary landfill Sites
Newland, North Carolina
Project No. 90-247

Dear Mr. Myers,

Please find enclosed copies of groundwater sampling reports for the Avery County sanitary and C and D landfills in Newland, North Carolina. If you have any questions concerning the above, please contact me at (336) 724-6994 extension 107. The next sampling event for the above sites is scheduled for October of 1998.

Sincerely,

ENGINEERING TECTONICS, P.A.

Daniel Bowser, PG
Senior Geologist

Enc.