BC | 8:18:08 | DN

34-12
6-2-99

HDR Engineering, Inc.
Project Quality Control Report

Project Number: 00162-090-018
Project Name: WINSTON-SALEM C&D
Project Manager: JOE READLING
Project Reviewer: CURT WELTY

Review Deadline: 6/18/99
Date Transmitted: 6/15/99
Actual Review Date:
Hours Allocated: 2.0
Actual:

☑ Discipline or Area of Review: TECHNICAL, HYDROGEOLOGIC

☑ Level of Review COMPLETENESS

Type of Project/Phase:

☒ Study/Report
- ☐ Work Plan
- ☐ Field Activities/Data Collection
- ☐ Concept/Outline
- ☐ Draft
- ☐ Final

☐ Design
- ☐ Preliminary Design
- ☐ Design Development
- ☐ Final Design

☐ Construction
- ☐ Progress Review
  _____% Complete

☐ Start-Up and Demonstration
- ☐ O & M
- ☐ Procedure Protocols

☒ Review Comments
- ☐ On This Form
- ☐ Attached
- ☐ On Plans & Specifications
- ☒ In Study/Report

☐ After Review Send Copies To:
- ☐ Project Manager
- ☐ Charlotte QA/QC Coordinator: S. Crittenden

Review Comments:

SPRING 1999 SEMIANNUAL GROUND-WATER SAMPLING RESULTS FOR OLD SALISBURY ROAD C&D LANDFILL.

Comments/corrections are noted in report.

cc: P.M., file, _____ Signature: Curtis M. Welty 6/18/99

June 22, 1999

HDR

Mr. Bobby Lutfy
North Carolina Department of Environment
and Natural Resources
Division of Solid Waste Management
Solid Waste Section
P. O. Box 27687
Raleigh, North Carolina 27611-7687

Re: Spring 1999 Semiannual Ground-Water Sampling Analytical Results
Winston-Salem Construction and Demolition Landfill (#34-12)
Forsyth County, North Carolina
HDR Project No. 00162-090-018

Dear Mr. Lutfy:

HDR Engineering, Inc. of the Carolinas (HDR) is hereby submitting, on behalf of the City of Winston-Salem Utilities Division (City), the ground-water analytical results for the Spring 1999 results of ground-water sampling at the C&D Landfill located in Forsyth County, North Carolina.

Ground-water samples were collected from on-site detection monitoring wells MW-1R, MW-2R, MW-4R, MW-5R, and MW-7 on June 2, 1999, for the eight RCRA metals and Appendix I volatile organic compound (VOC) analysis. Trip and equipment blanks were also included for QA/QC purposes. Field measurements of pH, specific conductance, and temperature were also recorded during pre-sampling well purging. These measurements were recorded on field forms, which have been attached to the Report of Laboratory Analysis. Ground-water samples were not collected from ground-water monitoring wells MW-3 and MW-6 during this sampling visit. Ground-water monitoring wells MW-3 and MW-6 are presently located within the proposed footprints of Phase II and Phase III of the landfill expansion plan. Approximately 15 to 20 feet of overburden has been removed from the vicinity of MW-3 leaving its wellhead inaccessible for sample collection. In addition, the well head of ground-water monitoring well MW-6 was found to be damaged during the sampling visit to the point that a bailer would not pass through to the water table. Both of these wells have been scheduled for permanent abandonment (in June 1999) in accordance with NCAC Title 15A, Subchapter 2C, Section .0100 abandonment procedures, and as approved by the Solid Waste Section. Replacements for these monitoring wells will also be installed outside the limits of future landfill construction at the time of the aforementioned abandonment. Well installation and abandonment records will be submitted to the Solid Waste Section upon completion.

Based on past ground-water flow characteristics for the site, ground-water monitoring well MW-1R is hydraulically upgradient of the landfill and is therefore considered as "background" for the site.

HDR Engineering, Inc.
of the Carolinas

Employee-owned

Suite 1400
128 S. Tryon Street
Charlotte, North Carolina
28202-5001

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704 338-6700
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The metals arsenic, barium, chromium, and lead were detected in the ground water during this round of sampling. The concentrations detected were low and are reflective of the naturally-occurring trace metals typically present in the saprolite of this region. Lead in MW-1R, MW-4R, MW-5R, and MW-7 was detected at concentrations which slightly exceed the 2L ground-water standard of 0.015 mg/l. Likewise, chromium was detected in MW-1R, MW-4R, and MW-7 at concentrations which slightly exceed the 2L ground-water standard of 0.05 mg/l. Note that these exceedances occur in both the background well and the downgradient wells. As reflected by the Pre-sampling Well Purging forms, the presence of these trace metal detections is due to the slight lingering well turbidity in each well.

A trace of methylene chloride (dichloromethane) was detected in all monitoring wells, including background well MW-1R during this sampling event. The detection of methylene chloride is considered to be a probable laboratory contaminant, since this compound has never been detected prior to this event and was identified in laboratory blanks during routine QA/QC procedures. A trace of methylene chloride was also detected in the equipment blank.

It is expected that turbidity will continue to decrease as purging and sampling of the wells continues. HDR plans to redevelop all ground-water monitoring wells prior to the next scheduled semiannual sampling event to reduce the effects of lingering well turbidity. The Report of Laboratory Analysis for this sampling event at the Winston-Salem C&D Landfill is attached to this letter (including the Chain-of-Custody Record and field purging forms). Table 1-1 is also attached to this report and summarizes the results of all sampling events performed to date at the landfill.

If you have any questions or comments concerning the information summarized in this letter or in the attached analytical data report, please do not hesitate to contact me at (704) 338-6832.

Sincerely,

HDR Engineering, Inc. of the Carolinas

John R. Isham, P.G.
Project Hydrogeologist

JRI/nt

Attachments: Table 1-1, Summary of Ground-Water Analytical Results
Report of Laboratory Analysis (w/Chain-of-Custody Record)
Pre-sampling Well Purging Forms
Phase I Ground-Water Monitoring Well Locations

cc: Ed Gibson, Winston-Salem Utilities Division

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-1R

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/5/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0084
Barium	0.224	0.18	0.10	0.29	0.10	0.16	0.43
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.010	0.006	0.003	0.011	0.049	0.012	0.16
Lead	0.006	<0.005	<0.005	0.012	<0.005	<0.005	0.025
Mercury	0.0018	0.0002	<00002	<0.0002	<0.0002	<0.0002	<0.0002
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	<0.001	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
Methyl Chloride	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<10
Acetone	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Methyl Iodide	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100
Dichloromethane	<5	<5	<5	<5	<5	<5	11
Carbon Disulfide	23	<5	<5	<5	<5	28	<5
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	<100
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Xylenes (total)	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	<5

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-2R

Parameter	1/17/96	10/28/96	5/13/97	10/30/97	5/5/98	11/5/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005
Barium	0.35	0.16	0.20	0.34	0.19	1.1	0.15
Cadmium	<0.010	<0.001	0.003	<0.001	<0.001	<0.001	<0.001
Chromium	0.012	0.009	0.004	0.043	0.034	0.21	0.0078
Lead	0.026	0.008	0.014	0.031	0.019	0.068	<0.005
Mercury	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	0.006	<0.005	<0.002	<0.002	<0.002
Methyl Chloride	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<10
Acetone	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Methyl Iodide	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100
Dichloromethane	<5	<5	<5	<5	<5	<5	13
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50
Methyl Ethyl Ketone	86	<100	<100	<100	<100	<100	<100
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Xylenes (total)	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	<5

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-3

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/5/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-----
Barium	1.23	0.79	0.80	0.62	0.86	1.4	-----
Cadmium	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	-----
Chromium	0.009	0.020	0.028	0.016	0.025	0.077	-----
Lead	0.015	0.015	0.027	0.026	0.032	0.039	-----
Mercury	0.0007	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	-----
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-----
Silver	<0.001	<0.005	<0.005	<0.005	<0.002	<0.002	-----
Methyl Chloride	<10	<10	<10	<10	<10	<10	-----
Vinyl Chloride	<10	<10	<10	<10	<10	<10	-----
Bromomethane	<10	<10	<10	<10	<10	<10	-----
Chloroethane	<10	<10	<10	<10	<10	<10	-----
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	-----
Acetone	<100	<100	<100	<100	<100	<100	-----
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
Methyl Iodide	<5	<5	<5	<5	<5	<5	-----
Acrylonitrile	<100	<100	<100	<100	<100	<100	-----
Dichloromethane	<5	<5	<5	<5	<5	<5	-----
Carbon Disulfide	<5	<5	<5	<5	<5	<5	-----
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	-----
Vinyl Acetate	<50	<50	<50	<50	<50	<50	-----
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	-----
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
Chloroform	<5	<5	<5	<5	<5	<5	-----
Bromochloromethane	<5	<5	<5	<5	<5	<5	-----
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	-----
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	-----
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	-----
Benzene	<5	<5	<5	<5	<5	<5	-----
Trichloroethene	<5	<5	<5	<5	<5	<5	-----
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	-----
Dibromomethane	<5	<5	<5	<5	<5	<5	-----
Bromodichloromethane	<5	<5	<5	<5	<5	<5	-----
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	-----
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	-----
Toluene	<5	<5	<5	<5	<5	<5	-----
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	-----
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	-----
2-Hexanone	<50	<50	<50	<50	<50	<50	-----
Dibromochloromethane	<5	<5	<5	<5	<5	<5	-----
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	-----
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	-----
Chlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	-----
Ethylbenzene	<5	<5	<5	<5	<5	<5	-----
Xylenes (total)	<5	<5	<5	<5	<5	<5	-----
Styrene	<5	<5	<5	<5	<5	<5	-----
Bromoform	<5	<5	<5	<5	<5	<5	-----
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	-----
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	-----
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	-----
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	-----

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-4R

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/6/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012
Barium	0.595	0.72	0.28	0.65	0.85	2.0	0.95
Cadmium	0.007	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	0.021	0.047	<0.002	0.055	0.13	0.30	0.11
Lead	0.017	0.016	0.012	0.029	0.043	0.076	0.05
Mercury	0.0017	0.0003	<0.0002	<0.0002	<0.0002	0.00021	<0.0002
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	<0.001	<0.005	0.006	<0.005	<0.002	<0.002	<0.002
Methyl Chloride	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<10
Acetone	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Methyl Iodide	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100
Dichloromethane	<5	<5	<5	<5	<5	<5	10
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	<100
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Xylenes (total)	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	<5

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-5R

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/6/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005
Barium	1.00	0.62	0.33	0.61	0.82	0.48	0.24
Cadmium	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	0.096	0.043	0.070	0.016	0.17	0.096	0.038
Lead	0.019	0.020	0.014	0.031	0.069	0.029	0.016
Mercury	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	<0.001	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
Methyl Chloride	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<10
Acetone	<100	<100	<100	<100	<100	? 150	<100
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Methyl Iodide	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100
Dichloromethane	<5	<5	<5	<5	<5	<5	10 ✓
Carbon Disulfide	<5	<5	<5	<5	<5	✓ 25	<5
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	<100
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Xylenes (total)	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	<5

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-6

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/5/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-----
Barium	1.40	0.59	0.30	0.26	0.36	0.16	-----
Cadmium	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	-----
Chromium	0.012	0.010	0.021	0.014	0.033	0.012	-----
Lead	0.018	0.011	0.014	0.014	0.020	<0.005	-----
Mercury	0.0014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-----
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-----
Silver	<0.001	<0.005	<0.005	<0.005	<0.002	<0.002	-----
Methyl Chloride	<10	<10	<10	<10	<10	<10	-----
Vinyl Chloride	<10	<10	<10	<10	<10	<10	-----
Bromomethane	<10	<10	<10	<10	<10	<10	-----
Chloroethane	<10	<10	<10	<10	<10	<10	-----
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	-----
Acetone	<100	<100	<100	<100	<100	<100	-----
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
Methyl Iodide	<5	<5	<5	<5	<5	<5	-----
Acrylonitrile	<100	<100	<100	<100	<100	<100	-----
Dichloromethane	<5	<5	<5	<5	<5	<5	-----
Carbon Disulfide	<5	<5	<5	<5	<5	<5	-----
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	-----
Vinyl Acetate	<50	<50	<50	<50	<50	<50	-----
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	-----
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	-----
Chloroform	<5	<5	<5	<5	<5	<5	-----
Bromochloromethane	<5	<5	<5	<5	<5	<5	-----
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	-----
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	-----
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	-----
Benzene	<5	<5	<5	<5	<5	<5	-----
Trichloroethene	<5	<5	<5	<5	<5	<5	-----
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	-----
Dibromomethane	<5	<5	<5	<5	<5	<5	-----
Bromodichloromethane	<5	<5	<5	<5	<5	<5	-----
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	-----
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	-----
Toluene	<5	<5	<5	<5	<5	<5	-----
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	-----
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	-----
2-Hexanone	<50	<50	<50	<50	<50	<50	-----
Dibromochloromethane	<5	<5	<5	<5	<5	<5	-----
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	-----
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	-----
Chlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	-----
Ethylbenzene	<5	<5	<5	<5	<5	<5	-----
Xylenes (total)	<5	<5	<5	<5	<5	<5	-----
Styrene	<5	<5	<5	<5	<5	<5	-----
Bromoform	<5	<5	<5	<5	<5	<5	-----
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	-----
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	-----
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	-----
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	-----
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	-----

TABLE 1-1
Summary of Ground-Water Analytical Results
Winston-Salem C&D Landfill
MW-7

Parameter	1/17/96	10/24/96	5/13/97	10/30/97	5/5/98	11/6/98	6/2/99
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0098
Barium	1.93	0.97	0.75	1.8	1.2	1.3	0.96
Cadmium	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	0.028	0.021	0.18	0.41	0.43	0.35	0.19
Lead	0.017	0.006	0.023	0.053	0.038	0.036	0.03
Mercury	0.0014	0.0004	<0.0002	0.0002	<0.002	<0.002	<0.0002
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	<0.001	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
Methyl Chloride	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	<10	<10	<10	<10	<10	<10	<10
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Chloroethane	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<10
Acetone	<100	<100	<100	<100	<100	<100	<100
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Methyl Iodide	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	<100	<100	<100	<100	<100	<100	<100
Dichloromethane	<5	<5	<5	<5	<5	<5	10
Carbon Disulfide	<5	<5	<5	<5	<5	9	<5
Trans-1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50
Methyl Ethyl Ketone	<100	<100	<100	<100	<100	<100	<100
Cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroporpane	<5	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-Pentanone	<50	<50	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Trans-1,3-Dichloro-1-Propene	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Xylenes (total)	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5	<5
Trans-1,4-Dichloro-2-Butene	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	<5	<5	<5	<5	<5	<5	<5

Pace Analytical

Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

June 11, 1999

RECEIVED
JUN 14 1999
HDR ENGINEERING, INC.
OF THE CAROLINAS

Mr. John Isham
HDR Engineering
128 South Tryon Street
Suite 1400
Charlotte, NC 28202

RE: Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Dear Mr. Isham:

Enclosed are the results of analyses for sample(s) received by the laboratory on June 2, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bonnie Hervey
Project Manager

Enclosures

Laboratory Certification IDs	
NC Wastewater	12
NC Drinking Water	37706
SC	99006

REPORT OF LABORATORY ANALYSIS

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Laboratory Certification IDs	
KY Drinking Water	90090
TN UST List	
VA Drinking Water	213

Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

Pace Analytical

DATE: 06/11/99
PAGE: 1

Engineering
South Tryon Street
e 1400
lotte, NC 28202

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

: Mr. John Isham
e: (704)338-1800

d results are reported on a dry weight basis

Sample No: 92480169 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-1R Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
ils							
tals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	ND	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	0.15	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	0.0078	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	ND	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
ercury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
MS Volatiles							
C/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	13	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	

Laboratory Certification IDs
NC Wastewater 12
NC Drinking Water 37706
SC 99006

REPORT OF LABORATORY ANALYSIS

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Laboratory Certification IDs
KY Drinking Water 90090
TN UST List
VA Drinking Water 213

Pace Analytical

Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

DATE: 06/11/99

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

e Sample No: 92480169 Date Collected: 06/02/99 Matrix: Water
ent Sample ID: MW-1R Date Received: 06/02/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	97	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	92	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	

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Pace Analytical

DATE: 06/11/99

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Sample No: 92480169 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-1R Date Received: 06/02/99

neters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
4-Bromofluorobenzene (S)	102	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

e Sample No: 92480177 Date Collected: 06/02/99 Matrix: Water
ent Sample ID: MW-2R Date Received: 06/02/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
als							
etals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	0.0084	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	0.43	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	0.16	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	0.025	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
lercury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
'MS Volatiles							
C/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	11	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Sample No: 92480177 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-2R Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	96	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	100	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

e Sample No: 92480185 Date Collected: 06/02/99 Matrix: Water
ent Sample ID: MW-4R Date Received: 06/02/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
als							
etals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	0.012	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	0.95	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	0.11	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	0.05	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
ercury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
IS Volatiles							
/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	10	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Sample No: 92480185 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-4R Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	99	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	100	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Sample No: 92480193 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-5R Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
ls							
tals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	ND	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	0.24	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	0.038	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	0.016	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
rcury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
S Volatiles							
/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	10	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

Sample No: 92480193 Date Collected: 06/02/99 Matrix: Water
nt Sample ID: MW-5R Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	99	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	101	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

:e Sample No: 92480201 Date Collected: 06/02/99 Matrix: Water
ient Sample ID: MW-7R Date Received: 06/02/99

·ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
:als							
letals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	0.0098	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	0.96	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	0.19	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	0.03	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
lercury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
'MS Volatiles							
:C/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	10	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

e Sample No: 92480201 Date Collected: 06/02/99 Matrix: Water
ent Sample ID: MW-7R Date Received: 06/02/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	101	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	100	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

e Sample No: 92480219 Date Collected: 06/02/99 Matrix: Water
ent Sample ID: EQUIPMENT BLANK Date Received: 06/02/99

ameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
als							
etals by Trace ICP	Method: EPA 6010				Prep Method: EPA 3010		
Arsenic	ND	mg/l	0.005	06/09/99	TYM	7440-38-2	
Barium	ND	mg/l	0.005	06/09/99	TYM	7440-39-3	
Cadmium	ND	mg/l	0.001	06/09/99	TYM	7440-43-9	
Chromium	ND	mg/l	0.002	06/09/99	TYM	7440-47-3	
Lead	ND	mg/l	0.005	06/09/99	TYM	7439-92-1	
Selenium	ND	mg/l	0.005	06/09/99	TYM	7782-49-2	
Silver	ND	mg/l	0.002	06/09/99	TYM	7440-22-4	
Date Digested				06/04/99			
ercury in Water	Method: EPA 7470				Prep Method: EPA 7470		
Mercury	ND	mg/l	0.0002	06/10/99	TYM	7439-97-6	
IS Volatiles							
:/MS VOCs by 8260	Method: EPA 8260				Prep Method: EPA 8260		
Chloromethane	ND	ug/l	10	06/03/99	VFT	74-87-3	
Vinyl Chloride	ND	ug/l	10	06/03/99	VFT	75-01-4	
Bromomethane	ND	ug/l	10	06/03/99	VFT	74-83-9	
Chloroethane	ND	ug/l	10	06/03/99	VFT	75-00-3	
Trichlorofluoromethane	ND	ug/l	10	06/03/99	VFT	75-69-4	
Acetone	ND	ug/l	100	06/03/99	VFT	67-64-1	
1,1-Dichloroethene	ND	ug/l	5	06/03/99	VFT	75-35-4	
Iodomethane	ND	ug/l	5	06/03/99	VFT	74-88-4	
Acrylonitrile	ND	ug/l	100	06/03/99	VFT	107-13-1	
Methylene Chloride	11	ug/l	5	06/03/99	VFT	75-09-2	1
Carbon Disulfide	ND	ug/l	5	06/03/99	VFT	75-15-0	
trans-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-60-5	
1,1-Dichloroethane	ND	ug/l	5	06/03/99	VFT	75-34-3	
Vinyl Acetate	ND	ug/l	50	06/03/99	VFT	108-05-4	
2-Butanone	ND	ug/l	100	06/03/99	VFT	78-93-3	
cis-1,2-Dichloroethene	ND	ug/l	5	06/03/99	VFT	156-59-2	
Chloroform	ND	ug/l	5	06/03/99	VFT	67-66-3	
Bromochloromethane	ND	ug/l	5	06/03/99	VFT	74-97-5	
1,1,1-Trichloroethane	ND	ug/l	5	06/03/99	VFT	71-55-6	
1,2-Dichloroethane	ND	ug/l	5	06/03/99	VFT	107-06-2	
Carbon Tetrachloride	ND	ug/l	5	06/03/99	VFT	56-23-5	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

: Sample No: 92480219 Date Collected: 06/02/99 Matrix: Water
:nt Sample ID: EQUIPMENT BLANK Date Received: 06/02/99

meters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
Benzene	ND	ug/l	5	06/03/99	VFT	71-43-2	
Trichloroethene	ND	ug/l	5	06/03/99	VFT	79-01-6	
1,2-Dichloropropane	ND	ug/l	5	06/03/99	VFT	78-87-5	
Dibromomethane	ND	ug/l	5	06/03/99	VFT	74-95-3	
Bromodichloromethane	ND	ug/l	5	06/03/99	VFT	75-27-4	
4-Methyl-2-Pentanone	ND	ug/l	50	06/03/99	VFT	108-10-1	
cis-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-01-5	
Toluene	ND	ug/l	5	06/03/99	VFT	108-88-3	
trans-1,3-Dichloropropene	ND	ug/l	5	06/03/99	VFT	10061-02-6	
1,1,2-Trichloroethane	ND	ug/l	5	06/03/99	VFT	79-00-5	
2-Hexanone	ND	ug/l	50	06/03/99	VFT	591-78-6	
Dibromochloromethane	ND	ug/l	5	06/03/99	VFT	124-48-1	
Tetrachloroethene	ND	ug/l	5	06/03/99	VFT	127-18-4	
1,2-Dibromoethane	ND	ug/l	5	06/03/99	VFT	106-93-4	
Chlorobenzene	ND	ug/l	5	06/03/99	VFT	108-90-7	
1,1,1,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	630-20-6	
Ethylbenzene	ND	ug/l	5	06/03/99	VFT	100-41-4	
m&p-Xylene	ND	ug/l	10	06/03/99	VFT	7816-60-0	
Styrene	ND	ug/l	5	06/03/99	VFT	100-42-5	
o-Xylene (1,2-Dimethylbenzene)	ND	ug/l	5	06/03/99	VFT	95-47-6	
Bromoform	ND	ug/l	5	06/03/99	VFT	75-25-2	
1,1,2,2-Tetrachloroethane	ND	ug/l	5	06/03/99	VFT	79-34-5	
1,2,3-Trichloropropane	ND	ug/l	5	06/03/99	VFT	96-18-4	
trans-1,4-Dichloro-2-Butene	ND	ug/l	5	06/03/99	VFT	110-57-6	
1,4-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	106-46-7	
1,2-Dichlorobenzene	ND	ug/l	5	06/03/99	VFT	95-50-1	
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	06/03/99	VFT	96-12-8	
Dibromofluoromethane (S)	102	%		06/03/99	VFT	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%		06/03/99	VFT	17060-07-0	
Toluene-d8 (S)	101	%		06/03/99	VFT	2037-26-5	
4-Bromofluorobenzene (S)	100	%		06/03/99	VFT	460-00-4	

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Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

AMETER FOOTNOTES

Not Detected
Not Calculable
Pace Reporting Limit
Surrogate
Possible laboratory contaminant.

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QUALITY CONTROL DATA

DATE: 06/11/99

Engineering
South Tryon Street
te 1400
rlotte, NC 28202

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

n: Mr. John Isham
ne: (704)338-1800

Batch ID: 13499
lysis Method: EPA 8260
ociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

QC Batch Method: EPA 8260
Analysis Description: GC/MS VOCs by 8260

HOD BLANK: 92480698
ociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

ameter	Units	Method Blank Result	PRL	Footnotes
oromethane	ug/l	ND	10	
yl Chloride	ug/l	ND	10	
momethane	ug/l	ND	10	
oroethane	ug/l	ND	10	
chlorofluoromethane	ug/l	ND	10	
tone	ug/l	ND	100	
-Dichloroethene	ug/l	ND	5	
omethane	ug/l	ND	5	
ylonitrile	ug/l	ND	100	
hylene Chloride	ug/l	ND	5	
bon Disulfide	ug/l	ND	5	
ns-1,2-Dichloroethene	ug/l	ND	5	
-Dichloroethane	ug/l	ND	5	
yl Acetate	ug/l	ND	50	
utanone	ug/l	ND	100	
-1,2-Dichloroethene	ug/l	ND	5	
oroform	ug/l	ND	5	
mochloromethane	ug/l	ND	5	
,1-Trichloroethane	ug/l	ND	5	
-Dichloroethane	ug/l	ND	5	
bon Tetrachloride	ug/l	ND	5	
zene	ug/l	ND	5	
chloroethene	ug/l	ND	5	
-Dichloropropane	ug/l	ND	5	

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QUALITY CONTROL DATA

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

THOD BLANK: 92480698
sociated Pace Samples:

92480169 92480177 92480185 92480193 92480201 92480219

·ameter	Units	Method Blank Result	PRL	Footnotes
romomethane	ug/l	ND	5	
modichloromethane	ug/l	ND	5	
lethyl-2-Pentanone	ug/l	ND	50	
-1,3-Dichloropropene	ug/l	ND	5	
uene	ug/l	ND	5	
ins-1,3-Dichloropropene	ug/l	ND	5	
,2-Trichloroethane	ug/l	ND	5	
lexanone	ug/l	ND	50	
romochloromethane	ug/l	ND	5	
rachloroethene	ug/l	ND	5	
-Dibromoethane	ug/l	ND	5	
orobenzene	ug/l	ND	5	
,1,2-Tetrachloroethane	ug/l	ND	5	
ylbenzene	ug/l	ND	5	
-Xylene	ug/l	ND	10	
rene	ug/l	ND	5	
ylene (1,2-Dimethylbenzene)	ug/l	ND	5	
moform	ug/l	ND	5	
,2,2-Tetrachloroethane	ug/l	ND	5	
,3-Trichloropropane	ug/l	ND	5	
ns-1,4-Dichloro-2-Butene	ug/l	ND	5	
-Dichlorobenzene	ug/l	ND	5	
-Dichlorobenzene	ug/l	ND	5	
-Dibromo-3-Chloropropane	ug/l	ND	5	
romofluoromethane (S)	%	97		
-Dichloroethane-d4 (S)	%	92		
uene-d8 (S)	%	101		
romofluorobenzene (S)	%	101		

RIX SPIKE & MATRIX SPIKE DUPLICATE: 92480714 92480722

ameter	Units	92478791	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
-Dichloroethene	ug/l	65.07	50	120.2	110	121.4	113	2	
zene	ug/l	0	50	54.03	108	55.63	111	3	
chloroethene	ug/l	0	50	57.58	115	59.54	119	3	
uene	ug/l	0	50	54.38	109	55.88	112	3	

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QUALITY CONTROL DATA

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

TRIX SPIKE & MATRIX SPIKE DUPLICATE: 92480714 92480722

rameter	Units	92478791	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
lorobenzene	ug/l	0	50	54.46	109	54.80	110	1	
bromofluoromethane (S)					99		100		
2-Dichloroethane-d4 (S)					96		100		
luene-d8 (S)					101		101		
3romofluorobenzene (S)					101		102		

3ORATORY CONTROL SAMPLE: 92480706

rameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
loromethane	ug/l	50	25.53	51.1	
nyl Chloride	ug/l	50	28.49	57.0	
omomethane	ug/l	50	50.21	100	
loroethane	ug/l	50	47.41	94.8	
ichlorofluoromethane	ug/l	50	46.05	92.1	
etone	ug/l	100	102.0	102	
1-Dichloroethene	ug/l	50	53.68	107	
domethane	ug/l	100	112.6	113	
rylonitrile	ug/l	500	471.3	94.3	
thylene Chloride	ug/l	50	51.68	103	
rbon Disulfide	ug/l	100	105.7	106	
ans-1,2-Dichloroethene	ug/l	50	56.60	113	
1-Dichloroethane	ug/l	50	50.43	101	
nyl Acetate	ug/l	100	88.51	88.5	
3utanone	ug/l	100	99.80	99.8	
s-1,2-Dichloroethene	ug/l	50	54.12	108	
loroform	ug/l	50	54.92	110	
omochloromethane	ug/l	50	55.06	110	
1,1-Trichloroethane	ug/l	50	56.65	113	
2-Dichloroethane	ug/l	50	52.16	104	
rbon Tetrachloride	ug/l	50	60.82	122	
nzene	ug/l	50	52.90	106	
ichloroethene	ug/l	50	57.86	116	
2-Dichloropropane	ug/l	50	52.68	105	
bromomethane	ug/l	50	52.62	105	
omodichloromethane	ug/l	50	57.62	115	
4ethyl-2-Pentanone	ug/l	100	103.2	103	
s-1,3-Dichloropropene	ug/l	50	51.66	103	
luene	ug/l	50	53.50	107	
ans-1,3-Dichloropropene	ug/l	50	55.47	111	

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QUALITY CONTROL DATA

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

ORATORY CONTROL SAMPLE: 92480706

·ameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
..2-Trichloroethane	ug/l	50	50.79	102	
lexanone	ug/l	100	103.6	104	
romochloromethane	ug/l	50	55.85	112	
rachloroethene	ug/l	50	56.32	113	
-Dibromoethane	ug/l	50	53.08	106	
orobenzene	ug/l	50	52.82	106	
..1,2-Tetrachloroethane	ug/l	50	57.10	114	
ylbenzene	ug/l	50	51.49	103	
-Xylene	ug/l	100	105.9	106	
rene	ug/l	50	52.79	106	
ylene (1,2-Dimethylbenzene)	ug/l	50	53.00	106	
moform	ug/l	50	55.60	111	
..2,2-Tetrachloroethane	ug/l	50	52.95	106	
,3-Trichloropropane	ug/l	50	53.19	106	
ns-1,4-Dichloro-2-Butene	ug/l	50	56.07	112	
-Dichlorobenzene	ug/l	50	54.32	109	
-Dichlorobenzene	ug/l	50	53.14	106	
-Dibromo-3-Chloropropane	ug/l	50	56.66	113	
romofluoromethane (S)				98	
-Dichloroethane-d4 (S)				96	
uene-d8 (S)				101	
romofluorobenzene (S)				100	

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Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Tel: 704-875-9092
Fax: 704-875-9091

Pace Analytical

QUALITY CONTROL DATA

DATE: 06/11/99

ℓ Engineering
3 South Tryon Street
ite 1400
ırlotte, NC 28202

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

:n: Mr. John Isham
ɔne: (704)338-1800

Batch ID: 13529
ılysis Method: EPA 6010
sociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

QC Batch Method: EPA 3010
Analysis Description: Metals by Trace ICP

THOD BLANK: 92482173
sociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

·ameter	Units	Method Blank Result	PRL	Footnotes
senic	mg/l	ND	0.005	
·ium	mg/l	ND	0.005	
dmium	mg/l	ND	0.001	
·omium	mg/l	ND	0.002	
ad	mg/l	ND	0.005	
lenium	mg/l	ND	0.005	
lver	mg/l	ND	0.002	

TRIX SPIKE & MATRIX SPIKE DUPLICATE: 92482181 92482199

·ameter	Units	92478320	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
senic	mg/l	0.0004180	0.2500	0.2610	104	0.2580	103	1	
·ium	mg/l	0.01060	0.2500	0.2670	103	0.2630	101	2	
dmium	mg/l	0.0003630	0.2500	0.2560	102	0.2520	101	2	
·omium	mg/l	0.001730	0.2500	0.2600	103	0.2550	101	2	
ad	mg/l	0	0.2500	0.2480	99.2	0.2440	97.6	2	
lenium	mg/l	0.0005400	0.2500	0.2440	97.4	0.2380	95.0	2	
lver	mg/l	0.0007800	0.2500	0.2610	104	0.2560	102	2	

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QUALITY CONTROL DATA

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

RATORY CONTROL SAMPLE: 92482215

meter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
nic	mg/l	0.2500	0.2520	101	
um	mg/l	0.2500	0.2570	103	
ium	mg/l	0.2500	0.2560	102	
mium	mg/l	0.2500	0.2550	102	
	mg/l	0.2500	0.2490	99.6	
nium	mg/l	0.2500	0.2380	95.2	
er	mg/l	0.2500	0.2560	102	

LE DUPLICATE: 92482207

meter	Units	92480169	Dup. Result	RPD	Footnotes
nic	mg/l	ND	ND	NC	
um	mg/l	0.1500	0.1500	1	
ium	mg/l	ND	ND	NC	
mium	mg/l	0.007800	0.008600	9	
	mg/l	ND	ND	NC	
nium	mg/l	ND	ND	NC	
er	mg/l	ND	ND	NC	

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Huntersville, NC 28078
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Fax: 704-875-9091

QUALITY CONTROL DATA

DATE: 06/11/99

: Engineering
| South Tryon Street
te 1400
rlotte, NC 28202

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

n: Mr. John Isham
ne: (704)338-1800

Batch ID: 13710
lysis Method: EPA 7470
ociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

QC Batch Method: EPA 7470
Analysis Description: Mercury in Water

HOD BLANK: 92488626
ociated Pace Samples: 92480169 92480177 92480185 92480193 92480201 92480219

ameter	Units	Method Blank Result	PRL	Footnotes
cury	mg/l	ND	0.0002	

RIX SPIKE & MATRIX SPIKE DUPLICATE: 92488634 92488642

ameter	Units	92478601	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
cury	mg/l	0	0.0050	0.004540	90.8	0.004710	94.2	4	

ORATORY CONTROL SAMPLE: 92488667

ameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
cury	mg/l	0.0050	0.005180	104	

PLE DUPLICATE: 92488659

ameter	Units	92480169	Dup. Result	RPD	Footnotes
cury	mg/l	ND	ND	NC	

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Tel: 704-875-9092
Fax: 704-875-9091

Pace Project Number: 926609
Client Project ID: W-S Landfill 00162-090-018

.ITY CONTROL DATA PARAMETER FOOTNOTES

:istent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

Not Detected
Not Calculable
Pace Reporting Limit
Relative Percent Difference
Surrogate

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HDR
Suite 1400
128 S. Tryon Street
Charlotte, NC 28202-5001
704 338-6700

HDR Engineering, Inc.

Chain of Custody Record

Project No.: 00162-090-013
Project Name: WINSTON-SALEM C&D LANDFILL
☐ Environmental
Hazardous: ☒ Low ☐ Med ☐ High

Samplers: (Signature) John R. Isham
(Printed) JOHN R. ISHAM

Lab: Address: PACE ANALYTICAL, 9800 KINCEY AVE, STE 100, HUNTERSVILLE, NC 28078

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	App. I VOCs	RCRA METALS	RES CL				Remarks
92480169 MW-1R	6/2	845		X	MONITORING WELL	6	4	1	1				926607 OBTAIN APPROPRIATE DETECTION
92480177 MW-2R	6/2	0930		X		6	4	1	1				LIMITS for METALS.
~~MW-3~~	~~6/2~~			~~X~~									NOT SAMPLED
92480185 MW-4R	6/2	1150		X		6	4	1	1				BAD VOA LID
92480193 MW-5R	6/2	1045		X		6	4	1	1				
~~92480201 MW-6~~	~~6/2~~			~~X~~									NOT SAMPLED
92480201 MW-7R	6/2	1355		X		6	4	1	1				
~~TRIP BLANK~~					~~SAMPLE COOLER~~								
92480219 EQUIPMENT BLK	6/2				SAMPLE BAILER	6	4	1	1				

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
John R. Isham	6/2	1545	[illegible]		6/1/99	1200hr	
(Printed) JOHN R. ISHAM	HDR		(Printed)	(Printed)			(Printed)

Relinquished By: (Signature)	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Results to: SAME AS ABOVE.
(Printed)			(Printed)			

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

LEAP - 19

PRE-SAMPLING
WELL PURGING

PROJECT WINSTON-SALEM C&D
WELL NUMBER MW-1R
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 62.60 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK 8 INCHES

PROJECT NUMBER 00162-090-018
DATE 6/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 70
WEATHER CONDITIONS SUNNY, COOL
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	37.99				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0802				
TIME END FLUSHING	0840				
ESTIMATED VOLUME FLUSHING (gal)	0	4	8	12	
WELL VOLUMES REMOVED	0				

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.5	17.0	16.6	16.5	
SAMPLE (pH)	5.03	5.36	5.47	5.46	
SAMPLE CONDUCTIVITY (umhos/cm)	100	110	94	96	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	CLEAR	CLEAR	LT YELLOW	SAME	
OTHER				SL. TURBID	

COMMENTS
SAMPLED: 0845

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 62.60 (WELL DEPTH) − 37.99 (DEPTH TO WATER) = 24.61 FT
3.14 × 0.0833 (r^2) × h = 0.536 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 4.01

WELLPURG.DWG

PRE-SAMPLING
WELL PURGING

PROJECT WINSTON-SALEM C&D
WELL NUMBER MW-2R
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 24.90 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK 8 INCHES

PROJECT NUMBER 00162-090-018
DATE 6/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT)
WEATHER CONDITIONS SUNNY, WARM
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	9.65				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	0904				
TIME END FLUSHING	0923				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	8
WELL VOLUMES REMOVED	0				

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.2	15.8	15.8	16.0	
SAMPLE (pH)	5.68	5.65	5.63	5.65	
SAMPLE CONDUCTIVITY (umhos/cm)	75	76	75	80	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	CLEAR	BROWN	SAME	SAME	
OTHER		TURBID	SAME	DRY	

COMMENTS
SAMPLED: 0930

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 24.90 (WELL DEPTH) − 9.65 (DEPTH TO WATER) = 15.25 FT
3.14 x 0.0833 (r^2) x h = 0.332 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.49

WELLPURG.DWG

PRE-SAMPLING
WELL PURGING

PROJECT WINSTON-SALEM C&D

WELL NUMBER MW-4R

WELL INSIDE DIAMETER 2 INCHES

DEPTH OF BOTTOM 22.25 FEET

LENGTH OF GRAVEL PACK — FEET

DIAMETER OF GRAVEL PACK 8 INCHES

PROJECT NUMBER 00162-090-018

DATE 6/2/99 PAGE 1 OF 1

AIR TEMPERATURE (FAHRENHEIT)

WEATHER CONDITIONS

HNU/OVA READING NA

METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	14.15				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1115				
TIME END FLUSHING	1140				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	6	8
WELL VOLUMES REMOVED	0				

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.6	15.5	15.6	15.4	15.9
SAMPLE (pH)	5.64	5.64	5.64	5.63	5.65
SAMPLE CONDUCTIVITY (umhos/cm)	140	140	140	140	140
BUFFER BEFORE	4	4	4	4	4
BUFFER AFTER	4	4	4	4	4
ODOR	NONE	NONE	NONE	SAME	SAME
COLOR	CLOUDY	BROWN	SAME	SAME	SAME
OTHER		TURBID	SAME	SAME	SAME

COMMENTS

SAMPLED: 1150

BF: 2 SEPTUM VOA

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)

$\pi r^2 \times h$ = WELL VOLUME IN FT^3

π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET

h = HEIGHT OF WATER COLUMN IN WELL IN FEET

CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT

h = 22.25 (WELL DEPTH) − 14.15 (DEPTH TO WATER) = 14.15 FT

3.14 × 0.0833 (r^2) × h = 1.308 FT^3 × 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.31

WELLPURG.DWG

PRE-SAMPLING
WELL PURGING

PROJECT WINSTON-SALEM C&D
WELL NUMBER MW-5R
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 32.20 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK 8 INCHES

PROJECT NUMBER 00162-090-018
DATE 6/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT) 70
WEATHER CONDITIONS SUNNY, BREEZY
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	11.50				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1000				
TIME END FLUSHING	1035				
ESTIMATED VOLUME FLUSHING (gal)	0	4	8	12	
WELL VOLUMES REMOVED	0				

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	16.8	16.6	16.6	16.8	
SAMPLE (pH)	5.64	5.72	5.78	5.79	
SAMPLE CONDUCTIVITY (umhos/cm)	190	180	190	190	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	NONE	
COLOR	CLEAR	BROWN	SAME	SAME	
OTHER		SL. TURBID	SAME	SAME	

GOING DRY

COMMENTS
SAMPLED: 1045

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 32.20 (WELL DEPTH) − 11.50 (DEPTH TO WATER) = 20.70 FT
3.14 x 0.0833 (r^2) x h = 0.451 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 3.37

WELLPURG.DWG

PRE-SAMPLING
WELL PURGING

PROJECT WINSTON-SALEM CCD
WELL NUMBER MW-7
WELL INSIDE DIAMETER 2 INCHES
DEPTH OF BOTTOM 48.25 FEET
LENGTH OF GRAVEL PACK — FEET
DIAMETER OF GRAVEL PACK 8 INCHES

PROJECT NUMBER 00162-090-018
DATE 6/2/99 PAGE 1 OF 1
AIR TEMPERATURE (FAHRENHEIT)
WEATHER CONDITIONS
HNU/OVA READING NA
METHOD OF EVACUATION AND TYPE OF EQUIPMENT USED
BAILER

WITHDRAWAL OF WELL VOLUMES

FLUSHING	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME	WELL VOLUME
WATER LEVEL BEFORE	35.15				
WATER LEVEL AFTER	NA				
TIME BEGIN FLUSHING	1300				
TIME END FLUSHING	1330				
ESTIMATED VOLUME FLUSHING (gal)	0	2	4	7	
WELL VOLUMES REMOVED	0				

FIELD ANALYSIS					
WATER TEMPERATURE (°C)	19.4	17.8	17.9	17.4	
SAMPLE (pH)	5.35	5.36	5.34	5.36	
SAMPLE CONDUCTIVITY (umhos/cm)	18	84	94	98	
BUFFER BEFORE	4	4	4	4	
BUFFER AFTER	4	4	4	4	
ODOR	NONE	NONE	NONE	Same	
COLOR	Brown	Brown	SAME	Same	
OTHER	SLAURED	TURBID	SAME	Same	

COMMENTS 33.28' H2O

SAMPLED: 1335

WELL VOLUME CALCULATIONS (1cf = 7.48 gal)
$\pi r^2 \times h$ = WELL VOLUME IN FT^3
π = 3.14

r = RADIUS IN INCHES/12 = RADIUS IN FEET
h = HEIGHT OF WATER COLUMN IN WELL IN FEET
CONVERSION FROM FT^3 TO GALLONS = 7.48 gal/ft^3

WELL RADIUS = 1.0 IN/12 = 0.0833 FT
h = 48.25 (WELL DEPTH) − ____ (DEPTH TO WATER) = 13.10 FT
3.14 x 0.0833 (r^2) x h = .285 FT^3 x 7.48 gal/FT^3 = 1 WELL VOLUME IN GAL = 2.14

WELLPURG.DWG