Prepared for:

Waste Management of Virginia, Inc.
Maplewood Recycling and Waste Disposal Facility
20221 Maplewood Road
Jetersville, Virginia 23083

LANDFILL BIOREACTOR PROJECT
JANUARY 2004
SEMI-ANNUAL REPORT
OF MONITORING ACTIVITIES

MAPLEWOOD RECYCLING AND
WASTE DISPOSAL FACILITY
AMELIA COUNTY, VIRGINIA
VADEQ Solid Waste Permit No. 540

Prepared by:

GEOSYNTEC CONSULTANTS
10015 Old Columbia Road, Suite A-200
Columbia, Maryland 21046

Project No.: ME0275

19 January 2004

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 Terms of Reference 1
1.2 Project Overview 1
1.3 Report Organization 2

2. REQUIREMENTS OF FEDERAL REGISTER SITE-SPECIFIC RULE MAKING 4

3. REQUIREMENTS OF VADEQ EXPERIMENTAL PERMIT 7

4. MONITORING PROGRAM AND SAMPLING AND ANALYSIS ACTIVITIES 9

4.1 Monitoring Program 9
4.2 Sampling and Analytical Activities 11

4.2.1 Leachate Quality 11
4.2.2 Landfill Gas Quality and Quantity 12
4.2.3 Waste Sampling 12

4.3 Other Data 13

4.3.1 Leachate Generation Quantities 13
4.3.2 Quantity of Liquid Applied to Landfill 13
4.3.3 Landfill Settlement 13

5. DATA ANALYSIS 14

5.1 Leachate Quality and Quantity 14
5.2 Landfill Gas Quality and Quantity 15
5.3 Solid Waste Analysis 16

6. CONCLUSIONS 18

7. REFERENCES 19

TABLE OF CONTENTS
(continued)

TABLES

Table 1: 2003 Monitoring Activities
Table 2: Summary of Sampling Activities
Table 3: Leachate Analysis Parameters
Table 4: Landfill Gas Data
Table 5: Summary of Leachate Quality Data
Table 6: Summary of Leachate Quantity Data
Table 7: Liquid Application Summary
Table 8: Summary of Landfill Settlement Data
Table 9: Summary of Rainfall Data
Table 10: Summary of Waste Characterization Data
Table 11: 2004 Monitoring Activities

FIGURES

Figure 1: Existing Conditions
Figure 2: Liquid Applied to Landfill – Cumulative
Figure 3: BOD/COD Ratio
Figure 4: COD/TOC Ratio
Figure 5: Chloride Concentration
Figure 6: Nitrate Nitrogen Concentration
Figure 7: Ammonia Nitrogen Concentration
Figure 8: Landfill Gas Quantity
Figure 9: Landfill Gas Quality Data – Methane
Figure 10: Landfill Gas Quality Data – Carbon Dioxide

DRAWINGS (reduced copies included in this report)

Drawing 1: Existing Conditions (CAD)
Drawing 2: Landfill Gas Monitoring Plan (CAD)
Drawing 3: Settlement Monitoring Plan (CAD)
Drawing 4: Settlement Contours

TABLE OF CONTENTS
(continued)

APPENDICES

Appendix A: Leachate Quality Test Results
- July 2003
- October 2003

Appendix B: Daily Liquid Application Log

Appendix C: Trench Monitoring Log

Appendix D: Settlement Data
- June 2003

Appendix E: Landfill Gas Data
- July 2003

Appendix F: Groundwater Quality Compliance

1. INTRODUCTION

1.1 Terms of Reference

The purpose of this semi-annual monitoring report is to present the results obtained between July 1, 2003 and December 31, 2003, of the Landfill Bioreactor Project at the Maplewood Recycling and Waste Disposal Facility (Maplewood Landfill) in Amelia County, Virginia. The bioreactor study is being performed by Waste Management of Virginia, Inc. (a Waste Management, Inc. (WMI) company) under the United States Environmental Protection Agency's (USEPA's) Project XL program. This monitoring report was prepared for the Virginia Department of Environmental Quality (VADEQ) by Mr. Douglas T. Mandeville, and reviewed by Mr. Thomas B. Ramsey, P.E., and Mr. Michael F. Houlihan, P.E., all of GeoSyntec Consultants (GeoSyntec), in accordance with the internal peer review policy of the firm. This report describes the monitoring activities between the above mentioned dates. To aid in the interpretation of the data, the tables and figures contain all of the data collected since leachate recirculation began on August 20, 2002.

1.2 Project Overview

The Maplewood Landfill is located in Amelia County, Virginia, approximately 30 miles southwest of Richmond, Virginia. The waste disposal area will cover approximately 404 acres upon completion. Construction of the first phases started in 1992; construction of the most recent phase was completed in 2003. The Maplewood Landfill was constructed having a geomembrane composite double-liner system, with primary leachate collection and leak detection (secondary collection) layers. The current configuration of Phases 1 through 4 is shown in Figure 1 and Drawing 1. As part of the XL program, Phases 1 and 2 are operated as bioreactors (i.e., leachate is recirculated); whereas Phases 3 and 4 are operated as standard landfill cells (i.e., no leachate is recirculated). Phases 1 and 2 of the Maplewood Landfill are referred to as the test area. Phases 3 and 4 are referred to as the control area.

A landfill becomes a bioreactor when leachate and other liquids are added to the landfill. The purposes of operating a landfill as a bioreactor are to increase the rate of biodegradation in the landfill and to facilitate the management of leachate and other waste liquids. The original intent of the program was to recirculate all of the leachate

generated at the site, typically between 3 to 4 million gallons per year. WMI will seek to recirculate this amount, and maintain compliance with applicable rules and regulations. In the interest of maintaining compliance with good landfill operating practices and environmental protection, the actual amount of leachate recirculated may be less than 4 million gallons per year. The amount of liquid applied to the waste will vary based on site inspections and observations. Regardless of the quantity of leachate recirculated, the requirement to perform monitoring during the course of the program will continue.

It is anticipated that operating Phases 1 and 2 as a bioreactor will result in several environmental and cost saving benefits including, but not limited to, the following: (i) decreased leachate management costs; (ii) increased waste density in the landfill; (iii) reduced period of landfill gas generation; and (iv) improved long-term leachate quality. These benefits are discussed in depth in WMI's Project XL application [GeoSyntec, 2000].

The performance of the landfill is evaluated based on measurements of critical chemical and physical parameters associated with the solids, liquids, and gasses obtained from the test and control areas. Parameters to be measured include: settlement, leachate quantity and quality, in-place density of waste, and air quality. The parameters measured in the bioreactor area (i.e., test area) are compared to similar parameters measured from the control area.

1.3 Report Organization

In this report, the results of the analytical tests conducted during the first half of calendar year 2003 will be provided. The organization of this report is described below.

- Section 2 addresses the Federal register site specific rule making.
- Section 3 presents the requirements of VADEQ Experimental Permit.
- Section 4 describes the monitoring program and sampling and analysis activities performed during the first half of calendar year 2003.
- Section 5 describes the analytical test results and other data collected during the first half of calendar year 2003.

- Section 6 presents closing comments.
- Section 7 provides references.
- Appendix A presents leachate laboratory analysis results.
- Appendix B presents the liquid application logs (a daily and monthly liquid application summary is presented in Table 7).
- Appendix C presents the trench monitoring logs.
- Appendix D presents landfill settlement data.
- Appendix E presents landfill gas data.
- Appendix F presents groundwater quality compliance data.

2. REQUIREMENTS OF FEDERAL REGISTER SITE-SPECIFIC RULE MAKING

On July 18, 2002, the EPA promulgated a site-specific rule to implement this project under the EPA's Project Excellence and Leadership Program (Project XL). This rule was published in the Federal Register and provides site-specific regulatory flexibility under the Resource Conservation and Recovery Act (RCRA) for the Maplewood Landfill. Part 258, Subpart D of the rule identifies 14 conditions that are to be met while leachate is recirculated at Maplewood. The remainder of this section addresses 12 of these conditions; the last two conditions are related to the duration of, and compliance with, the site specific rule.

1) *Item 1 relates to the integrity of the liner system and maintaining less than 30 cm of head on the liner system.* In accordance with Item 1, the integrity of the liner system was maintained during construction of the recirculation trenches and the leachate collection system has been maintained in good operating order. To date, the leachate collection records for the test and control areas indicate that the leachate collection system is functioning as intended. Additionally, there has not been an increase in the leachate collection rate in the secondary leachate collection system. It is noted that design calculations showed that up to 3 to 4 million gallons of liquid per year could be added to the waste mass and that the head on the liner system would remain less than 30 cm. The liquid application rate is approximately 1.8 million gallons per year based on data between August 20, 2002 and December 31, 2003. Based on the design calculations and the actual leachate recirculation rates, the head on the liner system is expected to be less than 30 cm. Additionally, the leachate collection system has been designed to operate such that the leachate removal pumps turn on when the head acting on the liner system at or below 30 cm.

   There are no apparent signs of slope movement based on daily observations at the site.

2) *Item 2 relates to the Code of Federal Regulations (CFR) Section 258.40.* In accordance with Item 2, the groundwater quality has been monitored and analyzed at the compliance point. This analysis was performed by Joyce Engineering, Inc. (Joyce Engineering); a copy of the letter is presented in

Appendix F. Lead has been detected at concentrations that exceed the current MCL; however, it is noted that the detected concentrations were less than the facility background concentrations at the time of detection. Joyce Engineering determined that the concentrations did not represent statistically significant concentrations. As per VADEQ, the monitoring program at the Maplewood Landfill, Permit No. 540, was allowed to continue in the Detection Monitoring Program.

3) *Item 3 relates to the occurrence of seeps at the landfill.* No surface seeps have occurred at the Maplewood Landfill between July 1, 2003 and December 31, 2003 that were associated with the leachate recirculation operations.

4) *Item 4 relates to the leachate quality parameters to be analyzed as part of this project.* The evaluation of the key leachate quality parameters occurred at the frequency presented in the Final Project Agreement [GeoSyntec, 2000] and the VADEQ state permit [GeoSyntec, 2001]. The test results are discussed in Section 5.1. It should be noted that these parameters (or groups of parameters) have been analyzed in leachate samples collected from the test and control areas. Appendix A includes a summary of the leachate parameters that exceeded the MCL or were detected. A complete set of laboratory results is available upon request.

5) *Item 5 relates to the quantity of leachate applied to the test area and the amount of leachate collected in the test and control areas of the landfill.* These issues are discussed in Section 5.1.

6) *Item 6 relates to an initial characterization of the liquid that was added to the test area.* An initial characterization of the leachate added to the landfill was performed in August 2002. The results of this characterization indicate that the leachate is comparable to typical landfill leachate. Between July 1, 2003 and December 31, 2003, leachate was the only liquid added to the test area at Maplewood.

7) *Item 7 relates to the occurrence of landfill fires in the test area and the measurement of gas temperature at the wellheads.* The test area at Maplewood has been operated in a manner to prevent landfill fires from

occurring and none have been observed during the project. The gas temperature at the wellheads is discussed in Section 5.2.

8) *Item 8 relates to topographic surveys at the site.* In accordance with Item 8, two topographic surveys were performed in 2003. The first survey was conducted in March 2003; the second survey was conducted in June 2003. Construction and waste placement activities during late summer and fall 2003 prevented the collection of accurate survey information, therefore, no surveys were conducted. The difference in ground surface elevation between the June survey and the original survey in August 2002 was used to calculate settlement. Settlement of the test and control areas is discussed in Section 5.3.

9) *Item 9 relates to odor complaints resulting from liquid application events.* No odor complaints associated with the liquid application events were recorded at Maplewood during the reporting period.

10) *Item 10 relates to an initial waste characterization in the test area of the landfill.* A total of 5 borings were drilled in the summer of 2001. Three of these borings were in the control area and two were in the test area. The results of this testing indicates that the waste is typical MSW. Section 5.3 addresses future waste sampling activities.

11) *Item 11 relates to the preparation of semi-annual reports to the EPA Regional Administrator.* Previous semi-annual monitoring reports were submitted on May 8, 2003 and July 17, 2003. The next semi-annual monitoring report will be submitted in July 2004.

12) *Item 12 relates to additional landfill gas monitoring.* The monitoring requirements for the New Source Performance Standards (NSPS) and the Title V Air Permit for the site were met. Copies of the wellhead monitoring results and the surface scans are presented in Appendix E.

3. REQUIREMENTS OF VADEQ EXPERIMENTAL PERMIT

On July 18, 2002, VADEQ issued a permit modification allowing bioreactor operations in Phases 1 and 2 at the Maplewood Landfill. Permit module I.F. of the permit amendment issued July 18, 2002 identifies several site specific conditions that must be met while leachate is recirculated at Maplewood. The remainder of this section addresses each of these conditions.

1) *Item I.F.1 relates to the issuance of a Certificate to Operate.* Construction of the liquid application trenches was completed within 180 days of the issuance of the permit amendment. A renewal letter to continue recirculation operations was submitted to VADEQ in July 2003.

2) *Item I.F.2 relates to the expiration of the experimental permit and request for a full permit amendment.* This report presents the data obtained during the second half of calendar year 2003. At this time, there is not enough data available to draw conclusions from the experiment. If the project is found to be a success, WMI anticipates submitting a request for a full permit amendment.

3) *Item I.F.3 relates to the permitted landfill bioreactor area, Phases 1 and 2.* In accordance with the permit requirements, the liquid application trenches were constructed in Phases 1 and 2, and liquid was applied only in this part of the landfill.

4) *Item I.F.4 relates to the monitoring, sampling, and reporting requirements.* In accordance with Item I.F.4, the monitoring was completed as identified in Permit Attachment IIB-2. Previous quarterly monitoring reports were submitted in May 2003, June 2003, and September 2003. From this point on, monitoring reports will be completed on a semi-annual basis.

5) *Item I.F.5 relates to the Title V Air Permit Issued January 10, 2002 and the New Source Performance Standards Subpart WWW.* In accordance with Item I.F.5, WMI complied with the regulations identified in the Title V Air Permit and the NSPS Subpart WWW.

6) *Item I.F.6 relates to managing leachate as a hazardous waste if the characterization of leachate indicates it is hazardous in accordance with Virginia Hazardous Waste Management Regulations (9 VAC 20-60-10).* (It should be noted that leachate is not explicitly listed as a hazardous waste in the Virginia Hazardous Waste Management Regulations). The initial leachate characterization indicates that the leachate at Maplewood is not a Hazardous Waste.

7) *Item I.F.7 relates to the monitoring of leachate head over the liner at its lowest disposal point to ensure that no more than 1 foot of head of leachate accumulated over the liner.* The issue of hydraulic head acting on the liner system is addressed in Section 2, Item 1.

8) *Item I.F.8 relates to the closure of the bioreactor landfill area.* At this time, WMI plans to continue bioreactor operations in Phases 1 and 2 at Maplewood. In accordance with Item I.F.8, WMI will notify VADEQ at least 180 days prior to the anticipated date of closing.

4. MONITORING PROGRAM AND SAMPLING AND ANALYSIS ACTIVITIES

4.1 Monitoring Program

As shown in Table 1, the monitoring activities at the Maplewood Landfill consist of tracking the quality and quantity of leachate, landfill gas, and solid waste in the test and control areas. Detailed monitoring activities for the Landfill Bioreactor Program are described in the document entitled, *"Monitoring, Sampling, and Analysis Plan"* (Monitoring Plan) [GeoSyntec, 2001], which is contained in the permit application submitted to VADEQ. As part of the USEPA XL program and VADEQ permit requirements, a series of site-specific rules and monitoring requirements have been developed. The USEPA site-specific rule appeared in the Federal Register on July 18, 2002; these requirements are addressed in Section 2 of this report. The VADEQ site-specific permit requirements appeared in the state permit modification issued for the site on July 18, 2002; these requirements are addressed in Section 3 of this report. Table 1 shows the schedule followed for the 2003 monitoring events; Table 2 summarizes the dates and sampling events that have occurred to date. The leachate monitoring events include collecting leachate samples from the control area and the test area for subsequent laboratory analysis. The landfill gas monitoring events include measuring landfill gas composition at the wellheads in the control and test areas, obtaining landfill gas composition samples, and performing a surface scan to measure surface emissions. The solid waste monitoring event includes obtaining waste samples for subsequent analysis. In addition to these field monitoring events, leachate generation volumes, liquid application volumes, and landfill settlement are monitored.

The purpose of the monitoring program is to evaluate the performance of the landfill bioreactor throughout the duration of the project. The evaluation is based on the following performance criteria:

- leachate quality and quantity;
- landfill gas quality and quantity; and
- solid waste decomposition/stabilization.

The manner in which these criteria are being evaluated is described in the following three subsections.

Leachate Quality and Quantity

Sampling activities are conducted in both the test area and control area. Leachate sampling was conducted in Phases 1, 2, 3, 4, and at the leachate storage tank, according to the frequency described in Table 1. Leachate samples are collected by filling the appropriate sample bottles directly from the sampling ports from the primary leachate collection system for the respective phase being sampled. The sampling ports for each of the primary leachate collection systems are located within the vault/riser house of the leachate collection system for each phase. The specific parameters measured, and the associated test methods, are provided in Table 3. Several key parameters that identify the presence of biological processes in the landfill have been identified (Pohland and Harper, 1986) and are presented in detail in this report. These parameters include: (i) Biological Oxygen Demand (BOD); (ii) Chemical Oxygen Demand (COD); (iii) Total Organic Carbon (TOC); (iv) Chloride; (v) Sulfate; (vi) Nitrate as Nitrogen; and (vii) Ammonia as Nitrogen. From these indicators, a qualitative inference can be made regarding the degree of organic composition of landfill wastes.

In addition to evaluating the leachate quality in the landfill over time, the amount of liquid added to the leachate recirculation trenches and the amount of leachate collected in the leachate collection sumps was recorded.

Landfill Gas Quality and Quantity

Measurements of landfill gas quality are obtained from composite gas samples of the landfill gas collection system. The parameters measured and the test methods for the landfill gas monitoring and sampling are described in the Monitoring Plan [GeoSyntec, 2001]. The non methane organic compounds (NMOCs), gas samples were obtained in accordance with the requirements of USEPA Method 25 and samples obtained for volatile organic compounds were obtained in accordance with USEPA Method TO-14.

Landfill gas monitoring is performed at each of the existing landfill gas wells to monitor activity within the test and control areas. Measurements of methane (CH_4), oxygen (O_2), carbon dioxide (CO_2), temperature, and flow rate were obtained from each gas well using portable field instruments, (i.e., a Landtech, Inc., GEM 500). Hydrogen sulfide (H_2S) measurements were obtained using a GasTech GT-2 Hydrogen sulfide detector.

Surface emissions monitoring is performed in accordance with the requirements specified by the NSPS and Emissions Guidelines (EG) for MSW landfills [40 CFR 60.755]. Methane concentrations were measured within 5 to 10 centimeters (2 to 4 inches) from the landfill surface in the test and control areas.

Solid Waste Decomposition/Stabilization

To evaluate the degree of decomposition of the solid waste, a series of borings were drilled in the test and control areas in 2001. Samples of the solid waste were obtained from these borings. The parameters evaluated from these solid waste samples include: (i) moisture content; (ii) cellulose; (iii) lignin; (iv) pH; and (v) biochemical methane potential. The moisture content is the percentage of water that is present in the waste. Cellulose is the portion of the volatile solids that will degrade over time; lignin is the portion of the volatile solids that will not degrade. Biochemical methane potential is a measure of how much methane the waste may generate.

To evaluate waste settlement in both the test area and the control area, a series of topographic surveys of the test and control areas are conducted.

4.2 Sampling and Analytical Activities

The overall monitoring and sampling program was implemented by GeoSyntec with sampling performed by Joyce Engineering, Golder Associates (Golder) and WMI site personnel.

4.2.1 Leachate Quality

Leachate samples from the test and control areas were obtained by Joyce Engineering on the dates presented in Table 2. The leachate samples were collected from sumps in Phases 1, 2, 3, 4, and the leachate storage tank. The leachate samples were collected using the field sampling procedures described in the Monitoring Plan contained in the permit application for leachate recirculation at the site [GeoSyntec, 2001].

Leachate samples were analyzed by Geochemical Testing, Inc., and were tested for the parameters listed in Table 3. A summary of the key parameters identified in Section 1.3 are presented in Table 5. Also included in Table 5 are the parameters listed in the Federal Register site-specific rule (i.e., wet chemistry parameters, heavy metals, and common ions). The test results for the organic priority pollutants are not anticipated to indicate the overall performance of the test area and are not presented in Table 5 at this time. Section 5.1 of this report provides an analysis of the leachate quality data.

4.2.2 Landfill Gas Quality and Quantity

The landfill gas samples were collected using the procedures described in the Monitoring Plan contained in the permit application for leachate recirculation at the site [GeoSyntec, 2001]. Drawing 2 shows the landfill gas monitoring plan. These activities were conducted by Golder or WMI on the dates presented in Table 2. The landfill gas composition at the wellheads in the test and control areas were tested for the percentages of oxygen, carbon dioxide, methane, flow rate, and temperature. The landfill gas composition at the well heads measured during the field sampling events is summarized in Table 4.

The landfill gas samples from the header pipes in the landfill gas collection system were sent to Triangle Environmental Services for laboratory analysis. These landfill gas samples were tested in accordance with USEPA Method TO-14. Copies of these results are presented in Appendix E.

4.2.3 Waste Sampling

Prior to construction of the leachate recirculation system, a series of exploratory borings were drilled in both the test and control areas. Samples of solid waste were collected from a variety of depths at each boring location. The solid waste samples collected during the field activities were sent to Virginia Tech and were analyzed for moisture content, lignin, cellulose, pH, and biochemical methane potential. No solid waste samples were obtained during this reporting period; samples were obtained in early January 2004. The results from the initial background samples are discussed in Section 5.3; the results from the January 2004 sampling event will be discussed in the next monitoring report.

4.3 Other Data

4.3.1 Leachate Generation Quantities

Leachate flow was measured weekly in Phases 1, 2, 3, 4, 11, and 12 by site personnel using flowmeters that are installed in the leachate riser vaults near each cell. The leachate generation quantities for each phase are presented in Table 6.

4.3.2 Quantity of Liquid Applied to Landfill

The amount of liquid added to each trench was recorded by site personnel. A summary of the liquid added to the landfill is presented in Table 7.

4.3.3 Landfill Settlement

A series of topographic surveys of the test and control areas have been performed by Flora Surveying. An approximately 100-ft grid system was established, with the elevation measured at the same locations over time. A summary table containing the point number, northing, easting, and elevations at different survey times is presented in Table 8. Drawing 3 shows the settlement monitoring plan and Drawing 4 shows the settlement contours.

5. DATA ANALYSIS

5.1 Leachate Quality and Quantity

Several new site features have been added to Maplewood since the last semi-annual monitoring report was submitted. These new features affect the amount of leachate that can be recirculated and the amount of leachate that is generated. On July 3, 2003, a leachate pumping system began operating. This system pumps leachate from the storage tanks to the recirculation trenches in Phases 1 and 2 (i.e., leachate is no longer moved to the top of the landfill using haul trucks). Two additional recirculation trenches have been constructed. These trenches are approximately 20-ft deep and 5-ft wide (the previous three trenches were approximately 10-ft deep and 5-ft wide). Finally, construction of the next waste disposal phase (Phase 13) was completed in the fall of 2003; waste disposal in this cell began on November 16, 2003.

Liquid application at the Maplewood Landfill commenced on August 20, 2002. To date, leachate was the only liquid added to the test area. Figure 2 shows the liquid added to the landfill, the target rate of 4 million gallons per year (333,333 gallons per month or 6,500 gallons per day), as well as the amount of leachate collected in the test and control areas. The total amount of leachate applied to the landfill during 2002 was 864,282 gallons. Approximately 396,045 gallons of leachate were recirculated between January 1, 2003 and June 30, 2003. Between July 1, 2003 and December 31, 2003, approximately 1,205,872 gallons of leachate have been recirculated. Therefore, approximately 1,601,917 gallons of leachate have been recirculated during the 2003 calendar year. To date, a total of 2,466,199 gallons of leachate have been recirculated at Maplewood.

In reviewing Table 7, it is apparent that the majority of the leachate recirculated since July has been in the two newest trenches (i.e., Trenches 4 and 5). Use of these trenches over the last several months has indicated that they have a much higher leachate recirculation capacity than Trenches 1, 2, and 3. Trenches 4 and 5 have also been able to drain faster than Trenches 1, 2, and 3.

It should be noted that several site conditions (i.e., weather and construction) made recirculation operations difficult. Table 9 shows the average monthly precipitation, 2003 monthly precipitation, and departure from normal. In 2003, the site received approximately 20.11 inches above its normal annual precipitation.

The amount of leachate collected in the test and control areas during the operation of the liquid application system in the second half of calendar year 2003 was 131,437 and 554,466 gallons, respectively. Since August 2002, the total amount of leachate collected in the test and control areas was 459,441 and 2,275,082 gallons, respectively. It should be noted that the average monthly leachate collection rates for the test and control areas was 15,720 gallons and 102,000 gallons, respectively. No leachate was sent off-site for disposal in the second half of calendar year 2003. Figure 2 also indicates that more leachate is being collected in the control area than in the test area. It should be noted that the outward facing side slopes in the test area have been capped with the final cover system, limiting the amount of infiltration and subsequent leachate generation.

In examining Figure 2, there does not appear to be a correlation between the liquid applied to the landfill and the leachate collected in the leachate collection system. This indicates that at this time, the waste in the test area had not yet reached its absorptive capacity.

Figures 3 through 6 show variation with time in the BOD to COD ratio, COD to TOC ratio, Chloride, and Nitrate Nitrogen, respectively. These figures represent the variation in the key leachate parameters identified in Table 5. The leachate samples in both the test and control areas continue to indicate a biological oxygen demand (BOD) value in the lower ranges of typical landfill leachate (typical values range from 20 mg/l to 35,000 mg/l, [Kjeldsen et al., 2002]). Figure 7 shows the variation in Ammonia Nitrate concentration with time; in this figure, the concentration in the test area continues to be consistently lower than the concentration in the control area. Because of the limited amount of data collected so far, trends in the data cannot be identified.

Additional data related to the leachate quality results is presented in Appendix A. The tables in Appendix A summarize the leachate parameters that exceeded the MCL or were at detectable levels.

5.2 Landfill Gas Quality and Quantity

Table 4 summarizes the landfill gas composition and temperature measured at the wellheads. The wellheads are identified as being located in the test or control areas.

The temperatures measured at the wellheads are within normal ranges; this indicates that there are no landfill fires within the test or control areas.

The trends in the landfill gas quantity for the gas wells in the test and control areas are shown in Figure 8. None of the gas wells shown in Figure 8 show consistent behavior; the flow rate measured at each of the wells appears to fluctuate in a similar pattern.

Figure 9 shows the percentage methane in the landfill gas at the wells in the test and control areas. At this time, there does not appear to be a clear difference between the percentage methane present in the landfill gas in the test or control areas.

Figure 10 shows the percentage carbon dioxide in the landfill gas at the wells in the test and control areas. In 2003, the percentage carbon dioxide present in the gas measured at the wells appears to be fairly consistent between 35 and 40 percent. At this time, there does not appear to be a clear difference between the percentage carbon dioxide present in the landfill gas in the test and control areas.

During the quarterly NSPS surface emission scans, methane exceedences were detected in the vicinity of the temperature monitoring probes that were installed in 2001. Methane hits were detected at the same locations during subsequent monitoring events. These temperature probes were decommissioned in December 2003.

5.3 Solid Waste Analysis

Table 10 summarizes the baseline solid waste sampling results from the field work conducted in the summer of 2001. These results appear at this time to indicate few differences between the organic constituents in the landfill as waste. Future comparisons will be made as subsequent solid waste samples are obtained from the test and control areas. A second set of solid waste samples were obtained in early 2004; the laboratory results of these samples will be discussed in the next semi-annual monitoring report.

Drawing 4 presents the settlement contours for both the test and control areas. These contours are based on the data presented in Table 8 and show the difference in grade between the initial background survey on August 2, 2002 and a recent survey on

June 9, 2003. The values range from no settlement to up to five feet of settlement. In examining Drawing 4, two items become apparent. The settlement appears to be relatively uniform over most of the test and control areas, with the exception of the northwest corner of Phase 1 and near the Phase 4 boundary with Phase 11. In addition, it appears that settlement in the control area is larger than in the test area. Considering the relatively short timeframe over which these contours are based, this may not be indicative of the performance of the bioreactor system but the result of waste compression in the relatively newer portions of the landfill (i.e., the control area). Construction and waste placement activities in late summer and fall of 2003 did not allow for ground surveys to be performed. It is anticipated that the surveys will resume in January 2004.

6. CONCLUSIONS

This report provides a summary of the monitoring activities at the Maplewood Landfill as part of the leachate recirculation operations conducted under the USEPA's XL Program. Because the program has been operating for approximately one and a half years, definitive conclusions regarding the performance of the test area at the Maplewood Landfill cannot yet be made. However, based on the experience gained during the design, permitting, and construction processes, the following comments are offered.

- Leachate recirculation operations with a pump system have been successfully implemented and are an operational improvement over hauling leachate by truck. Using the pump system, recirculation operations are not influenced by site or weather conditions.
- Using the operational techniques identified in the Project XL program for Maplewood, the anticipated benefits (i.e., settlement, improved leachate quality, and improved landfill gas quality) require more than 1.5 years to be realized.
- Based on the information obtained to date, it has been observed that leachate recirculation has been performed without major impacts (i.e., excessive odors, slope stability problems, etc.).
- The two trenches constructed in the second half of 2003 appear to be working well after approximately six months of operation. The operators have not noted problems related to drainage of these two trenches. Trenches 1, 2, and 3 continue to drain, but at a much slower rate than when first placed in operation.
- Because the trenches appear to have a reduced infiltration capacity when compared to their initial design, the ability to accept liquids is reduced. Consequently, a ten acre area may not be large enough to recirculate the target amount of leachate.
- In 2004, will consider different alternatives to improve liquid distribution in the recirculation area. WMI is considering a systematic pattern of vertical conduits to increase liquid distribution through the recirculation area. It is anticipated that the vertical conduits may be similar in nature to a landfill gas extraction well.

A summary of the monitoring events planned for 2004 is presented in Table 11.

7. REFERENCES

GeoSyntec Consultants "*Project XL – Final Project Agreement for Landfill Bioreactor Systems – King George County Landfill and Recycling Center and Maplewood Recycling and Waste Disposal Facility*", dated 28 September 2000.

GeoSyntec Consultants "*Landfill Bioreactor Project Application for Permit Amendment for Experimental Permit*", Maplewood Recycling and Waste Disposal Facility, dated 19 September 2001.

Kjeldsen, P., Barlaz, M.P., Rooker, A.P., Baun, A., Ledin, A., and Christensen, T.H., "*Present and Long-Term Composition of MSW Landfill Leachate: A Review*", Critical Reviews in Environmental Science and Technology, 32 (4), pp. 297-336.

Pohland, F.G., and Harper, S.R., 1986, "*Critical Review and Summary of Leachate and Gas Production From Landfills*", EPA/600/2-86/073, U.S. Environmental Protection Agency, Cincinnati, Ohio.

Title 40, Code of Federal Regulations, Part 60.

TABLE 1
2003 MONITORING ACTIVITIES
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

	Monitoring Parameters	Responsible Party	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. LEACHATE	Chemical parameters measured on site	WM personnel	X			X			X					
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters sampled on site from test area	Sampled by subcontractor, tested offsite by Geochemical	X			X			X					
	Chemical parameters sampled on site from storage tanks	Sampled by subcontractor, tested offsite by Geochemical	X			X			X					
2. LANDFILL GAS	Landfill gas composition measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters	WM personnel, testing by subcontractor	X			X			X					
	Surface landfill gas measured on site	Subcontractor	X			X			X					
3. SOLID WASTE	Survey, on site	Subcontractor	X		X		X		X		X		X	
	Solid waste stabilization and decomposition measured on site	WM personnel								X				

TABLE 2
SUMMARY OF SAMPLING ACTIVITIES
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Date	Sampling Event
8/2/2002	Topographical site survey
8/12/2002	Background leachate and landfill gas sampling
9/12/2002	Monthly landfill gas sampling
9/13/2002	Monthly leachate sampling
10/17/2002	Monthly landfill gas sampling
10/24/2002	Topographical site survey
10/28/2002	Monthly leachate sampling
11/20/2002	Monthly leachate sampling
11/21/2002	Monthly landfill gas sampling
12/18/2002	Monthly landfill gas sampling
12/26/2002	Monthly leachate sampling
1/23/2003	Monthly leachate sampling
1/28/2003	Monthly landfill gas sampling
2/15/2003	Monthly landfill gas sampling
3/10/2003	Topographical site survey
3/16/2003	Monthly landfill gas sampling
4/16/2003	Quarterly leachate sampling
5/21/2003	Monthly landfill gas sampling
6/9/2003	Topographical site survey
6/22/2003	Monthly landfill gas sampling
7/8/2003	Quarterly landfill gas sampling
7/16/2003	Quarterly leachate sampling
10/29/2003	Quarterly leachate sampling

TABLE 3
LEACHATE ANALYSIS PARAMETERS
Project XL
Maplewood Recycling and Waste Disposal Facility
Ameila County, Virginia

Parameter	Method	Parameter	Method
Cadmium	EPA 200.7	Bromochloromethane	EPA 8260B
Potassium	EPA 200.7	Bromomethane	EPA 8260B
Chloride	EPA 325.2	Carbon Disulfide	EPA 8260B
Ammonia Nitrogen	EPA 350.1	Carbon Tetrachloride	EPA 8260B
Total Kjeldahl Nitrogen	EPA 351.3	Chlorobenzene	EPA 8260B
Nitrate Nitrogen	EPA 353.2	Chlorodibromomethane	EPA 8260B
Phosphorus, ortho	EPA 365.2	Chloroethane	EPA 8260B
Phosphorus, total	EPA 365.2	Chloromethane	EPA 8260B
Sulfate	EPA 375.4	cis-1,2-Dichloroethene	EPA 8260B
Arsenic	EPA 6010 B	cis-1,3-Dichloropropene	EPA 8260B
Barium	EPA 6010 B	Dibromomethane	EPA 8260B
Chromium	EPA 6010 B	Dichlorobromomethane	EPA 8260B
Lead	EPA 6010 B	Dichlorodifluoromethane	EPA 8260B
Selenium	EPA 6010 B	Ethyl Methacrylate	EPA 8260B
Silver	EPA 6010 B	Ethylbenzene	EPA 8260B
Mercury	EPA 7470	Iodomethane	EPA 8260B
1,2-Dibromo-3-chloropropane	EPA 8011	Methacrylonitrile	EPA 8260B
1,2-Dibromoethane	EPA 8011	Methyl Ethyl Ketone	EPA 8260B
1,1,1,2-Tetrachloroethane	EPA 8260B	Methyl methacrylate	EPA 8260B
1,1,1-Trichloroethane	EPA 8260B	Methylene Chloride	EPA 8260B
1,1,2,2-Tetrachloroethane	EPA 8260B	Propionitrile	EPA 8260B
1,1,2-Trichloroethane	EPA 8260B	Styrene	EPA 8260B
1,1-Dichloroethane	EPA 8260B	Tetrachloroethene	EPA 8260B
1,1-Dichloroethene	EPA 8260B	Toluene	EPA 8260B
1,1-Dichloropropene	EPA 8260B	Total Xylene	EPA 8260B
1,2,3-Trichloropropane	EPA 8260B	trans-1,2-Dichloroethene	EPA 8260B
1,2-Dichlorobenzene	EPA 8260B	trans-1,3-Dichloropropene	EPA 8260B
1,2-Dichloroethane	EPA 8260B	trans-1,4-Dichloro-2-butene	EPA 8260B
1,2-Dichloropropane	EPA 8260B	Tribromomethane	EPA 8260B
1,3-Dichlorobenzene	EPA 8260B	Trichloroethene	EPA 8260B
1,3-Dichloropropane	EPA 8260B	Trichlorofluoromethane	EPA 8260B
1,4-Dichlorobenzene	EPA 8260B	Trichloromethane	EPA 8260B
2,2-Dichloropropane	EPA 8260B	Vinyl Acetate	EPA 8260B
2-chloro-1,3-butadiene	EPA 8260B	Vinyl Chloride	EPA 8260B
2-Hexanone	EPA 8260B	1,2,4,5-Tetrachlorobenzene	EPA 8270C
2-Methyl-1-propanol	EPA 8260B	1,2,4-Trichlorobenzene	EPA 8270C
3-Chloro-1-Propene	EPA 8260B	1,3-Dinitrobenzene	EPA 8270C
4-Methyl-2-Pentanone	EPA 8260B	1,4-Naphthoquinone	EPA 8270C
Acetone	EPA 8260B	1-Naphthylamine	EPA 8270C
Acetonitrile	EPA 8260B	1-Nitrosopiperidine	EPA 8270C
Acrolein	EPA 8260B	2,3,4,6-Tetrachlorophenol	EPA 8270C
Acrylonitrile	EPA 8260B	2,4,5-Trichlorophenol	EPA 8270C
Benzene	EPA 8260B	2,4,6-Trichlorophenol	EPA 8270C

TABLE 3
LEACHATE ANALYSIS PARAMETERS
(continued)

Parameter	Method	Parameter	Method
2,4-Dichlorophenol	EPA 8270C	Dibenzofuran	EPA 8270C
2,4-Dimethylphenol	EPA 8270C	Diethyl Phthalate	EPA 8270C
2,4-Dinitrophenol	EPA 8270C	Dimethoate	EPA 8270C
2,4-Dinitrotoluene	EPA 8270C	Dimethyl Phthalate	EPA 8270C
2,6-Dichlorophenol	EPA 8270C	Di-N-Butyl Phthalate	EPA 8270C
2,6-Dinitrotoluene	EPA 8270C	Di-N-Octylphthalate	EPA 8270C
2-Acetylaminofluorene	EPA 8270C	Di-n-propylnitrosamine	EPA 8270C
2-Chloro-Naphthalene	EPA 8270C	Diphenylamine	EPA 8270C
2-Chlorophenol	EPA 8270C	Disulfoton	EPA 8270C
2-Methyl-4,6-dinitrophenol	EPA 8270C	Ethyl Methanesulfonate	EPA 8270C
2-Methylnaphthalene	EPA 8270C	Famphur	EPA 8270C
2-Naphthylamine	EPA 8270C	Fluoranthene	EPA 8270C
2-Nitroaniline	EPA 8270C	Fluorene	EPA 8270C
2-Nitrophenol	EPA 8270C	Hexachlorobenzene	EPA 8270C
3,3-Dichlorobenzidine	EPA 8270C	Hexachlorobutadiene	EPA 8270C
3,3'-Dimethylbenzidine	EPA 8270C	Hexachlorocyclopentadiene	EPA 8270C
3-Methylcholanthrene	EPA 8270C	Hexachloroethane	EPA 8270C
3-Nitroaniline	EPA 8270C	Hexachloropropene	EPA 8270C
4-Aminobiphenyl	EPA 8270C	Indeno(1,2,3-cd)pyrene	EPA 8270C
4-Bromophenylphenylether	EPA 8270C	Isodrin	EPA 8270C
4-Chloro-3-methylphenol	EPA 8270C	Isophorone	EPA 8270C
4-Chloroaniline	EPA 8270C	Isosafrole	EPA 8270C
4-Chlorophenylphenylether	EPA 8270C	m,p-Cresol	EPA 8270C
4-Nitroaniline	EPA 8270C	Methapyrilene	EPA 8270C
4-Nitrophenol	EPA 8270C	Methyl Methanesulfonate	EPA 8270C
5-Nitro-o-toluidine	EPA 8270C	Methyl Parathion	EPA 8270C
7,12Dimethylbenz(a)-anthracene	EPA 8270C	Naphthalene	EPA 8270C
Acenaphthene	EPA 8270C	Nitrobenzene	EPA 8270C
Acenaphthylene	EPA 8270C	N-Nitrosodibutylamine	EPA 8270C
Acetophenone	EPA 8270C	N-Nitrosodiethylamine	EPA 8270C
Anthracene	EPA 8270C	n-Nitrosodimethylamine	EPA 8270C
Benzo(a)anthracene	EPA 8270C	n-Nitrosodiphenylamine	EPA 8270C
Benzo(a)pyrene	EPA 8270C	N-Nitrosomethylethylamine	EPA 8270C
Benzo(b)fluoranthene	EPA 8270C	N-Nitrosopyrrolidine	EPA 8270C
Benzo(ghi)perylene	EPA 8270C	o,o,o-Triethylphosphothioate	EPA 8270C
Benzo(k)fluoranthene	EPA 8270C	o-Cresol	EPA 8270C
Benzyl Alcohol	EPA 8270C	o-Toluidine	EPA 8270C
bis(2-Chloroethoxy)methane	EPA 8270C	Parathion	EPA 8270C
bis(2-Chloroethyl)ether	EPA 8270C	p-Dimethylaminoazobenzene	EPA 8270C
bis(2-Chloroisopropyl)ether	EPA 8270C	Pentachlorobenzene	EPA 8270C
bis(2-Ethylhexyl)phthalate	EPA 8270C	Pentachloronitrobenzene	EPA 8270C
Butyl benzylphthalate	EPA 8270C	Phenacetin	EPA 8270C
Chlorobenzilate	EPA 8270C	Phenanthrene	EPA 8270C
Chrysene	EPA 8270C	Phenol	EPA 8270C
Diallate	EPA 8270C	Phorate	EPA 8270C
Dibenzo(a,h)anthracene	EPA 8270C	p-Phenylenediamine	EPA 8270C

TABLE 3
LEACHATE ANALYSIS PARAMETERS
(continued)

Parameter	Method	Parameter	Method
Pronamide	EPA 8270C	Endrin Aldehyde	EPA 8081
Pyrene	EPA 8270C	Gamma BHC (Lindane)	EPA 8081
Safrole	EPA 8270C	Heptachlor	EPA 8081
sym-Trinitrobenzene	EPA 8270C	Heptachlor epoxide	EPA 8081
Thionazin	EPA 8270C	Methoxychlor	EPA 8081
Chemical Oxygen Demand	HACH 8000	Toxaphene	EPA 8081
Total dissolved solids	SM 2540C	2,4,5-T	EPA 8151A
Nitrite Nitrogen	SM 4500-NO2B	2,4-D	EPA 8151A
BOD 5-day	SM 5210B	Dinoseb	EPA 8151A
Total Organic Carbon	SM 5310C	Pentachlorophenol	EPA 8151A
Aldrin	EPA 8081	Silvex	EPA 8151A
Alpha BHC	EPA 8081	Pyruvic	
Beta BHC	EPA 8081	Lactic	
Chlordane	EPA 8081	Formic	
DDD	EPA 8081	Acetic	
DDE	EPA 8081	Proprionic	
DDT	EPA 8081	Butyric	
Delta BHC	EPA 8081		
Dieldrin	EPA 8081		
Endosulfan I	EPA 8081		
Endosulfan II	EPA 8081		
Endosulfan Sulfate	EPA 8081		
Endrin	EPA 8081		

Note

This list of parameters was developed from the Monitoring, Sampling, and Analysis Report included in the permit amendment submitted in October 2001.

TABLE 4
LANDFILL GAS DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

LFG WELL 1 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	95	82	96	91	100	77	77	80	78	82
Flow Rate (scfm)	19	37	107	80	53	74	65	70	59	55
Methane (%)	53	56.1	63.3	51.3	55.9	51.4	48.9	50.2	55.4	52.3
Carbon Dioxide (%)	39.6	40.3	36.1	38.8	37.1	39.3	37.4	37.3	38.2	36.1
Oxygen (%)	0.6	0.2	0.5	0.1	0.1	0.6	0.4	0.3	0.2	0.3
Balance (%)	6.8	3.4	0	9.8	6.9	8.7	13.3	12.2	6.2	11.3

LFG WELL 2 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	98	87	96	88	100	77	77	72.9	68	63.1
Flow Rate (scfm)	47	75	62	109	53	74	65	60	70	59
Methane (%)	54	59	58.6	59.8	55.9	51.4	48.9	54.0	53.4	55.2
Carbon Dioxide (%)	42.7	40.6	39	39.6	37.1	39.3	37.4	37.4	37.1	36.7
Oxygen (%)	0.9	0.4	0.8	0.4	0.1	0.6	0.4	0.3	0.2	0.2
Balance (%)	2.4	0	2	0.2	6.9	8.7	13.3	8.3	9.3	7.9

LFG WELL 3 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	115	102	105	100	92	98	96	97	99	95
Flow Rate (scfm)	2	20	53	75	65	56	55	54	53	58
Methane (%)	53	59.5	50.1	58.2	52.3	54.6	54.5	54.2	54.0	53.9
Carbon Dioxide (%)	38.6	40.1	36.1	39.8	34.9	39.8	36.5	36.8	36.5	36.2
Oxygen (%)	0.6	0.4	0.2	0.6	0.8	1.2	1.2	1.3	1.4	1.6
Balance (%)	7.8	0	14	1.4	12	4.4	7.8	7.7	8.0	8.3

LFG WELL 4 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	98	63	124	100	119	92	97	105	100	108
Flow Rate (scfm)	22	36	56	59	105	26	67	30	51	45
Methane (%)	54	58	50.9	57.3	57.1	60.2	57.4	59.4	60.1	60.9
Carbon Dioxide (%)	40	40.2	33.7	39.9	36	39.1	36.9	36.7	36.3	36.0
Oxygen (%)	0.4	0.8	1.5	0.6	0.9	0.5	1.6	1.2	1.3	1.4
Balance (%)	5.6	1	14	2.2	6	0.2	4.4	2.7	2.2	1.7

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 5 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	97	98	102	90	81	96	95	79	94	89
Flow Rate (scfm)	6	36	45	65	76	42	41	43	39	35
Methane (%)	52	59.8	50.4	60.2	60.8	60.7	53.1	57.4	59.5	60.0
Carbon Dioxide (%)	39.1	39.7	36.7	38.6	27.7	38.5	37.5	34.5	33.9	33.4
Oxygen (%)	1.9	0.5	0.4	1.1	4	0.6	2.5	2.4	2.6	2.8
Balance (%)	7	0	13	0.1	0.2	0.2	6.9	5.7	4.0	3.8

LFG WELL 6 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	100	111	120	101	56	106	102	100	107	99
Flow Rate (scfm)	0	12	59	56	75	21	35	40	52	54
Methane (%)	60	48.8	59.8	59.8	56.3	58.9	48.9	52.7	53.1	54.0
Carbon Dioxide (%)	39	32.8	38.3	38.8	36.7	40.1	37.1	40.2	38.8	39.1
Oxygen (%)	0.5	3.6	0.2	1.2	1.2	0.9	2.1	1.4	1.5	1.5
Balance (%)	0.5	14.8	2	0.2	5.8	0.1	11.9	5.7	6.6	5.4

LFG WELL 7 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	110	100	81	100	82	99	92	95	104	103
Flow Rate (scfm)	23	38	64	76	92	56	81	40	63	79
Methane (%)	53	61.8	62.8	65.2	61.1	58.8	57.3	55.1	49.8	61.1
Carbon Dioxide (%)	46.2	38.1	36.9	34.7	38.6	40.4	38.4	36.6	36.0	35.4
Oxygen (%)	0.8	0.1	0.2	0	0.2	0.6	1.1	0.7	0.8	0.8
Balance (%)	0	0	0	0.1	0.1	0.2	3.2	7.6	13.4	2.7

LFG WELL 8 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	115	67	78	90	82	101	92	84.0	89.0	102.0
Flow Rate (scfm)	33	18	51	39	87	48	81	44.0	62.0	55.0
Methane (%)	59	60.7	65.2	63.9	60.8	60	57.3	59.4	59.0	55.6
Carbon Dioxide (%)	39.9	38.8	33.5	35.9	38.6	39.4	38.4	38.0	38.1	38.2
Oxygen (%)	1.1	0.5	1.1	0.1	0.6	0.4	1.1	0.6	0.6	0.6
Balance (%)	0	0	0	0.1	0	0.2	3.2	1.9	2.3	5.7

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 9 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	110	66	80	110	110	97	92	100	90	94
Flow Rate (scfm)	31	45	10	66	81	42	62	40	51	48
Methane (%)	60	63.1	60.8	63.7	50.4	61.2	56.4	59.4	54.9	54.0
Carbon Dioxide (%)	39.6	36.5	38.6	35.9	34.9	38	39.5	36.8	37.4	37.4
Oxygen (%)	0.4	0.4	0.5	0.3	9.8	0.7	1	3.5	4.0	4.4
Balance (%)	0	0	0	0.1	4.9	0.1	3.1	0.3	3.7	4.2

LFG WELL 10 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	109	114	80	110	92	103	95	100	89	93
Flow Rate (scfm)	40	55	36	36	81	63	41	42	49	51
Methane (%)	50	49.9	60.8	56.9	57.3	51.9	53.1	55.7	52.0	50.2
Carbon Dioxide (%)	41	33.3	38.6	39.5	38.5	39.4	37.5	38.5	38.5	38.6
Oxygen (%)	1	3	0.5	1	0.7	2.2	2.5	2.0	2.1	2.2
Balance (%)	8	13.8	0	2.6	3.5	6.5	6.9	3.8	7.3	9.0

LFG WELL 11 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	119	98	101	100	94	95	98	96	97	94
Flow Rate (scfm)	25	48	56	77	72	49	50	52	54	58
Methane (%)	58	60.2	57.8	61.6	60.8	58.3	52.6	56.0	52.0	54.8
Carbon Dioxide (%)	41.7	39.3	40.3	37.6	38.5	40.5	36	36.8	38.0	35.6
Oxygen (%)	0.3	0.5	0.9	0.6	0.5	1.1	2.8	2.1	2.4	2.7
Balance (%)	0	0	1	0.2	0.2	0.1	8.6	5.0	7.6	6.8

LFG WELL 12 (IN CONTROL AREA, BUT NEAR APPLICATION TRENCHES)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	115	119	84	100	77	110	111	104	101	110
Flow Rate (scfm)	35	54	102	66	85	31	59	40	48	54
Methane (%)	61	60.4	62.1	61	52.5	60.6	56.5	55.9	57.0	54.3
Carbon Dioxide (%)	38.6	39.2	37.3	38.5	36.9	38.6	35.9	36.5	35.0	37.0
Oxygen (%)	0.4	0.4	0.4	0.3	0.1	0.7	1.8	1.2	1.4	1.6
Balance (%)	0	0	0	0.2	10.5	0.1	5.8	6.4	6.6	7.2

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 13 (IN CONTROL AREA, BUT NEAR APPLICATION TRENCHES)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	110	75	94	100	99	108	109	104	106	99
Flow Rate (scfm)	40	61	41	76	65	59	82	62	75	57
Methane (%)	60	61.3	62.3	60.4	56.3	59.1	57.3	56.9	58.0	55.6
Carbon Dioxide (%)	39.5	38.1	37.2	38.9	36.7	40.2	37.2	37.8	37.7	39.8
Oxygen (%)	0.5	0.6	0.4	0.5	1.2	0.6	1.4	1.2	0.7	0.8
Balance (%)	0	0	0	0.2	5.8	0.1	4.1	4.1	3.6	3.8

LFG WELL 14 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	109	71	107	90	96	92	104	101	99	97
Flow Rate (scfm)	19	36	60	62	79	34	53	37	54	47
Methane (%)	56	66.7	59.7	62.2	61.1	56.2	58	58.0	57.6	57.1
Carbon Dioxide (%)	41.9	33.1	39.3	36.7	38.6	39.7	32.9	35.4	34.9	34.4
Oxygen (%)	1	0.2	0.8	1	0.2	2.2	2.5	2.3	2.5	2.8
Balance (%)	1.1	0	0	0.1	0.1	1.9	6.6	4.3	5.0	5.8

LFG WELL 15 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	111	73	93	79	99	88	75	77	83	90
Flow Rate (scfm)	22	49	49	46	79	21	60	50	52	47
Methane (%)	54	56.7	56.7	51	56.8	59.1	51.7	54.9	54.8	54.7
Carbon Dioxide (%)	40.6	41.3	38.6	36.4	36.9	39.6	37.2	39.0	42.0	35.4
Oxygen (%)	0.6	0.4	1.9	1.7	0.5	1.1	2.9	2.3	2.5	2.8
Balance (%)	4.8	1.6	3	10.9	5.8	0.2	8.2	3.9	0.7	7.1

LFG WELL 16 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	90	94	61	110	62	79	91	83	88	75
Flow Rate (scfm)	0	12	65.4	52	79	9	66	58	61	49
Methane (%)	53	57.6	57.2	58	60.8	48.7	60.3	57.6	57.9	58.2
Carbon Dioxide (%)	40	40.5	41.3	41.2	38.5	36.2	35.3	35.4	34.4	33.5
Oxygen (%)	1.7	0.8	1.3	0.7	0.6	4.9	2.7	3.3	3.7	4.1
Balance (%)	5.3	1.1	0	0.1	0.1	10.2	1.7	3.7	4.0	4.2

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 17 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	90	83	90	96	97	99	98	99	95	96
Flow Rate (scfm)	30	48	51	69	43	39	13	37	44	46
Methane (%)	52	54.1	59	55.5	54.6	53.8	53.3	54.5	52.0	51.0
Carbon Dioxide (%)	39.4	39.2	39.6	37.1	37.5	39.1	37	37.1	36.7	36.4
Oxygen (%)	0.8	0.4	1.2	0.4	1.3	1.4	2.3	2.1	2.3	2.5
Balance (%)	7.8	6.3	0	7	6.6	5.7	7.4	6.4	9.0	10.1

LFG WELL 18 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	109	93	103	103	70	101	117	108	98	102
Flow Rate (scfm)	10	25	23	60	72	22	24	30	41	45
Methane (%)	58	63.1	64.4	67.5	59.3	57.6	62.7	60.0	58.0	61.4
Carbon Dioxide (%)	41.3	36.4	35.3	31.5	39.3	41.4	36.5	37.3	36.1	38.2
Oxygen (%)	0.7	0.5	0.2	0.8	1	0.7	0.7	0.8	0.9	0.3
Balance (%)	0	0	0	0.2	0.4	0.3	0.1	1.8	5.0	0.1

LFG WELL 29 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	105	85	103	110	69	105	129	115	113	110
Flow Rate (scfm)	43	6	25	56	81	41	77	63	70	52
Methane (%)	55	59.3	64.4	50.5	45.9	59.4	55.7	53.4	55.0	52.3
Carbon Dioxide (%)	36.9	39.5	35.3	34.1	35	39.7	38.1	41.1	37.6	37.7
Oxygen (%)	2.1	1.2	0.2	4.5	0.3	0.8	1	0.9	0.7	0.6
Balance (%)	6	0	0	10.9	18.8	0.1	5.2	4.6	6.7	9.4

LFG WELL 30 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	105	69	96	100	83	129	99	96	84	90
Flow Rate (scfm)	5	62	55	64	96	27	49	83	17	60
Methane (%)	60	53.7	64.3	46.7	50.9	43.8	51.6	52.0	49.0	55.0
Carbon Dioxide (%)	39.5	35.3	35.2	35.9	36.1	35.4	34.4	33.9	36.9	32.9
Oxygen (%)	0.5	0.5	0.3	0.3	0.6	0.3	3.5	1.0	0.4	2.8
Balance (%)	0	10.5	0	17.1	12.4	20.5	10.5	13.1	13.7	9.3

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 31 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	100	89	111	100	64	96	112	78	89	99
Flow Rate (scfm)	30	65	39	64	66	30	73	35	60	49
Methane (%)	55	41.6	64.8	46.9	59	39	51.4	48.0	47.2	56.1
Carbon Dioxide (%)	42.3	33.4	34.4	34.7	35.7	34.4	37.1	42.0	39.4	33.4
Oxygen (%)	0.9	0.5	0.6	0.2	1.8	1.1	1.2	1.4	1.5	0.9
Balance (%)	1.8	24.5	0	18.2	3.5	25.5	10.3	8.6	11.9	9.6

LFG WELL 37 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	101	93	111	103	80	116	120	104	92	114
Flow Rate (scfm)	58	73	53	120	82	119	139	110	95	117
Methane (%)	60	66.9	64.8	59.6	63	52.2	56.4	54.4	52.9	54.8
Carbon Dioxide (%)	39	32.5	34.4	38.5	36.1	40.8	39.3	40.0	40.7	41.3
Oxygen (%)	1	0.6	0.6	0.7	0.8	2.2	0.8	1.4	1.5	1.6
Balance (%)	0	0	0	1.2	0.1	4.8	3.5	4.3	5.0	2.3

LFG Well 38 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	110	93	85	102	80	105	120	110	98	97
Flow Rate (scfm)	49	50	54	84	82	39	77	81	60	83
Methane (%)	55	58.3	62.9	53.1	63	39.9	56.8	51.1	50.0	48.9
Carbon Dioxide (%)	35.8	39.1	36.3	35.7	36.1	37	41	38.9	43.0	39.7
Oxygen (%)	2.1	0.8	0.7	0.3	0.8	0.8	0.4	0.1	1.0	0.7
Balance (%)	7.1	1.8	0	10.9	0.1	22.3	1.8	9.9	6.0	10.8

LFG WELL 39 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	101	102	86	96	61	125	82	105	84	91
Flow Rate (scfm)	88	52	36	66	63	85	94	99	92	79
Methane (%)	56	50	66	45.7	64.1	44.9	57.6	58.0	53.6	51.9
Carbon Dioxide (%)	40.5	32.8	32.9	34.5	35.4	43.3	38.1	39.1	39.7	40.3
Oxygen (%)	0.8	0.4	1	0.1	0.4	0.5	1	0.6	0.6	0.6
Balance (%)	2.7	16.8	0	19.7	0.1	11.3	3.3	2.3	6.1	7.2

TABLE 4
LANDFILL GAS DATA
(continued)

LFG WELL 80 (TEST AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	88	123	115	98	61	103	94	80	95	99
Flow Rate (scfm)	48	44	25	77	61	60	65	62	68	57
Methane (%)	48	53.2	68.3	55.4	50.3	51.9	52.1	53.0	57.4	52.4
Carbon Dioxide (%)	36.8	36.6	30.7	40.2	35	42.1	39.6	40.7	41.5	42.4
Oxygen (%)	0.2	0.4	0.8	0.4	0.2	0.8	1.1	1.0	0.8	0.4
Balance (%)	15	9.9	0	4	14.5	5.2	7.2	5.4	0.3	4.8

LFG WELL 81 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	112	65	90	94	97	98	98	95	94	99
Flow Rate (scfm)	52	45	42	86	69	86	94	91	65	70
Methane (%)	44	55	54.7	59.8	49.7	52	54.7	55.9	47.0	57.4
Carbon Dioxide (%)	36.2	40.9	37.2	39.6	35.8	40.9	37.7	38.8	38.9	39.0
Oxygen (%)	0.8	0.4	0.7	0.5	0.5	1.1	0.8	0.6	0.9	1.2
Balance (%)	19	3.7	7	0.1	14	6	6.8	4.8	13.2	2.4

LFG WELL 82 (CONTROL AREA)

Parameter	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Apr-03	Jun-03	Sep-03	Oct-03	Dec-03
Temperature (degrees F)	98	68	101	95	71	110	100	90	85	96
Flow Rate (scfm)	29	55	64	72	74	40	56	71	45	50
Methane (%)	55	59.1	62.2	47.9	51.2	48.2	55.5	49.7	51.0	52.3
Carbon Dioxide (%)	42.1	40.4	36.8	32.8	35.9	35.2	38.1	34.0	39.6	43.9
Oxygen (%)	0.6	0.5	0.8	2	0.1	1	1	0.2	0.5	1.2
Balance (%)	2.3	0	0	17.3	12.8	15.6	5.4	16.1	8.9	2.6

TABLE 5
SUMMARY OF LEACHATE QUALITY DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

TEST AREA (PHASE 1-2N)

Key Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Biological Oxygen Demand	mg/l	34	25	36	15	60	54	91	28	33
Chemical Oxygen Demand	mg/l	505	780	598	1,150	912	784	477	739	906
Total Organic Carbon	mg/l	155	152	160	164	171	241	214	183	216
BOD/COD Ratio	-	0.07	0.03	0.06	0.01	0.07	0.07	0.19	0.04	0.04
COD/TOC Ratio	-	3.26	5.13	3.74	7.01	5.33	3.25	2.23	4.04	4.19
Chloride	mg/l	886	938	984	930	949	1,140	1,040	670	945
Sulfate	mg/l	<10	<10	<10	<10	< 10	< 10	< 10	<10	<10
Nitrate Nitrogen	mg/l as N	0.05	0.05	0.12	1.37	0	0	0	0	0.07
Ammonia Nitrogen	mg/l as N	293	352	284	352	344	450	391	387	291

Secondary Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Arsenic	ug/L	20	20	< 10	20	20	20	30	20	30
Barium	ug/L	770	1070	110	890	950	1,100	860	910	970
Cadmium	ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<5	<5
Chromium	ug/L	20	30	< 10	30	30	40	40	30	30
Lead	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5
Mercury	ug/L	< 0.2	< 0.2	< 0.2	< 0.4	< 0.0004	< 0.0004	< 0.2	<0.2	<0.2
Nitrite Nitrogen	mg/L	< 0.05	< 0.05	< 0.05	0.16	< 0.05	< 0.05	< 0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	312	445	252	399	432	567	404	395	307
Ortho Phosphorus	mg/L	6.6	1.6	2.2	0.9	1.8	0.9	2.3	2.2	4.8
Potassium	ug/L	214,000	215,000	227,000	251,000	273,000	328,000	320,000	256,000	270,000
Selenium	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5
Silver	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10
Total Dissolved Solids	mg/L	3490	3,440	3480	3,670	3,660	4,440	4,300	3,710	3,780
Total Phosphorus	mg/L	1.9	2.1	3.1	0.7	2.2	1.4	2.1	1.6	10.5

TABLE 5
SUMMARY OF LEACHATE QUALITY DATA
(continued)

TEST AREA (PHASE 1-2S)

Parameter		12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Biological Oxygen Demand	mg/l	51	33	17	9	51	63	74	40	29
Chemical Oxygen Demand	mg/l	776	897	1,020	526	547	648	759	755	976
Total Organic Carbon	mg/l	211	203	181	147	153	201	180	187	216
BOD/COD Ratio	-	0.07	0.04	0.02	0.02	0.09	0.10	0.10	0.05	0.03
COD/TOC Ratio	-	3.68	4.42	5.64	3.58	3.58	3.22	4.22	4.04	4.52
Chloride	mg/l	465	1,210	1,160	832	948	220	1,080	989	1,060
Sulfate	mg/l	<10	<10	<10	<10	< 10	< 10	< 10	<10	<10
Nitrate Nitrogen	mg/l as N	0.09	0.11	0.05	0.05	< 0.05	< 0.05	< 0.05	<0.05	0.24
Ammonia Nitrogen	mg/l as N	319	380	327	295	350	416	346	401	361

Secondary Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Arsenic	ug/L	10	< 10	10	< 10	10	< 10	10	<10	20
Barium	ug/L	830	990	970	640	760	790	810	770	820
Cadmium	ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<5	<5
Chromium	ug/L	20	20	30	20	30	30	30	30	30
Lead	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5
Mercury	ug/L	< 0.2	< 0.2	< 0.2	< 0.4	< 0.0004	< 0.0004	< 0.2	<0.2	<0.2
Nitrite Nitrogen	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	354	597	227	319	468	489	359	407	376
Ortho Phosphorus	mg/L	2.5	2	2.9	1.2	2.3	3.1	2.7	2.9	5.5
Potassium	ug/L	235,000	239,000	257,000	211,000	246,000	282,000	269,000	235,000	263,000
Selenium	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5
Silver	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10
Total Dissolved Solids	mg/L	3240	3320	10800	2580	2800	3130	3270	3310	3570
Total Phosphorus	mg/L	2.6	2.7	2.5	0.6	2.5	2.2	2.8	3	10.8

TABLE 5
SUMMARY OF LEACHATE QUALITY DATA
(continued)

CONTROL AREA (PHASE 3)

Parameter	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	16-Apr-03	16-Jul-03	29-Oct-03
Biological Oxygen Demand	mg/l	148	118	159	12	129	416	184	84
Chemical Oxygen Demand	mg/l	7,830	2,950	2,950	2,910	149	2,710	3,090	2860
Total Organic Carbon	mg/l	873	812	763	814	835	805	1,040	1110
BOD/COD Ratio	-	0.02	0.04	0.05	0.00	0.87	0.15	0.06	0.03
COD/TOC Ratio	-	8.97	3.63	3.87	3.57	0.18	3.37	2.97	2.58
Chloride	mg/l	2,180	2,990	2,990	2,930	2,950	3,270	3,070	3330
Sulfate	mg/l	<10	<10	<10	<10	<10	< 10	<10	<10
Nitrate Nitrogen	mg/l as N	0.08	0.08	0.16	0.19	0.13	0.09	0.81	3.27
Ammonia Nitrogen	mg/l as N	1,480	1,620	1,110	2,130	1,560	2,150	2,280	2,000

Secondary Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	16-Apr-03	16-Jul-03	29-Oct-03
Arsenic	ug/L	30	30	40	30	40	40	70	60
Barium	ug/L	680	660	580	650	660	910	610	630
Cadmium	ug/L	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 5	<5	<5
Chromium	ug/L	140	150	180	160	170	190	190	200
Lead	ug/L	< 5	< 5	< 5	< 5	<5	< 5	<5	<5
Mercury	ug/L	< 0.2	< 0.2	< 0.2	< 0.4	<0.0004	< 0.2	<0.2	<0.2
Nitrite Nitrogen	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	0.81	<0.05
Total Kjeldahl Nitrogen	mg/L	932	809	1693	1666	1,756	2,198	2,343	2,062
Ortho Phosphorus	mg/L	0.4	0.8	13	5.5	15.1	16.2	17.2	19.2
Potassium	ug/L	984,000	900,000	946,000	1,060,000	10,400,000	1,080,000	937,000	1,000,000
Selenium	ug/L	5	< 5	8	6	6	< 5	<5	13
Silver	ug/L	< 10	< 10	< 10	< 10	<10	< 10	<10	<10
Total Dissolved Solids	mg/L	8280	7250	7620	7600	7350	8150	7,600	6,690
Total Phosphorus	mg/L	13.3	11.5	14.6	7.3	16.1	14.9	16.6	14.3

Note: Leachate samples could not be obtained for the January 2003 event in Phase 3 because of frozen sampling ports.

TABLE 5
SUMMARY OF LEACHATE QUALITY DATA
(continued)

CONTROL AREA (PHASE 4)

Parameter		12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	16-Apr-03	16-Jul-03	29-Oct-03
Biological Oxygen Demand	mg/l	3,150	495	1650	24		960	1,670	20
Chemical Oxygen Demand	mg/l	8,230	4,980	4,680	6,880	170	7,480	4,600	423
Total Organic Carbon	mg/l	2,150	1,420	1,560	1,790	2,240	2,390	1,560	150
BOD/COD Ratio	-	0.38	0.10	0.35	0.00	0.00	0.13	0.36	0.05
COD/TOC Ratio	-	3.83	3.51	3.00	3.84	0.08	3.13	2.95	2.82
Chloride	mg/l	3,290	4,280	3,520	2,890	1,980	2,960	3,580	346
Sulfate	mg/l	<10	<10	<10	<10	2,000	<10	<10	<10
Nitrate Nitrogen	mg/l as N	0.1	0.11	0.23	0.16	0.17	0.17	0.19	0.2
Ammonia Nitrogen	mg/l as N	1,750	2,630	1,120	2,040	1,390	2,170	2,200	383

Secondary Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	16-Apr-03	16-Jul-03	29-Oct-03
Arsenic	ug/L	80	70	70	50	60	60	90	<10
Barium	ug/L	490	450	370	410	400	810	450	540
Cadmium	ug/L	< 0.5	2.1	< 0.5	< 0.5	0.9	<5	<5	<5
Chromium	ug/L	270	260	220	200	1,980	210	290	10
Lead	ug/L	< 5	5	< 5	< 5	6	<5	<5	<5
Mercury	ug/L	< 0.2	< 0.2	< 0.2	< 0.4	<0.2	<0.2	<0.2	<0.2
Nitrite Nitrogen	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	481	2,417	1,579	1,830	1,556	2,227	2,269	394
Ortho Phosphorus	mg/L	0.5	0.5	9.5	6.3	13.7	19.6	25.8	1.7
Potassium	ug/L	714,000	604,000	487,000	479,000	442,000	528,000	588,000	73,600
Selenium	ug/L	7	8	6	< 5	9	<5	<5	<5
Silver	ug/L	< 10	< 10	< 10	< 10	<10	<10	<10	<10
Total Dissolved Solids	mg/L	7,530	9,430	6,030	5,300	4,740	6,130	4,120	1480
Total Phosphorus	mg/L	21.3	18.9	12.2	7.9	5.4	15.9	17.9	2.1

Note: Leachate samples could not be obtained for the January 2003 event in Phase 4 because of frozen sampling ports.
The BOD value for the 26 December 2002 sampling event is erroneous and has been omitted from this table.

TABLE 5
SUMMARY OF LEACHATE QUALITY DATA
(continued)

LEACHATE TANK

Parameter	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Biological Oxygen Demand	mg/l	52	143	1,310	120	398		800	120	68
Chemical Oxygen Demand	mg/l	2,490	2,630	2,150	2,340	2,300	2,850	2,480	2,110	1760
Total Organic Carbon	mg/l	603	746	708	710	742	999	1,000	514	574
BOD/COD Ratio	-	0.02	0.05	0.61	0.05	0.17	0.00	0.32	0.06	0.04
COD/TOC Ratio	-	4.13	3.53	3.04	3.30	3.10	2.85	2.48	4.11	3.07
Chloride	mg/l	2,310	1,380	2,820	54	1,900	2,250	1,880	1,860	2,140
Sulfate	mg/l	<10	<10	<10	<10	< 10	< 10	< 10	<10	<10
Nitrate Nitrogen	mg/l as N	0.05	0.09	0.16	0.11	0.15	0.11	0.07	0.08	<0.05
Ammonia Nitrogen	mg/l as N	1,510	1,590	1,390	1,560	1,280	989	520	1,370	1,280

Secondary Parameters	Units	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
Arsenic	ug/L	40	40	40	30	30	30	30	30	30
Barium	ug/L	640	660	600	680	720	500	1040	690	720
Cadmium	ug/L	< 0.5	0.9	< 0.5	< 0.5	< 0.5	< 5	< 5	<5	<5
Chromium	ug/L	150	150	170	120	140	130	110	120	120
Lead	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<5	<5
Mercury	ug/L	< 0.2	< 0.2	< 0.2	< 0.4	< 0.0004	< 0.2	< 0.2	<0.2	<0.2
Nitrite Nitrogen	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	1,373	1,476	2,919	1,647	1,471	1,181	549	1,406	1,310
Ortho Phosphorus	mg/L	15.9	0.8	20	5	8.4	11.8	10.5	13.5	15
Potassium	ug/L	535,000	568,000	535,000	455,000	524,000	493,000	438,000	427,000	455,000
Selenium	ug/L	< 5	6	6	< 5	5	< 5	< 5	<5	5
Silver	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10
Total Dissolved Solids	mg/L	6,370	5,960	5,900	5,490	5,180	5,640	4,900	5,040	4,120
Total Phosphorus	mg/L	18.8	8.3	11.9	8.3	23.3	12.9	8.3	9.4	13

Note: The BOD value for the 23 January 2002 sampling event is erroneous and has been omitted from this table.

TABLE 6
SUMMARY OF LEACHATE QUANTITY DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia
2002

	Phase	Area (Acres)			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Total
Test Area	PH 1 & 2 NOR	12.5	PRIMARY	GAL	6,602	6,020	8,699	4,353	6,378	6,557	15,895	9,197	7,269	5,616	5,776	8,392	90,754
			SECONDARY	GAL	0	7	48	35	99	2	103	0	0	0	800	267	1,361
	PH 1 & 2 SOU	13.9	PRIMARY	GAL	6,268	6,122	10,433	9,806	8,706	6,050	5,667	6,448	5,168	7,497	9,608	13,059	94,832
			SECONDARY	GAL	0	0	830	614	226	497	20	853	0	268	0	414	3,722
Control Area	PHASE 3	10.5	PRIMARY	GAL	45,672	40,965	40,811	40,111	43,156	38,889	39,249	44,639	39,007	40,324	35,410	38,804	487,037
			SECONDARY	GAL	1,481	29	0	1	1	1	1,477	0	0	0	0	23	3,013
	PHASE 4	11.1	PRIMARY	GAL	66,608	58,153	59,725	65,014	57,183	52,606	54,192	26,630	49,656	56,191	53,529	61,528	661,015
			SECONDARY	GAL	0	0	4,928	0	5,005	1	0	6	0	4,970	0	4,986	19,896
Current Disposal Area	PHASE 11	10.3	PRIMARY	GAL	38,454	35,476	34,927	37,692	35,345	29,802	33,545	29,377	29,552	30,663	6,989	34,497	376,319
			SECONDARY	GAL	27	2	0	0	0	2,901	1	1	5	2,811	0	0	5,748
	PHASE 12	9.5	PRIMARY	GAL	33,029	32,091	38,396	36,128	23,929	21,136	10,925	17,031	31,174	21,403	28,763	34,472	328,477
			SECONDARY	GAL	2,060	0	0	0	1	0	0	20	0	0	3,115	0	5,196
	Monthly Total				200,201	178,865	198,797	193,754	180,029	158,442	161,074	134,202	161,831	169,743	143,990	196,442	2,077,370

Note:

This table is based on site records for the Maplewood Recycling and Waste Disposal Facility showing the amount of leachate collected in the primary and seconday leachate collection system. These records were provided by Waste Management and the site manager (Brian McClung) in a series faxes between September 2002 and December 2002.

The test area is represented by Ph 1&2 Nor and Ph 1&2 Sou, the control area is represented by Phase 3 and Phase 4, Phase 11 and Phase 12 are the current disposal areas and are provided for information purposes only.

TABLE 6
SUMMARY OF LEACHATE QUANTITY DATA
continued

2003

	Phase	Area (Acres)			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Total
Test Area	PH 1 & 2 NOR	12.5	PRIMARY	GAL	7,782	7,791	11,921	13,256	13,931	8,616	17,949	13,928	11,831	13,310	10,170	12,814	143,299
			SECONDARY	GAL	36	0	0	0	0	0	1	0	0	0	0	0	37
	PH 1 & 2 SOU	13.9	PRIMARY	GAL	6,199	13,138	13,531	13,963	14,949	12,109	6,763	9,318	8,290	4,804	7,491	13,489	124,044
			SECONDARY	GAL	113	0	0	0	0	0	0	0	1,279	0	0	0	1,392
Control Area	PHASE 3	10.5	PRIMARY	GAL	33,587	27,737	24,356	24,771	36,537	33,400	36,152	37,380	33,297	37,371	31,447	31,585	387,620
			SECONDARY	GAL	0	26	3,713	0	347	0	1	1	0	8	1	1,761	5,858
	PHASE 4	11.1	PRIMARY	GAL	55,062	55,445	64,356	63,242	60,276	51,538	51,150	52,112	51,072	61,523	53,815	63,121	682,712
			SECONDARY	GAL	29	5,164	4,974	55	5,040	0	4,760	0	4,406	3,294	187	22	27,931
Current Disposal Area	PHASE 11	10.3	PRIMARY	GAL	12,262	48,395	37,288	35,899	39,611	38,576	39,699	43,337	34,687	37,419	1,980	54,600	423,753
			SECONDARY	GAL	0	2,968	10	0	2,583	0	1	2	0	1	2,724	0	8,289
	PHASE 12	9.5	PRIMARY	GAL	29,879	35,866	47,430	44,029	44,761	45,277	41,551	44,754	34,343	39,114	34,499	42,835	484,338
			SECONDARY	GAL	0	4,287	0	0	3,229	89	0	3,183	0	12	76	0	10,876
	Monthly Total				144,949	200,817	207,579	195,215	221,264	189,605	198,027	204,015	179,205	196,856	142,390	220,227	2,300,149

TABLE 7
LIQUID APPLICATION SUMMARY
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
8/20/2002	13,441	7,203	0	0	0	20,644						
8/21/2002	0	0	0	0	0	20,644						
8/22/2002	6,695	6,662	6,669	0	0	40,670						
8/23/2002	0	0	0	0	0	40,670						
8/24/2002	0	0	0	0	0	40,670						
8/25/2002	13,281	13,210	13,369	0	0	80,530						
8/26/2002	0	0	0	0	0	80,530						
8/27/2002	0	0	0	0	0	80,530						
8/28/2002	0	0	0	0	0	80,530						
8/29/2002	0	0	0	0	0	80,530						
8/30/2002	0	0	0	0	0	80,530						
8/31/2002	0	0	0	0	0	80,530	33,417	27,075	20,038	0	0	80,530
9/1/2002	0	0	0	0	0	80,530						
9/2/2002	0	0	0	0	0	80,530						
9/3/2002	0	6,500	0	0	0	87,030						
9/4/2002	0	0	0	0	0	87,030						
9/5/2002	6,600	6,524	6,570	0	0	106,724						
9/6/2002	0	0	0	0	0	106,724						
9/7/2002	0	0	0	0	0	106,724						
9/8/2002	0	0	0	0	0	106,724						
9/9/2002	6,722	13,456	13,439	0	0	140,341						
9/10/2002	0	0	0	0	0	140,341						
9/11/2002	13,396	13,420	13,405	0	0	180,562						
9/12/2002	13,408	13,405	13,470	0	0	220,845						
9/13/2002	0	0	0	0	0	220,845						
9/14/2002	0	0	0	0	0	220,845						
9/15/2002	0	0	0	0	0	220,845						
9/16/2002	0	13,415	13,482	0	0	247,742						
9/17/2002	0	0	0	0	0	247,742						
9/18/2002	13,422	13,446	13,492	0	0	288,102						
9/19/2002	0	0	0	0	0	288,102						
9/20/2002	0	0	0	0	0	288,102						
9/21/2002	0	0	0	0	0	288,102						
9/22/2002	0	0	0	0	0	288,102						
9/23/2002	13,544	13,468	13,506	0	0	328,620						
9/25/2002	13,523	13,470	13,511	0	0	369,124						
9/26/2002	0	0	0	0	0	369,124						
9/27/2002	0	0	0	0	0	369,124						
9/28/2002	0	0	0	0	0	369,124						
9/29/2002	0	0	0	0	0	369,124						
9/30/2002	13,468	13,506	13,470	0	0	409,568	94,083	120,610	114,345	0	0	329,038
10/1/2002	6,700	6,698	6,733	0	0	429,699						
10/2/2002	6,726	6,707	0	0	0	443,132						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
10/3/2002	0	0	0	0	0	443,132						
10/4/2002	0	0	0	0	0	443,132						
10/5/2002	0	0	0	0	0	443,132						
10/6/2002	0	0	0	0	0	443,132						
10/7/2002	6,743	6,699	6,700	0	0	463,274						
10/8/2002	6,690	6,664	6,757	0	0	483,385						
10/9/2002	0	0	0	0	0	483,385						
10/10/2002	13,454	6,683	6,709	0	0	510,231						
10/11/2002	0	0	0	0	0	510,231						
10/12/2002	0	0	0	0	0	510,231						
10/13/2002	0	0	0	0	0	510,231						
10/14/2002	0	0	0	0	0	510,231						
10/15/2002	6,757	6,683	13,459	0	0	537,130						
10/16/2002	0	0	0	0	0	537,130						
10/17/2002	13,455	6,762	13,464	0	0	570,811						
10/18/2002	0	0	0	0	0	570,811						
10/19/2002	0	0	0	0	0	570,811						
10/20/2002	0	0	0	0	0	570,811						
10/21/2002	13,637	6,792	13,521	0	0	604,761						
10/22/2002	0	0	0	0	0	604,761						
10/23/2002	0	0	0	0	0	604,761						
10/24/2002	13,502	0	13,388	0	0	631,651						
10/25/2002	0	0	0	0	0	631,651						
10/26/2002	0	0	0	0	0	631,651						
10/27/2002	0	0	0	0	0	631,651						
10/28/2002	13,234	6,610	13,281	0	0	664,776						
10/29/2002	0	0	0	0	0	664,776						
10/30/2002	0	0	0	0	0	664,776						
10/31/2002	0	0	0	0	0	664,776	100,898	60,298	94,012	0	0	255,208
11/1/2002	13,338	0	13,265	0	0	691,379						
11/2/2002	0	0	0	0	0	691,379						
11/3/2002	0	0	0	0	0	691,379						
11/4/2002	13,364	6,676	13,321	0	0	724,740						
11/5/2002	0	0	0	0	0	724,740						
11/6/2002	0	0	0	0	0	724,740						
11/7/2002	13,362	6,645	13,345	0	0	758,092						
11/8/2002	0	0	0	0	0	758,092						
11/9/2002	0	0	0	0	0	758,092						
11/10/2002	0	0	0	0	0	758,092						
11/11/2002	0	0	0	0	0	758,092						
11/12/2002	0	0	0	0	0	758,092						
11/13/2002	0	0	0	0	0	758,092						
11/14/2002	0	0	0	0	0	758,092						
11/15/2002	0	0	0	0	0	758,092						
11/16/2002	0	0	0	0	0	758,092						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
11/17/2002	0	0	0	0	0	758,092						
11/18/2002	0	0	0	0	0	758,092						
11/19/2002	6,664	0	6,631	0	0	771,387						
11/20/2002	0	0	0	0	0	771,387						
11/21/2002	0	0	0	0	0	771,387						
11/22/2002	0	0	0	0	0	771,387						
11/23/2002	0	0	0	0	0	771,387						
11/24/2002	0	0	0	0	0	771,387						
11/25/2002	0	0	0	0	0	771,387						
11/26/2002	0	0	0	0	0	771,387						
11/27/2002	0	0	0	0	0	771,387						
11/28/2002	0	0	0	0	0	771,387						
11/29/2002	0	0	0	0	0	771,387						
11/30/2002	0	0	0	0	0	771,387	46,728	13,321	46,562	0	0	106,611
12/1/2002	0	0	0	0	0	771,387						
12/2/2002	0	0	0	0	0	771,387						
12/3/2002	0	0	0	0	0	771,387						
12/4/2002	6,477	6,520	6,493	0	0	790,877						
12/5/2002	0	0	0	0	0	790,877						
12/6/2002	0	0	0	0	0	790,877						
12/7/2002	0	0	0	0	0	790,877						
12/8/2002	0	0	0	0	0	790,877						
12/9/2002	0	0	0	0	0	790,877						
12/10/2002	13,200	13,429	19,940	0	0	837,446						
12/11/2002	0	0	0	0	0	837,446						
12/12/2002	6,795	0	6,572	0	0	850,813						
12/13/2002	0	0	0	0	0	850,813						
12/14/2002	0	0	0	0	0	850,813						
12/15/2002	0	0	0	0	0	850,813						
12/16/2002	0	0	0	0	0	850,813						
12/17/2002	0	0	0	0	0	850,813						
12/18/2002	0	0	0	0	0	850,813						
12/19/2002	0	0	0	0	0	850,813						
12/20/2002	0	0	0	0	0	850,813						
12/21/2002	0	0	0	0	0	850,813						
12/22/2002	0	0	0	0	0	850,813						
12/23/2002	0	0	0	0	0	850,813						
12/24/2002	0	0	0	0	0	850,813						
12/25/2002	0	0	0	0	0	850,813						
12/26/2002	13,469	0	0	0	0	864,282						
12/27/2002	0	0	0	0	0	864,282						
12/28/2002	0	0	0	0	0	864,282						
12/29/2002	0	0	0	0	0	864,282						
12/30/2002	0	0	0	0	0	864,282						
12/31/2002	0	0	0	0	0	864,282	39,941	19,949	33,005	0	0	92,895

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
1/1/2003	0	0	0	0	0	864,282						
1/2/2003	0	0	0	0	0	864,282						
1/3/2003	0	0	0	0	0	864,282						
1/4/2003	0	0	0	0	0	864,282						
1/5/2003	0	0	0	0	0	864,282						
1/6/2003	7,032	6,690	6,932	0	0	884,936						
1/7/2003	0	0	0	0	0	884,936						
1/8/2003	0	0	0	0	0	884,936						
1/9/2003	0	0	0	0	0	884,936						
1/10/2003	0	0	0	0	0	884,936						
1/11/2003	0	0	0	0	0	884,936						
1/12/2003	0	0	0	0	0	884,936						
1/13/2003	7,238	0	0	0	0	892,174						
1/14/2003	12,681	6,669	6,605	0	0	918,129						
1/15/2003	0	0	0	0	0	918,129						
1/16/2003	0	0	0	0	0	918,129						
1/17/2003	0	0	0	0	0	918,129						
1/18/2003	0	0	0	0	0	918,129						
1/19/2003	0	0	0	0	0	918,129						
1/20/2003	0	0	13,306	0	0	931,435						
1/21/2003	6,427	6,652	12,605	0	0	957,119						
1/22/2003	7,130	0	0	0	0	964,249						
1/23/2003	0	0	0	0	0	964,249						
1/24/2003	0	0	0	0	0	964,249						
1/25/2003	0	0	0	0	0	964,249						
1/26/2003	0	0	0	0	0	964,249						
1/27/2003	6,904	6,017	6,406	0	0	983,576						
1/28/2003	0	0	0	0	0	983,576						
1/29/2003	0	0	0	0	0	983,576						
1/30/2003	6,320	6,087	5,988	0	0	1,001,971						
1/31/2003	0	0	0	0	0	1,001,971	53,732	32,115	51,842	0	0	137,689
2/1/2003	0	0	0	0	0	1,001,971						
2/2/2003	0	0	0	0	0	1,001,971						
2/3/2003	0	0	0	0	0	1,001,971						
2/4/2003	0	0	0	0	0	1,001,971						
2/5/2003	12,529	6,377	6,358	0	0	1,027,235						
2/6/2003	2,878	0	9,528	0	0	1,039,641						
2/7/2003	0	0	0	0	0	1,039,641						
2/8/2003	0	0	0	0	0	1,039,641						
2/9/2003	0	0	0	0	0	1,039,641						
2/10/2003	0	0	0	0	0	1,039,641						
2/11/2003	0	0	0	0	0	1,039,641						
2/12/2003	0	0	0	0	0	1,039,641						
2/13/2003	6,384	6,213	4,828	0	0	1,057,066						
2/14/2003	7,406	0	0	0	0	1,064,472						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
2/15/2003	0	0	0	0	0	1,064,472						
2/16/2003	0	0	0	0	0	1,064,472						
2/17/2003	0	0	0	0	0	1,064,472						
2/18/2003	0	0	0	0	0	1,064,472						
2/19/2003	0	0	0	0	0	1,064,472						
2/20/2003	0	0	0	0	0	1,064,472						
2/21/2003	0	0	0	0	0	1,064,472						
2/22/2003	0	0	0	0	0	1,064,472						
2/23/2003	0	0	0	0	0	1,064,472						
2/24/2003	0	0	0	0	0	1,064,472						
2/25/2003	0	0	0	0	0	1,064,472						
2/26/2003	0	0	0	0	0	1,064,472						
2/27/2003	0	0	0	0	0	1,064,472						
2/28/2003	0	0	0	0	0	1,064,472	29,197	12,590	20,714	0	0	62,501
3/1/2003	0	0	0	0	0	1,064,472						
3/2/2003	0	0	0	0	0	1,064,472						
3/3/2003	0	0	0	0	0	1,064,472						
3/4/2003	0	0	0	0	0	1,064,472						
3/5/2003	0	0	0	0	0	1,064,472						
3/6/2003	0	0	0	0	0	1,064,472						
3/7/2003	0	0	0	0	0	1,064,472						
3/8/2003	0	0	0	0	0	1,064,472						
3/9/2003	0	0	0	0	0	1,064,472						
3/10/2003	0	0	0	0	0	1,064,472						
3/11/2003	0	0	0	0	0	1,064,472						
3/12/2003	0	0	0	0	0	1,064,472						
3/13/2003	0	0	0	0	0	1,064,472						
3/14/2003	0	0	0	0	0	1,064,472						
3/15/2003	0	0	0	0	0	1,064,472						
3/16/2003	0	0	0	0	0	1,064,472						
3/17/2003	0	0	0	0	0	1,064,472						
3/18/2003	0	0	0	0	0	1,064,472						
3/19/2003	0	0	0	0	0	1,064,472						
3/20/2003	0	0	0	0	0	1,064,472						
3/21/2003	0	0	0	0	0	1,064,472						
3/22/2003	0	0	0	0	0	1,064,472						
3/23/2003	0	0	0	0	0	1,064,472						
3/24/2003	0	0	0	0	0	1,064,472						
3/25/2003	0	0	0	0	0	1,064,472						
3/26/2003	6,646	13,154	13,062	0	0	1,097,334						
3/27/2003	12,919	0	6,558	0	0	1,116,811						
3/28/2003	0	0	0	0	0	1,116,811						
3/29/2003	0	0	0	0	0	1,116,811						
3/30/2003	0	0	0	0	0	1,116,811						
3/31/2003	0	0	0	0	0	1,116,811	19,565	13,154	19,620	0	0	52,339

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
4/1/2003	6,308	6,536	6,432	0	0	1,136,087						
4/2/2003	0	0	0	0	0	1,136,087						
4/3/2003	0	0	0	0	0	1,136,087						
4/4/2003	0	0	0	0	0	1,136,087						
4/5/2003	0	0	0	0	0	1,136,087						
4/6/2003	0	0	0	0	0	1,136,087						
4/7/2003	0	0	0	0	0	1,136,087						
4/8/2003	3,278	0	12,750	0	0	1,152,115						
4/9/2003	0	0	0	0	0	1,152,115						
4/10/2003	6,208	5,734	0	0	0	1,164,057						
4/11/2003	0	0	0	0	0	1,164,057						
4/12/2003	0	0	0	0	0	1,164,057						
4/13/2003	0	0	0	0	0	1,164,057						
4/14/2003	0	0	0	0	0	1,164,057						
4/15/2003	6,441	0	6,087	0	0	1,176,585						
4/16/2003	0	0	0	0	0	1,176,585						
4/17/2003	5,746	6,168	6,420	0	0	1,194,919						
4/18/2003	0	0	0	0	0	1,194,919						
4/19/2003	0	0	0	0	0	1,194,919						
4/20/2003	0	0	0	0	0	1,194,919						
4/21/2003	0	0	0	0	0	1,194,919						
4/22/2003	0	0	0	0	0	1,194,919						
4/23/2003	0	0	0	0	0	1,194,919						
4/24/2003	0	0	0	0	0	1,194,919						
4/25/2003	0	0	0	0	0	1,194,919						
4/26/2003	0	0	0	0	0	1,194,919						
4/27/2003	0	0	0	0	0	1,194,919						
4/28/2003	0	0	0	0	0	1,194,919						
4/29/2003	5,725	6,052	11,881	0	0	1,218,577						
4/30/2003	0	0	0	0	0	1,218,577	33,706	24,490	43,570	0	0	101,766
5/1/2003	0	0	0	0	0	1,218,577						
5/2/2003	0	0	0	0	0	1,218,577						
5/3/2003	0	0	0	0	0	1,218,577						
5/4/2003	0	0	0	0	0	1,218,577						
5/5/2003	0	0	0	0	0	1,218,577						
5/6/2003	5,943	6,028	6,192	0	0	1,236,740						
5/7/2003	0	0	0	0	0	1,236,740						
5/8/2003	0	0	0	0	0	1,236,740						
5/9/2003	0	0	0	0	0	1,236,740						
5/10/2003	0	0	0	0	0	1,236,740						
5/11/2003	0	0	0	0	0	1,236,740						
5/12/2003	0	0	0	0	0	1,236,740						
5/13/2003	0	0	0	0	0	1,236,740						
5/14/2003	0	0	0	0	0	1,236,740						
5/15/2003	5,962	6,446	11,179	0	0	1,260,327						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
5/16/2003	0	0	0	0	0	1,260,327						
5/17/2003	0	0	0	0	0	1,260,327						
5/18/2003	0	0	0	0	0	1,260,327						
5/19/2003	0	0	0	0	0	1,260,327						
5/20/2003	0	0	0	0	0	1,260,327						
5/21/2003	0	0	0	0	0	1,260,327						
5/22/2003	0	0	0	0	0	1,260,327						
5/23/2003	0	0	0	0	0	1,260,327						
5/24/2003	0	0	0	0	0	1,260,327						
5/25/2003	0	0	0	0	0	1,260,327						
5/26/2003	0	0	0	0	0	1,260,327						
5/27/2003	0	0	0	0	0	1,260,327						
5/28/2003	0	0	0	0	0	1,260,327						
5/29/2003	0	0	0	0	0	1,260,327						
5/30/2003	0	0	0	0	0	1,260,327						
5/31/2003	0	0	0	0	0	1,260,327	11,905	12,474	17,371	0	0	41,750
6/1/2003	0	0	0	0	0	1,260,327						
6/2/2003	0	0	0	0	0	1,260,327						
6/3/2003	0	0	0	0	0	1,260,327						
6/4/2003	0	0	0	0	0	1,260,327						
6/5/2003	0	0	0	0	0	1,260,327						
6/6/2003	0	0	0	0	0	1,260,327						
6/7/2003	0	0	0	0	0	1,260,327						
6/8/2003	0	0	0	0	0	1,260,327						
6/9/2003	0	0	0	0	0	1,260,327						
6/10/2003	0	0	0	0	0	1,260,327						
6/11/2003	0	0	0	0	0	1,260,327						
6/12/2003	0	0	0	0	0	1,260,327						
6/13/2003	0	0	0	0	0	1,260,327						
6/14/2003	0	0	0	0	0	1,260,327						
6/15/2003	0	0	0	0	0	1,260,327						
6/16/2003	0	0	0	0	0	1,260,327						
6/17/2003	0	0	0	0	0	1,260,327						
6/18/2003	0	0	0	0	0	1,260,327						
6/19/2003	0	0	0	0	0	1,260,327						
6/20/2003	0	0	0	0	0	1,260,327						
6/21/2003	0	0	0	0	0	1,260,327						
6/22/2003	0	0	0	0	0	1,260,327						
6/23/2003	0	0	0	0	0	1,260,327						
6/24/2003	0	0	0	0	0	1,260,327						
6/25/2003	0	0	0	0	0	1,260,327						
6/26/2003	0	0	0	0	0	1,260,327						
6/27/2003	0	0	0	0	0	1,260,327						
6/28/2003	0	0	0	0	0	1,260,327						
6/29/2003	0	0	0	0	0	1,260,327						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
6/30/2003	0	0	0	0	0	1,260,327	0	0	0	0	0	0
7/1/2003	0	0	0	0	0	1,260,327						
7/2/2003	0	0	0	0	0	1,260,327						
7/3/2003	0	0	0	0	0	1,260,327						
7/4/2003	0	0	0	0	0	1,260,327						
7/5/2003	0	0	0	0	20,590	1,280,917						
7/6/2003	0	0	0	0	0	1,280,917						
7/7/2003	0	0	0	0	0	1,280,917						
7/8/2003	0	0	0	0	0	1,280,917						
7/9/2003	0	0	0	0	8,250	1,289,167						
7/10/2003	0	0	0	0	0	1,289,167						
7/11/2003	0	0	0	0	19,000	1,308,167						
7/12/2003	0	0	0	0	0	1,308,167						
7/13/2003	0	0	0	0	0	1,308,167						
7/14/2003	0	0	0	15,624	0	1,323,791						
7/15/2003	0	0	0	40,547	0	1,364,338						
7/16/2003	0	0	0	43,301	0	1,407,639						
7/17/2003	0	0	0	43,210	0	1,450,849						
7/18/2003	0	0	0	0	0	1,450,849						
7/19/2003	0	0	0	0	0	1,450,849						
7/20/2003	0	0	0	0	0	1,450,849						
7/21/2003	0	0	0	0	0	1,450,849						
7/22/2003	0	0	0	42,005	0	1,492,854						
7/23/2003	0	0	0	28,294	0	1,521,148						
7/24/2003	0	0	0	0	0	1,521,148						
7/25/2003	0	0	0	0	0	1,521,148						
7/26/2003	0	0	0	0	0	1,521,148						
7/27/2003	0	0	0	0	0	1,521,148						
7/28/2003	0	0	0	35,969	0	1,557,117						
7/29/2003	0	0	0	0	35,002	1,592,119						
7/30/2003	0	0	0	0	26,219	1,618,338						
7/31/2003	0	0	0	0	30,657	1,648,995	0	0	0	248,950	139,718	388,668
8/1/2003	0	0	0	0	0	1,648,995						
8/2/2003	0	0	0	0	0	1,648,995						
8/3/2003	0	0	0	0	0	1,648,995						
8/4/2003	0	0	0	0	0	1,648,995						
8/5/2003	0	0	0	0	24,637	1,673,632						
8/6/2003	0	0	0	0	31,231	1,704,863						
8/7/2003	0	0	0	0	33,520	1,738,383						
8/8/2003	0	0	0	0	0	1,738,383						
8/9/2003	0	0	0	0	0	1,738,383						
8/10/2003	0	0	0	0	0	1,738,383						
8/11/2003	0	0	0	0	0	1,738,383						
8/12/2003	0	0	0	0	0	1,738,383						
8/13/2003	0	0	0	0	0	1,738,383						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
8/14/2003	0	0	0	0	0	1,738,383						
8/15/2003	0	0	0	0	22,643	1,761,026						
8/16/2003	0	0	0	0	0	1,761,026						
8/17/2003	0	0	0	0	0	1,761,026						
8/18/2003	0	0	0	0	0	1,761,026						
8/19/2003	0	0	0	0	0	1,761,026						
8/20/2003	0	0	0	0	0	1,761,026						
8/21/2003	0	0	0	0	0	1,761,026						
8/22/2003	0	0	0	0	0	1,761,026						
8/23/2003	0	0	0	0	0	1,761,026						
8/24/2003	0	0	0	0	0	1,761,026						
8/25/2003	0	0	0	0	0	1,761,026						
8/26/2003	0	0	0	0	0	1,761,026						
8/27/2003	0	0	0	0	0	1,761,026						
8/28/2003	0	0	0	0	0	1,761,026						
8/29/2003	0	0	0	0	0	1,761,026						
8/30/2003	0	0	0	0	0	1,761,026						
8/31/2003	0	0	0	0	0	1,761,026	0	0	0	0	112,031	112,031
9/1/2003	0	0	0	0	0	1,761,026						
9/2/2003	0	0	0	0	0	1,761,026						
9/3/2003	0	0	0	0	0	1,761,026						
9/4/2003	0	0	0	0	0	1,761,026						
9/5/2003	0	0	0	0	0	1,761,026						
9/6/2003	0	0	0	0	0	1,761,026						
9/7/2003	0	0	0	0	0	1,761,026						
9/8/2003	0	0	0	0	0	1,761,026						
9/9/2003	0	0	0	0	0	1,761,026						
9/10/2003	0	0	0	0	0	1,761,026						
9/11/2003	0	0	0	0	0	1,761,026						
9/12/2003	0	0	0	0	0	1,761,026						
9/13/2003	0	0	0	0	0	1,761,026						
9/14/2003	0	0	0	0	0	1,761,026						
9/15/2003	0	0	0	0	0	1,761,026						
9/16/2003	0	0	0	0	38,501	1,799,527						
9/17/2003	0	0	0	0	42,003	1,841,530						
9/18/2003	0	0	0	35,919	0	1,877,449						
9/19/2003	0	0	0	0	0	1,877,449						
9/20/2003	0	0	0	0	0	1,877,449						
9/21/2003	0	0	0	0	0	1,877,449						
9/22/2003	0	0	0	0	0	1,877,449						
9/23/2003	0	0	0	50,719	0	1,928,168						
9/24/2003	0	0	0	0	0	1,928,168						
9/25/2003	0	0	0	0	0	1,928,168						
9/26/2003	0	0	22,608	0	0	1,950,776						
9/27/2003	0	0	0	0	0	1,950,776						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
9/28/2003	0	0	0	0	0	1,950,776						
9/29/2003	0	0	0	0	0	1,950,776						
9/30/2003	0	15,802	0	31,065	0	1,997,643	0	15,802	22,608	117,703	80,504	236,617
10/1/2003	0	0	0	0	0	1,997,643						
10/2/2003	0	0	0	0	0	1,997,643						
10/3/2003	24,607	0	0	0	0	2,022,250						
10/4/2003	0	0	0	0	0	2,022,250						
10/5/2003	0	0	0	0	0	2,022,250						
10/6/2003	0	0	0	0	0	2,022,250						
10/7/2003	0	0	0	0	0	2,022,250						
10/8/2003	0	0	0	0	0	2,022,250						
10/9/2003	0	0	0	0	0	2,022,250						
10/10/2003	0	0	0	0	0	2,022,250						
10/11/2003	0	0	0	0	0	2,022,250						
10/12/2003	0	0	0	0	0	2,022,250						
10/13/2003	0	0	0	0	0	2,022,250						
10/14/2003	0	0	0	0	0	2,022,250						
10/15/2003	0	0	0	0	0	2,022,250						
10/16/2003	0	0	0	0	0	2,022,250						
10/17/2003	0	0	0	0	0	2,022,250						
10/18/2003	0	0	0	0	0	2,022,250						
10/19/2003	0	0	0	0	0	2,022,250						
10/20/2003	0	0	0	0	0	2,022,250						
10/21/2003	0	0	0	0	0	2,022,250						
10/22/2003	0	0	0	0	0	2,022,250						
10/23/2003	0	0	0	0	0	2,022,250						
10/24/2003	0	0	0	0	0	2,022,250						
10/25/2003	0	0	0	0	0	2,022,250						
10/26/2003	0	0	0	0	0	2,022,250						
10/27/2003	0	0	0	0	0	2,022,250						
10/28/2003	0	0	0	0	0	2,022,250						
10/29/2003	0	0	0	0	0	2,022,250						
10/30/2003	0	0	0	0	0	2,022,250						
10/31/2003	0	0	0	0	0	2,022,250	24,607	0	0	0	0	24,607
11/1/2003	0	0	0	0	0	2,022,250						
11/2/2003	0	0	0	0	0	2,022,250						
11/3/2003	0	0	0	0	0	2,022,250						
11/4/2003	0	0	0	0	0	2,022,250						
11/5/2003	0	0	0	0	0	2,022,250						
11/6/2003	0	0	0	0	0	2,022,250						
11/7/2003	0	0	0	0	0	2,022,250						
11/8/2003	0	0	0	0	0	2,022,250						
11/9/2003	0	0	0	0	0	2,022,250						
11/10/2003	0	0	0	0	0	2,022,250						
11/11/2003	0	0	0	0	0	2,022,250						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
11/12/2003	0	0	0	0	0	2,022,250						
11/13/2003	0	0	0	0	0	2,022,250						
11/14/2003	0	0	0	0	0	2,022,250						
11/15/2003	0	0	0	0	0	2,022,250						
11/16/2003	0	0	0	0	0	2,022,250						
11/17/2003	0	0	0	0	0	2,022,250						
11/18/2003	0	0	0	0	0	2,022,250						
11/19/2003	0	0	0	0	0	2,022,250						
11/20/2003	0	0	0	0	0	2,022,250						
11/21/2003	0	0	0	0	0	2,022,250						
11/22/2003	0	0	0	0	0	2,022,250						
11/23/2003	0	0	0	0	0	2,022,250						
11/24/2003	0	0	0	0	0	2,022,250						
11/25/2003	0	0	0	0	29,129	2,051,379						
11/26/2003	0	0	0	35,743	0	2,087,122						
11/27/2003	0	0	0	0	0	2,087,122						
11/28/2003	0	0	0	0	0	2,087,122						
11/29/2003	0	0	0	0	0	2,087,122						
11/30/2003	0	0	0	0	0	2,087,122	0	0	0	35,743	29,129	64,872
12/1/2003	0	0	0	0	0	2,087,122						
12/2/2003	0	0	0	0	0	2,087,122						
12/3/2003	0	0	0	0	0	2,087,122						
12/4/2003	0	0	0	0	0	2,087,122						
12/5/2003	0	0	0	0	0	2,087,122						
12/6/2003	0	0	0	0	0	2,087,122						
12/7/2003	0	0	0	0	0	2,087,122						
12/8/2003	0	0	0	0	0	2,087,122						
12/9/2003	0	0	0	33,959	0	2,121,081						
12/10/2003	0	0	0	0	38,624	2,159,705						
12/11/2003	0	0	0	0	43,783	2,203,488						
12/12/2003	0	0	0	0	28,066	2,231,554						
12/13/2003	0	0	0	0	0	2,231,554						
12/14/2003	0	0	0	0	0	2,231,554						
12/15/2003	0	0	0	0	0	2,231,554						
12/16/2003	0	0	0	0	0	2,231,554						
12/17/2003	0	0	0	0	53,913	2,285,467						
12/18/2003	0	0	0	0	41,915	2,327,382						
12/19/2003	0	0	0	40,002	0	2,367,384						
12/20/2003	0	0	0	0	0	2,367,384						
12/21/2003	0	0	0	0	0	2,367,384						
12/22/2003	0	0	0	0	0	2,367,384						
12/23/2003	0	0	0	29,617	0	2,397,001						
12/24/2003	0	0	0	0	0	2,397,001						
12/25/2003	0	0	0	0	0	2,397,001						
12/26/2003	0	0	0	37,199	0	2,434,200						

TABLE 7
LIQUID APPLICATION SUMMARY
continued

	Liquid Applied by Trench (gallons)						Monthly Summary by Trench					
Date	1	2	3	4	5	Cumulative Total	1	2	3	4	5	Monthly Total
12/27/2003	0	0	0	0	0	2,434,200						
12/28/2003	0	0	0	0	0	2,434,200						
12/29/2003	0	0	0	0	0	2,434,200						
12/30/2003	0	0	0	0	0	2,434,200						
12/31/2003	0	0	0	0	31,999	2,466,199	0	0	0	140,777	238,300	379,077

Total per tren	487,779	351,878	483,687	543,173	599,682	Total Leachate Recirculated	2,466,199
Daily Averag	979	707	971	3,195	3,350	Total Daily Average	4,952

All units are in gallons

TABLE 8
SUMMARY OF LANDFILL SETTLEMENT DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Point No.	Northing	Easting	Elev 8/2/2002	Elev 10/24/2002	Elev 3/10/2003	Elev 6/9/2003	Difference in grade 10/24/02 to 8/2/02
Control Area							
1004	3,635,349.73	11,610,244.17	485.87	485.39	484.32	484.13	-1.73
1005	3,635,448.00	11,610,262.56	485.51	485.04	483.96	483.96	-1.54
1006	3,635,546.31	11,610,280.96	488.10	487.72	486.94	486.84	-1.26
1007	3,635,644.56	11,610,299.35	489.08	488.77	488.12	487.53	-1.55
1008	3,635,742.79	11,610,317.74	489.29	489.21	488.64	487.82	-1.48
1018	3,635,662.70	11,610,201.04	486.24	486.08	485.38	485.31	-0.93
1019	3,635,564.34	11,610,182.66	484.57	484.27	483.48	483.48	-1.08
1020	3,635,466.17	11,610,164.24	483.05	482.72	481.84	481.84	-1.21
1021	3,635,367.83	11,610,145.87	482.26	481.94	481.14	480.70	-1.56
1022	3,635,269.54	11,610,127.55	480.97	480.59	479.64	478.91	-2.05
1023	3,635,171.30	11,610,109.13	477.72	477.37	476.35	476.35	-1.37
1024	3,635,189.69	11,610,010.81	472.04	471.74	471.08	471.08	-0.96
1025	3,635,091.34	11,609,992.34	468.72	468.35	468.35	468.00	-0.72
1026	3,635,288.00	11,610,029.13	474.30	474.05	473.33	473.09	-1.20
1027	3,635,386.32	11,610,047.53	475.71	475.20	474.73	474.48	-1.22
1028	3,635,484.54	11,610,066.03	477.62	477.36	476.44	476.44	-1.18
1029	3,635,582.91	11,610,084.37	479.07	478.85	478.18	478.18	-0.89
1030	3,635,681.10	11,610,102.80	480.72	480.53	480.04	479.70	-1.02
1041	3,635,699.44	11,610,004.53	472.92	472.85	472.55	472.55	-0.37
1042	3,635,601.14	11,609,986.14	472.03	471.81	471.20	471.04	-0.99
1043	3,635,502.84	11,609,967.77	471.02	470.75	470.05	470.05	-0.97
1044	3,635,404.59	11,609,949.32	470.05	469.80	469.09	468.54	-1.50
1045	3,635,306.31	11,609,930.87	468.07	467.72	467.18	466.62	-1.45
1046	3,635,208.01	11,609,912.58	465.01	464.78	464.63	464.63	-0.38
1047	3,635,109.73	11,609,894.15	461.57	461.29	461.29	460.78	-0.79
1048	3,635,011.39	11,609,875.70	452.50	452.28	452.21	452.21	-0.29
1049	3,635,029.78	11,609,777.38	452.53	452.46	452.03	451.09	-1.45
1050	3,635,128.05	11,609,795.71	454.78	454.55	454.02	454.02	-0.76
1051	3,635,226.37	11,609,814.18	457.93	457.68	457.03	456.81	-1.12
1052	3,635,324.67	11,609,832.49	460.81	460.65	460.12	460.12	-0.69
1053	3,635,422.98	11,609,850.93	463.32	462.89	462.30	462.30	-1.02
1054	3,635,521.22	11,609,869.39	465.71	465.18	464.52	464.52	-1.19
1055	3,635,619.61	11,609,887.68	466.06	465.78	465.30	465.01	-1.05
1056	3,635,717.83	11,609,906.15	466.95	466.84	466.58	466.58	-0.37
1067	3,635,736.32	11,609,807.82	463.21	463.04	462.80	462.25	-0.96
1068	3,635,638.08	11,609,789.37	461.01	460.97	460.44	460.44	-0.57
1069	3,635,539.79	11,609,770.95	460.16	460.00	459.25	458.78	-1.38
1070	3,635,441.45	11,609,752.58	457.70	457.48	456.88	456.88	-0.82
1071	3,635,343.15	11,609,734.20	455.12	455.02	454.67	454.65	-0.47
1072	3,635,244.85	11,609,715.82	451.48	451.32	450.68	450.68	-0.79

TABLE 8
SUMMARY OF LANDFILL SETTLEMENT DATA
continued

Point No.	Northing	Easting	Elev 8/2/2002	Elev 10/24/2002	Elev 3/10/2003	Elev 6/9/2003	Difference in grade 10/24/02 to 8/2/02
1073	3,635,146.56	11,609,697.41	448.58	448.38	447.76	447.76	-0.82
1074	3,635,048.25	11,609,679.00	448.55	448.41	448.64	445.64	-2.91
1075	3,635,066.63	11,609,580.65	439.54	439.45	438.48	438.48	-1.05
1076	3,635,164.92	11,609,599.02	440.47	440.40	440.16	440.16	-0.31
1077	3,635,263.23	11,609,617.48	445.99	445.91	445.44	445.42	-0.58
1078	3,635,361.52	11,609,635.86	448.91	448.78	448.43	448.43	-0.48
1079	3,635,459.84	11,609,654.19	451.72	451.54	450.93	450.93	-0.79
1080	3,635,558.09	11,609,672.62	452.56	452.25	451.37	451.37	-1.19
1081	3,635,656.40	11,609,691.02	455.31	455.09	454.79	454.79	-0.53
1094	3,635,674.74	11,609,592.74	450.59	450.51	450.09	449.89	-0.71
1095	3,635,576.47	11,609,574.29	447.01	446.77	446.03	445.82	-1.19
1096	3,635,478.15	11,609,555.97	445.83	445.63	445.28	445.28	-0.55
1097	3,635,379.86	11,609,537.48	444.65	444.56	444.13	443.40	-1.25
1098	3,635,281.56	11,609,519.19	440.66	440.57	440.24	440.24	-0.42
1099	3,635,183.28	11,609,500.81	437.68	437.37	437.46	437.72	0.04
1100	3,635,084.97	11,609,482.37	435.45	435.41	435.41	435.41	-0.03
1101	3,635,092.33	11,609,443.10	434.95	434.92	434.70	434.70	-0.25
1103	3,635,201.68	11,609,402.49	434.51	434.30	434.30	434.30	-0.20
1104	3,635,299.97	11,609,420.80	435.96	435.88	435.55	435.55	-0.40
1105	3,635,398.26	11,609,439.26	438.83	438.82	438.54	438.42	-0.41
1106	3,635,496.53	11,609,457.76	439.74	439.74	439.32	439.32	-0.42
1107	3,635,594.83	11,609,476.11	440.55	440.34	439.86	439.86	-0.70
1108	3,635,693.11	11,609,494.53	444.53	444.34	443.75	443.75	-0.78
1121	3,635,711.48	11,609,396.28	443.54	443.45	442.99	442.99	-0.54
1122	3,635,613.24	11,609,377.78	439.75	439.61	438.85	438.50	-1.25
1123	3,635,514.93	11,609,359.43	436.73	436.49	435.93	435.93	-0.81
1124	3,635,416.63	11,609,341.06	435.79	435.75	435.35	435.22	-0.57
1125	3,635,629.81	11,609,289.23	437.70	437.58	437.58	437.03	-0.67
1126	3,635,729.92	11,609,297.95	441.94	441.94	441.61	441.61	-0.33
Test Area							
1009	3,635,841.19	11,610,336.14	489.94	489.75	489.19	488.98	-0.96
1010	3,635,939.49	11,610,354.55	489.88	489.60	488.93	488.87	-1.01
1011	3,636,037.73	11,610,372.92	490.38	490.18	489.75	489.32	-1.06
1012	3,636,135.89	11,610,391.31	490.32	490.16	490.16	489.57	-0.76
1013	3,636,154.20	11,610,293.02	486.99	486.87	486.64	486.28	-0.71
1014	3,636,056.01	11,610,274.63	487.20	487.11	486.87	486.04	-1.16
1015	3,635,957.68	11,610,256.23	486.71	486.52	486.27	485.94	-0.76
1016	3,635,859.38	11,610,237.82	485.21	484.90	484.28	484.28	-0.92
1017	3,635,761.00	11,610,219.44	486.48	486.20	485.55	485.55	-0.93
1031	3,635,779.51	11,610,121.17	481.41	481.18	480.61	480.31	-1.09
1032	3,635,877.83	11,610,139.57	481.09	480.95	480.56	480.56	-0.53

TABLE 8
SUMMARY OF LANDFILL SETTLEMENT DATA
continued

Point No.	Northing	Easting	Elev 8/2/2002	Elev 10/24/2002	Elev 3/10/2003	Elev 6/9/2003	Difference in grade 10/24/02 to 8/2/02
1033	3,635,976.12	11,610,157.96	482.03	482.03	481.81	481.50	-0.53
1034	3,636,074.38	11,610,176.37	482.34	482.28	482.05	482.05	-0.29
1035	3,636,172.64	11,610,194.76	477.76	477.64	477.11	476.83	-0.93
1036	3,636,190.94	11,610,096.48	473.03	472.87	472.80	472.27	-0.77
1037	3,636,092.58	11,610,078.09	476.70	476.52	476.41	476.41	-0.29
1038	3,635,994.28	11,610,059.72	475.69	475.55	475.35	475.33	-0.37
1039	3,635,896.02	11,610,041.31	476.49	476.49	476.09	475.47	-1.02
1040	3,635,797.72	11,610,022.91	475.24	475.24	474.94	474.65	-0.58
1057	3,635,816.15	11,609,924.54	468.79	468.65	468.58	468.40	-0.39
1058	3,635,914.40	11,609,942.95	470.40	470.33	470.08	470.08	-0.32
1059	3,636,012.73	11,609,961.33	471.67	471.67	471.59	471.56	-0.11
1060	3,636,111.00	11,609,979.74	473.09	473.02	472.97	472.51	-0.58
1061	3,636,209.35	11,609,998.10	469.98	469.84	469.74	468.83	-1.14
1062	3,636,227.79	11,609,899.79	466.12	466.11	465.87	465.32	-0.80
1063	3,636,129.59	11,609,881.36	468.41	468.33	468.13	468.13	-0.28
1064	3,636,031.25	11,609,862.99	469.26	469.21	469.11	468.61	-0.66
1065	3,635,932.97	11,609,844.58	466.66	466.63	466.42	466.24	-0.42
1066	3,635,834.57	11,609,826.23	463.00	463.00	463.00	462.65	-0.34
1082	3,635,754.73	11,609,709.37	458.29	458.25	457.83	457.83	-0.46
1083	3,635,853.02	11,609,727.79	459.15	459.05	458.79	458.79	-0.36
1084	3,635,951.27	11,609,746.21	463.12	463.12	462.82	462.76	-0.36
1085	3,636,049.55	11,609,764.61	464.37	464.35	464.35	463.92	-0.45
1086	3,636,147.94	11,609,782.97	463.55	463.49	463.43	463.43	-0.12
1087	3,636,246.13	11,609,801.40	463.11	463.11	462.86	462.86	-0.25
1088	3,636,264.49	11,609,703.13	462.28	462.28	462.11	461.42	-0.87
1089	3,636,166.21	11,609,684.72	461.07	461.07	460.63	460.58	-0.49
1090	3,636,067.97	11,609,666.29	460.16	460.16	459.60	459.59	-0.57
1091	3,635,969.64	11,609,647.92	458.71	458.71	458.57	458.44	-0.27
1092	3,635,871.35	11,609,629.52	455.39	455.32	455.23	454.72	-0.67
1093	3,635,773.00	11,609,611.20	453.10	453.01	452.57	452.33	-0.78
1109	3,635,791.40	11,609,512.91	447.00	446.88	446.80	446.80	-0.20
1110	3,635,889.74	11,609,531.28	449.69	449.63	449.40	449.40	-0.29
1111	3,635,988.07	11,609,549.63	452.44	452.44	452.44	452.44	0.00
1112	3,636,086.37	11,609,568.01	455.21	455.21	452.44	452.44	-2.77
1113	3,636,184.68	11,609,586.40	455.94	455.94	455.90	455.50	-0.44
1114	3,636,282.85	11,609,604.89	457.94	457.94	457.70	456.55	-1.38
1115	3,636,301.28	11,609,506.56	452.17	452.17	452.05	450.28	-1.89
1116	3,636,202.99	11,609,488.15	450.20	450.04	449.94	449.94	-0.25
1117	3,636,104.71	11,609,469.78	449.09	449.09	448.97	448.97	-0.12
1118	3,636,006.39	11,609,451.41	448.42	448.42	448.09	448.09	-0.32
1119	3,635,908.14	11,609,432.94	447.08	447.08	446.77	446.67	-0.41

TABLE 8
SUMMARY OF LANDFILL SETTLEMENT DATA
continued

Point No.	Northing	Easting	Elev 8/2/2002	Elev 10/24/2002	Elev 3/10/2003	Elev 6/9/2003	Difference in grade 10/24/02 to 8/2/02
1120	3,635,809.87	11,609,414.54	442.72	442.72	442.56	442.48	-0.25
1127	3,635,828.22	11,609,316.33	442.36	442.19	442.00	442.00	-0.36
1128	3,635,926.52	11,609,334.68	443.66	443.66	443.53	441.95	-1.71
1129	3,636,024.81	11,609,353.11	446.31	446.29	446.25	443.41	-2.90
1130	3,636,123.13	11,609,371.52	446.79	446.79	446.76	446.29	-0.50
1131	3,636,221.45	11,609,389.88	446.82	446.67	446.62	446.62	-0.20
1132	3,636,319.64	11,609,408.34	446.62	446.62	446.60	446.57	-0.05
1133	3,636,337.98	11,609,310.06	443.94	443.93	443.75	444.59	0.65
1134	3,636,239.72	11,609,291.66	447.32	447.32	447.22	442.16	-5.16
1135	3,636,141.46	11,609,273.23	447.30	447.30	447.20	446.83	-0.48
1136	3,636,043.11	11,609,254.88	445.01	445.01	445.00	445.95	0.94

TABLE 9
RAINFALL DATA SUMMARY
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Month	Average Precipication	2003 Precipitation	Departure from Normal
January	3.24	2.18	-1.06
February	3.16	4.21	1.05
March	3.61	5.92	2.31
April	2.96	4.38	1.42
May	3.84	8.59	4.75
June	3.62	3.87	0.25
July	5.03	9.26	4.23
August	4.4	4.66	0.26
September	3.34	10.12	6.78
October	3.53	2.43	-1.1
November	3.17	3.39	0.22
December	3.26	4.26	1
Total	43.16	63.27	20.11

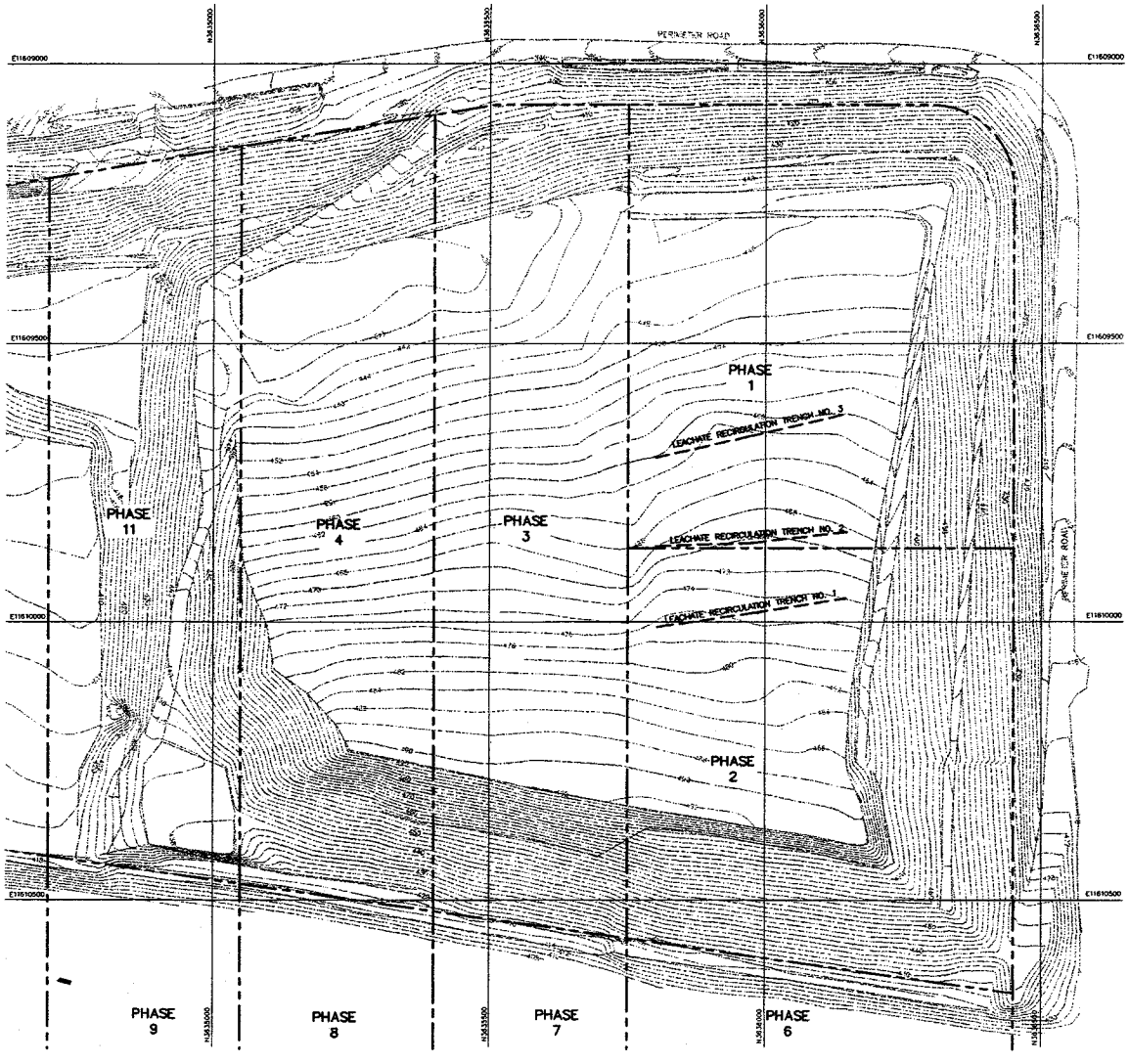
Note: The totals for 2003 precipication and departure from normal are for the year to date.
Rainfall data is for Richmond, Virginia.

TABLE 10
SUMMARY OF WASTE CHARACTERIZATION DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

	Sample Date	Location	Depth (ft)	Moisture (%)	VS (%)	Cellulose (%)	Lignin (%)	Cell/Lig Ratio	pH (Field)	BMP (mL/g)
Control Area	8/7/2001	Control-1	0-10	31.57	46.36	28.13	22.1	1.27	5.5	73.03
					48.94	26.62	22.2	1.20		71.98
					45.40					69.86
	8/7/2001	Control-1	10-20	40.72	57.93	30.31	21.7	1.40	5.5	69.08
					50.16	27.86	21	1.33		76.15
					57.92					76.44
	8/7/2001	Control-1	20-30	33.16	55.12	38.72	15.50	2.50	5.8	71.56
					62.96	31.33	15.00	2.09		87.68
					35.33					85.19
	8/7/2001	Control-1	30-40	38.47	59.26	31.58	25.00	1.26	7.8	79.45
					52.16	29.16	28.90	1.01		82.94
					61.08					80.67
	8/7/2001	Control-2	0-10	34.72	50.13	27.79	16.60	1.67	5.8	70.58
					53.26	35.11	16.90	2.08		76.51
					47.55					77.80
	8/7/2001	Control-2	10-20	40.05	45.61	30.19	20.40	1.48	5.5	68.75
					46.31	36.68	18.10	2.03		75.78
					45.96					75.34
	8/7/2001	Control-2	20-30	41.83	47.98	30.42	19.10	1.59	6.7	78.75
					48.18	30.50	18.30	1.67		76.23
					48.64					78.51
	8/7/2001	Control-2	30-40	52.70	73.51	35.62	24.80	1.44	8.2	98.48
					75.16	36.63	25.70	1.43		101.18
					75.05					105.73
Test Area	5/11/2001	Bio 1	0-10	42.56	76.57	-	31.70	-	5.7	83.18
					75.24	29.50	28.70	1.03		117.79
					75.86					175.70
	5/11/2001	Bio 1	10-20	39.80	62.15	25.01	19.50	1.28	7.7	69.46
					85.41 *	22.56	19.30	1.17		106.17
					61.47					65.85
	5/11/2001	Bio 1	20-30	33.62	47.83	19.00	20.40	0.93	5.3	134.09
					53.86	23.00	20.40	1.13		84.04
					51.18					121.08
	5/11/2001	Bio 1	30-40	37.20	71.67	33.77	28.80	1.17	5.6	90.47
					76.08	25.30	27.10	0.93		118.13
					71.20					104.92
	5/10/2001	Bio 2	0-10	28.75	78.03	32.87	24.40	1.35	5.8	115.60
					76.90	36.58	23.90	1.53		93.32
					78.52					112.01
	5/10/2001	Bio 2	10-20	51.20	61.91	22.74	22.50	1.01	8.4	85.83
					67.41	23.07	22.10	1.04		134.03
					62.31					174.36
	5/10/2001	Bio 2	20-30	40.56	67.96	26.36	22.40	1.18	8.2	78.18
					68.32	27.10	24.60	1.10		86.14
					70.42					50.74
	5/10/2001	Bio 2	30-40	27.80	69.90	34.22	22.90	1.49	7.5	38.61
					71.24	29.04	25.00	1.16		43.11
					68.27					31.50
	5/10/2001	Bio 3	0-10	39.86	78.94	36.38	25.20	1.44	5.3	19.12
					49.19 *	32.61	27.60	1.18		18.72
					79.46					38.36
	5/10/2001	Bio 3	10-20	38.59	62.23	36.15	17.60	2.05	8.5	98.93
					60.58	37.58	16.10	2.33		51.21
					63.07					119.14
	5/10/2001	Bio 3	20-30	38.46	81.44	39.96	24.70	1.62	5.5	101.60
					78.17	39.48	23.70	1.67		95.59
					80.78					40.51
	5/10/2001	Bio 3	30-40	32.80	74.58	39.80	18.40	2.16	6.2	109.92
					75.85	41.00	18.70	2.19		104.25
					73.58					189.83

TABLE 11
2004 MONITORING ACTIVITIES
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

	Monitoring Parameters	Responsible Party	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. LEACHATE	Chemical parameters measured on site	WM personnel	X						X					
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters sampled on site from test area	Sampled by subcontractor, tested offsite by Geochemical	X						X					
	Chemical parameters sampled on site from storage tanks	Sampled by subcontractor, tested offsite by Geochemical	X						X					
2. LANDFILL GAS	Landfill gas composition measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Physical parameters measured on site	WM personnel	X	X	X	X	X	X	X	X	X	X	X	X
	Chemical parameters	WM personnel, testing by subcontractor	X						X					
	Surface landfill gas measured on site	Subcontractor	X						X					
3. SOLID WASTE	Survey, on site	Subcontractor	X			X			X			X		
	Solid waste stabilization and decomposition measured on site	WM personnel								X				



NORTH

LEGEND

- PHASE BOUNDARY
- EXISTING GRADE CONTOUR (FEET, MSL)
- LEACHATE RECIRCULATION TRENCH

NOTES:

1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING OF A SURVEY CONDUCTED ON 24 APRIL 2002.

100 50 0 100 200
SCALE: 1" = 100'

GeoSyntec Consultants
COLUMBIA, MARYLAND
(410)381-4333

REV.	DATE	DESCRIPTION	DR BY	APP BY

DATE: SEPTEMBER 2002	PROJECT NO. WED0275-01	SCALE: 1" = 100'
DES BY: DTM SEPT 02	PROJECT: XL PROJECT MAPLEWOOD LANDFILL	
DRN BY: JOC SEPT 02		
CHK BY: MFH SEPT 02	SHEET TITLE: EXISTING CONDITIONS	
REV BY		
APP BY		

SIGNATURE

DATE

WASTE MANAGEMENT, INC.

FILE NO: 0275-001

DRAWING NO: 1 OF 4

P:\cadd\0275\0275-001.dwg Fri May 02 08:19:43 2003 GeoSyntec Consultants, MD (DTM)

FIGURE 2
LIQUID APPLIED TO LANDFILL - CUMULATIVE
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

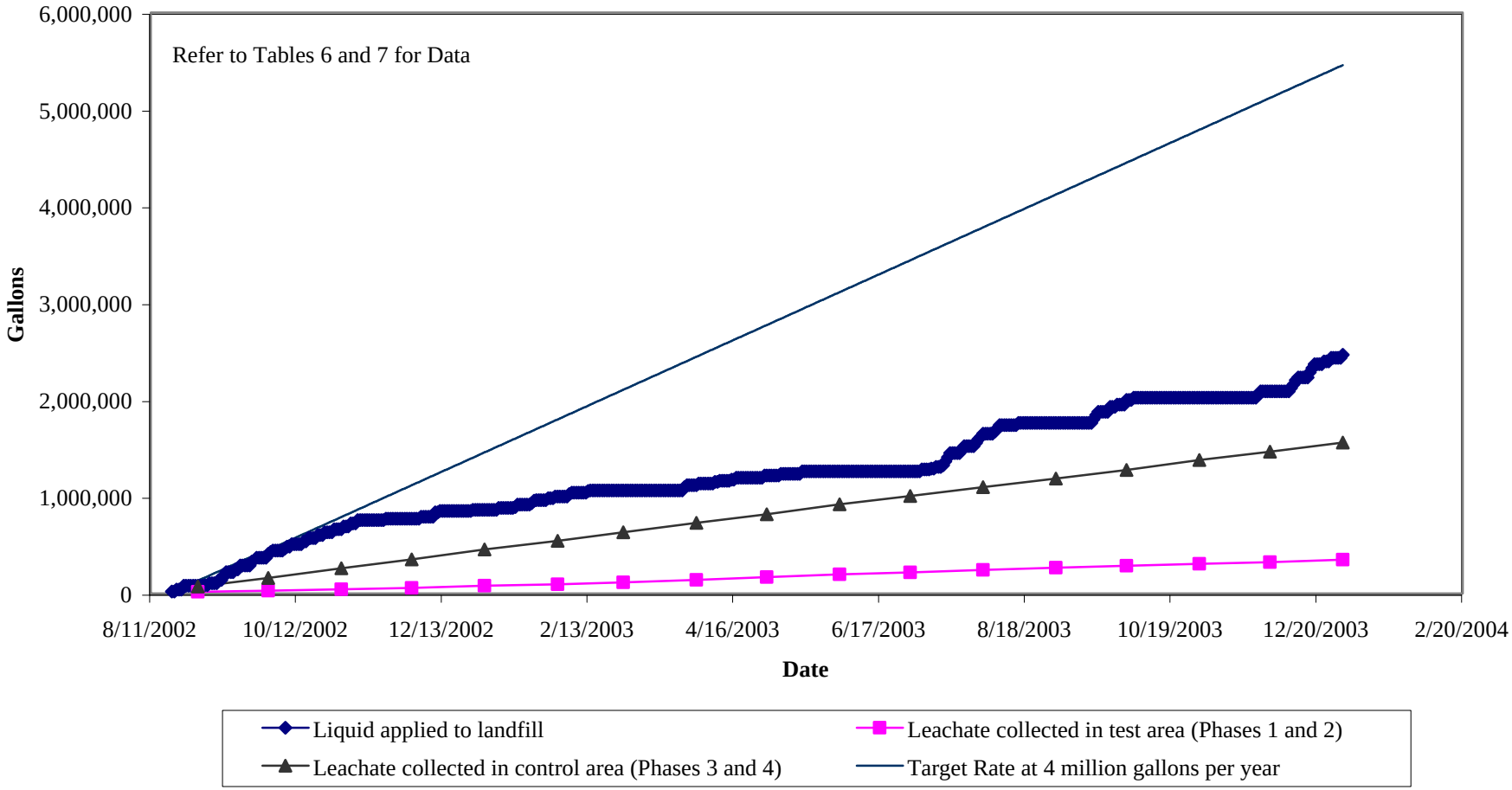


FIGURE 3
BOD/COD RATIO
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

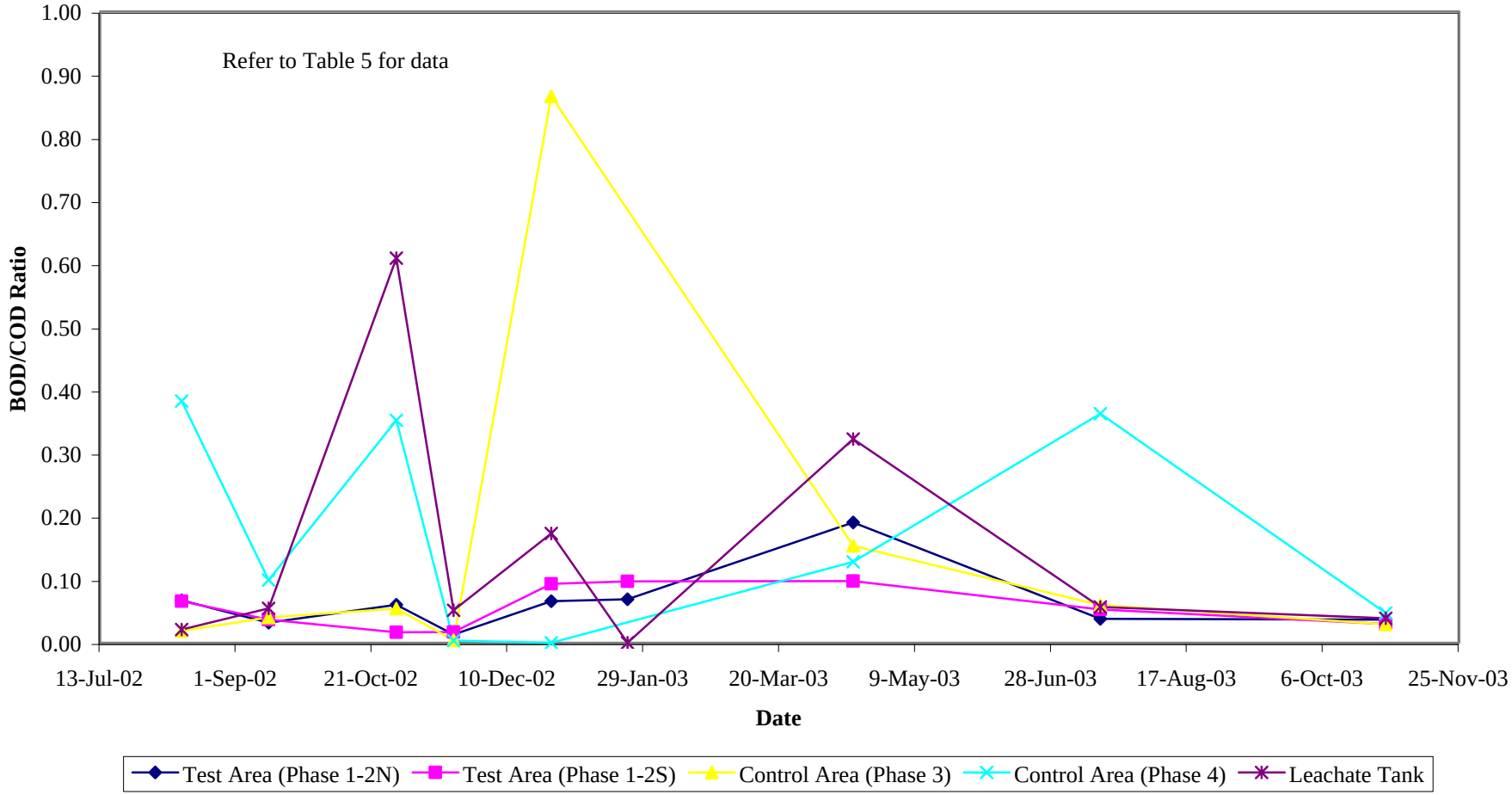


FIGURE 4
COD/TOC RATIO
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

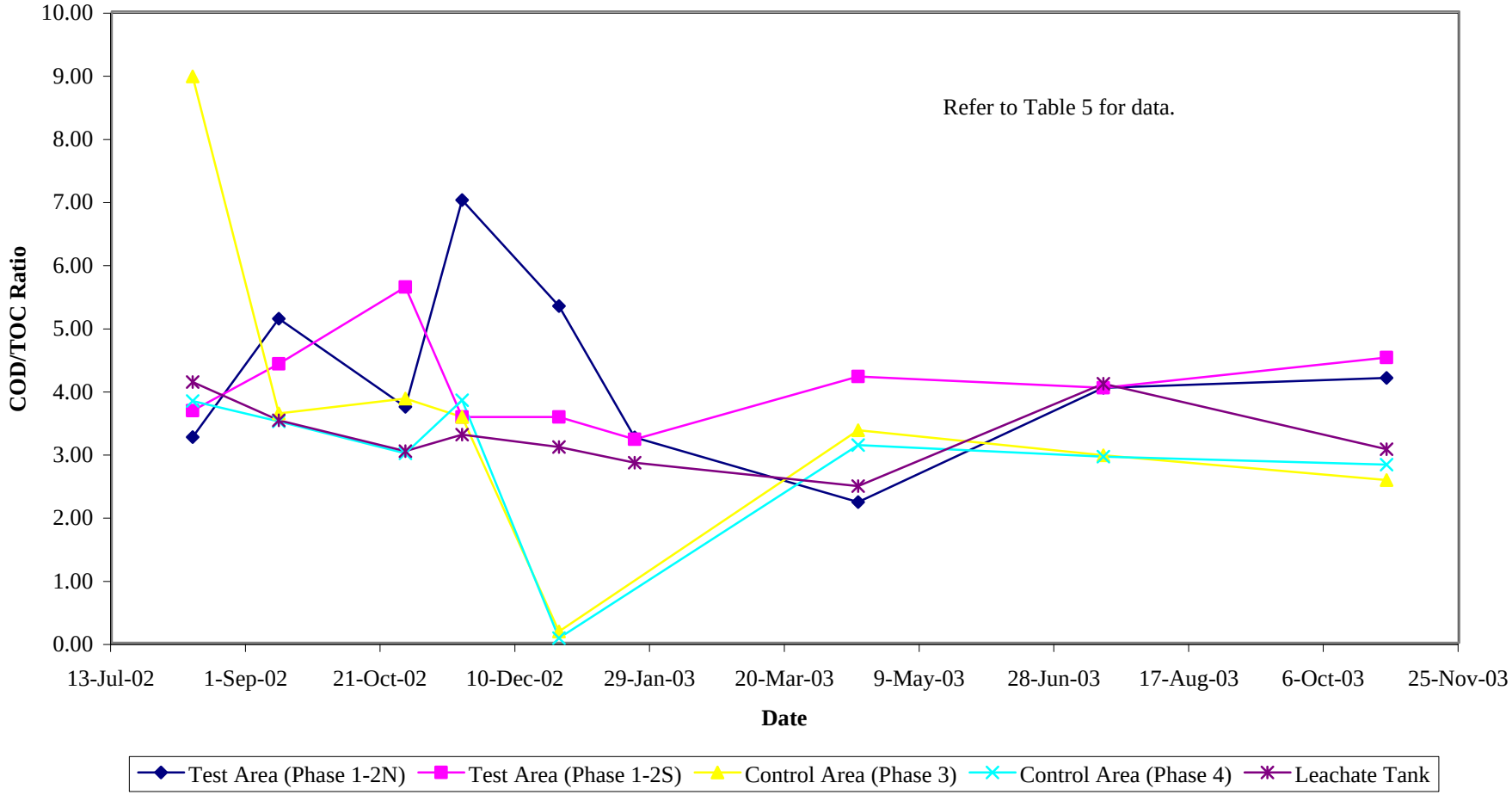


FIGURE 5
CHLORIDE CONCENTRATION
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

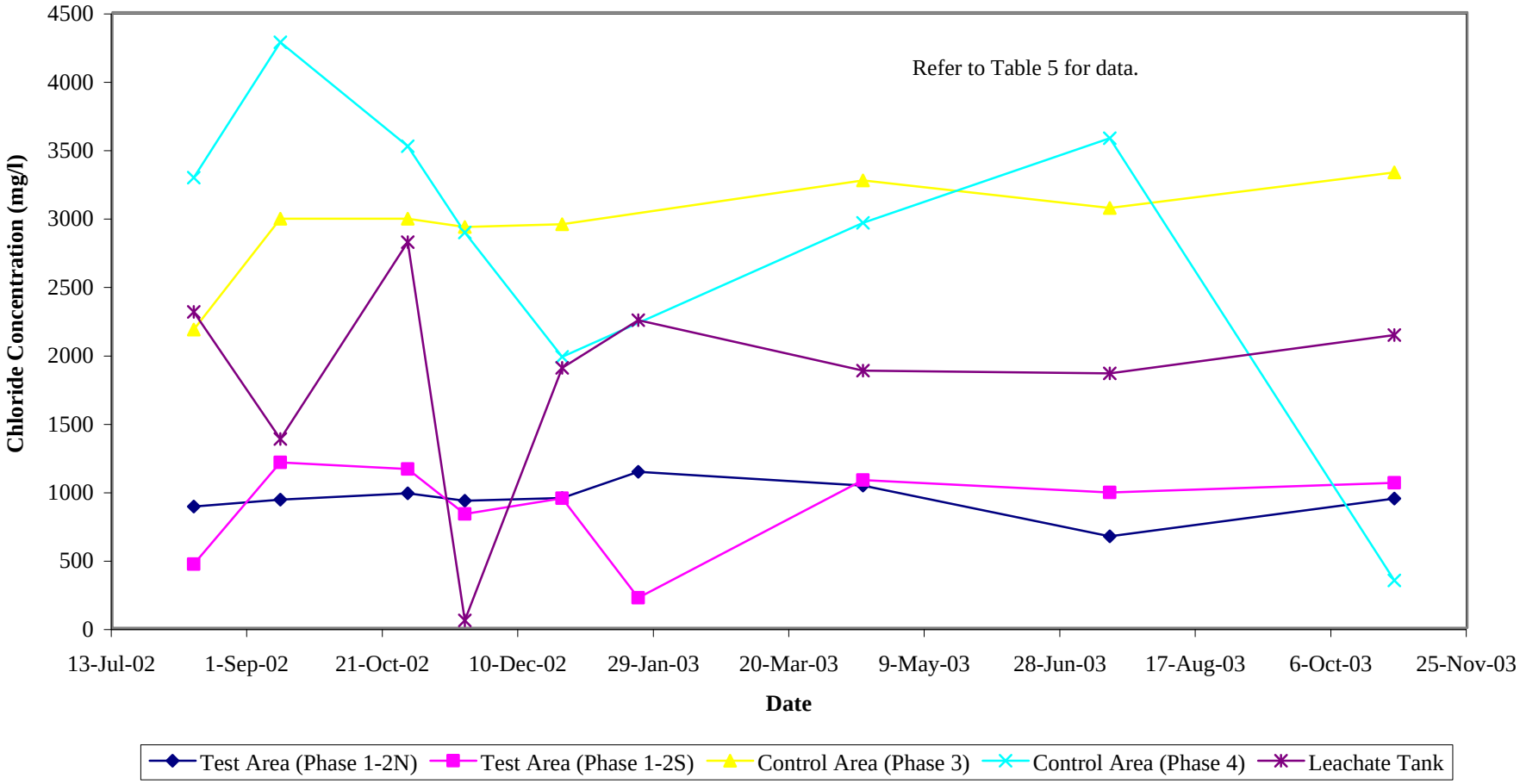


FIGURE 6
NITRATE NITROGEN CONCENTRATION
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

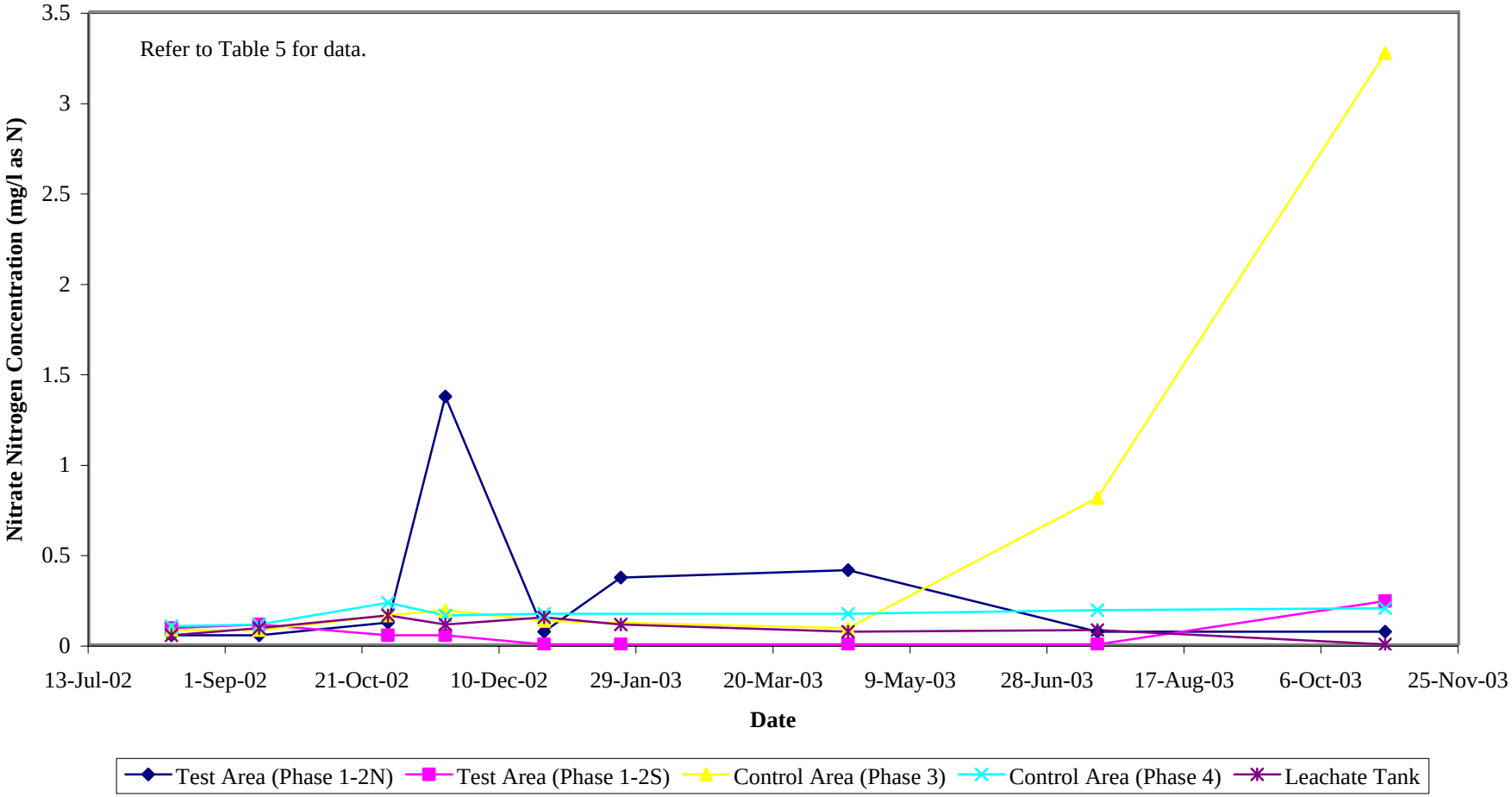


FIGURE 7
AMMONIA NITROGEN CONCENTRATION
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

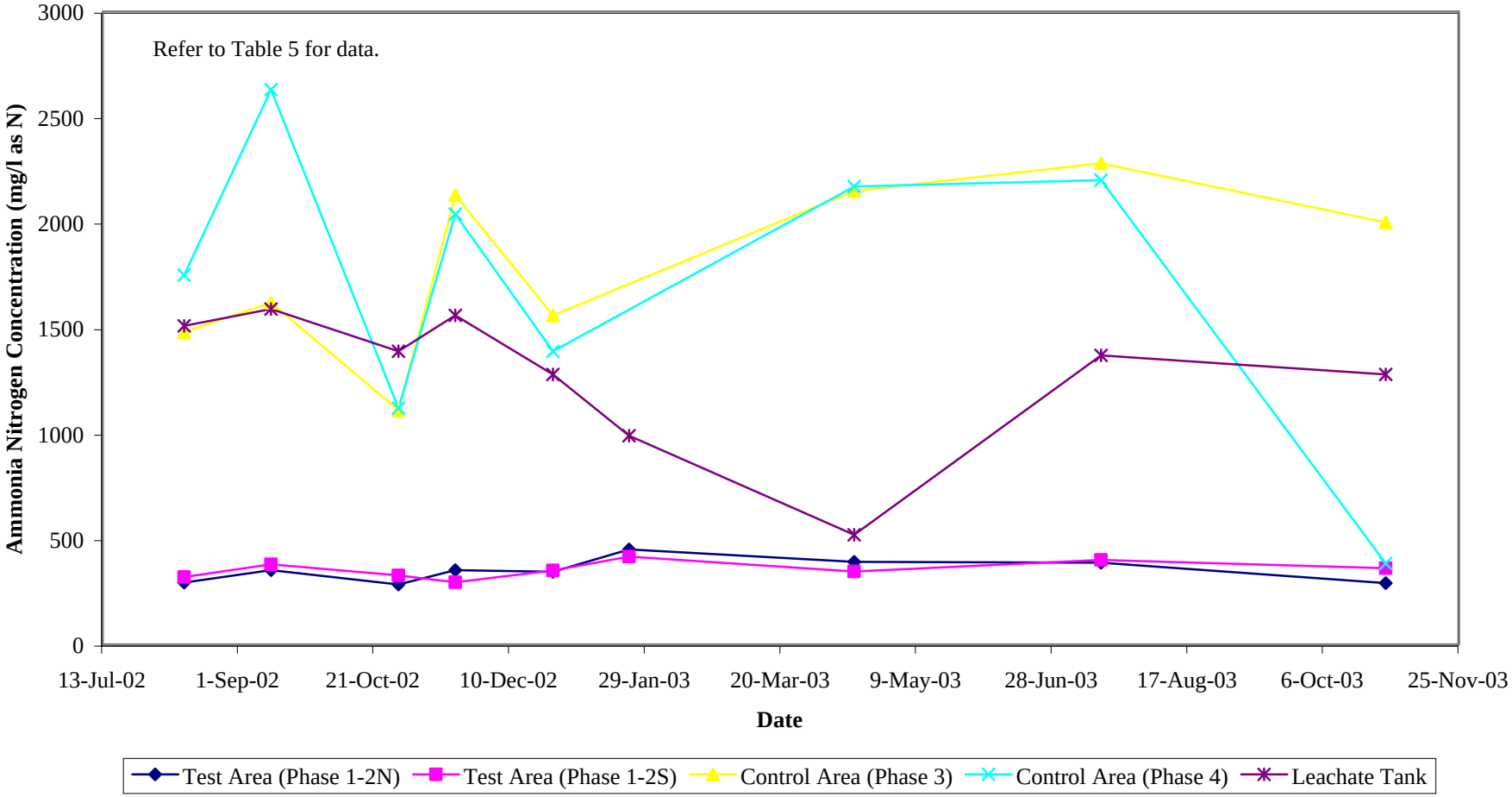


FIGURE 8
LANDFILL GAS QUANTITY DATA
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

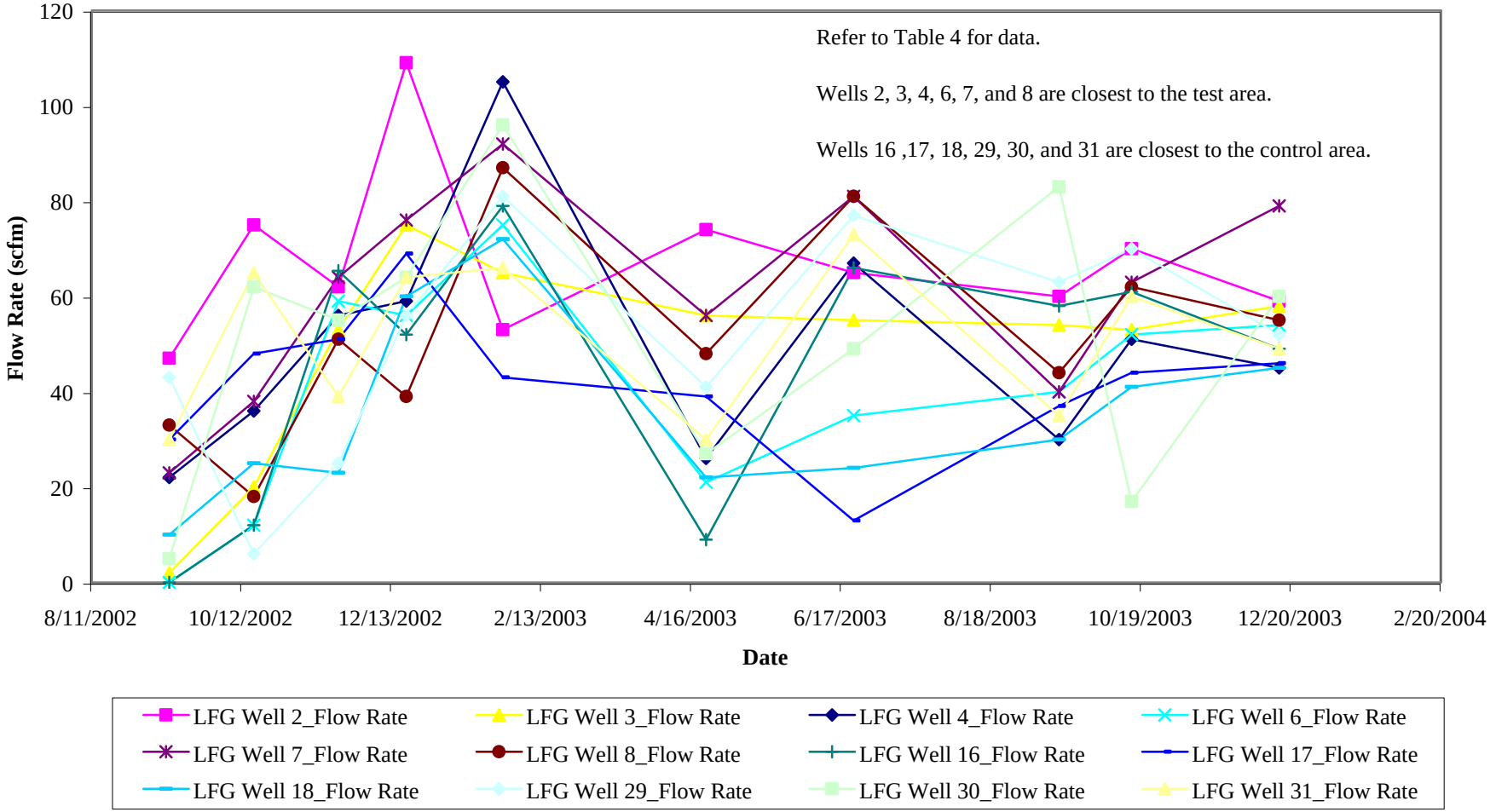


FIGURE 9
LANDFILL GAS QUALITY DATA - METHANE
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

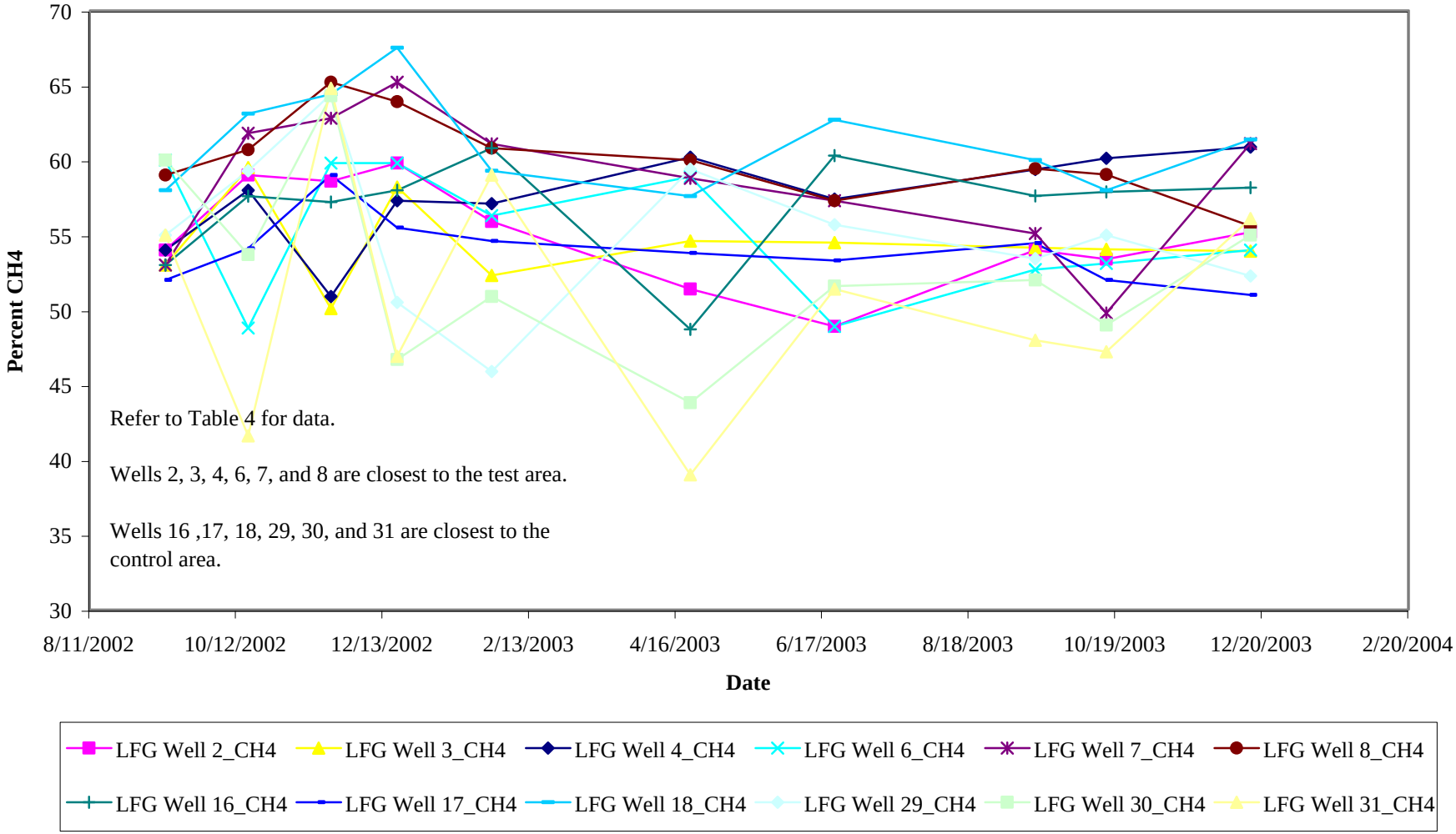
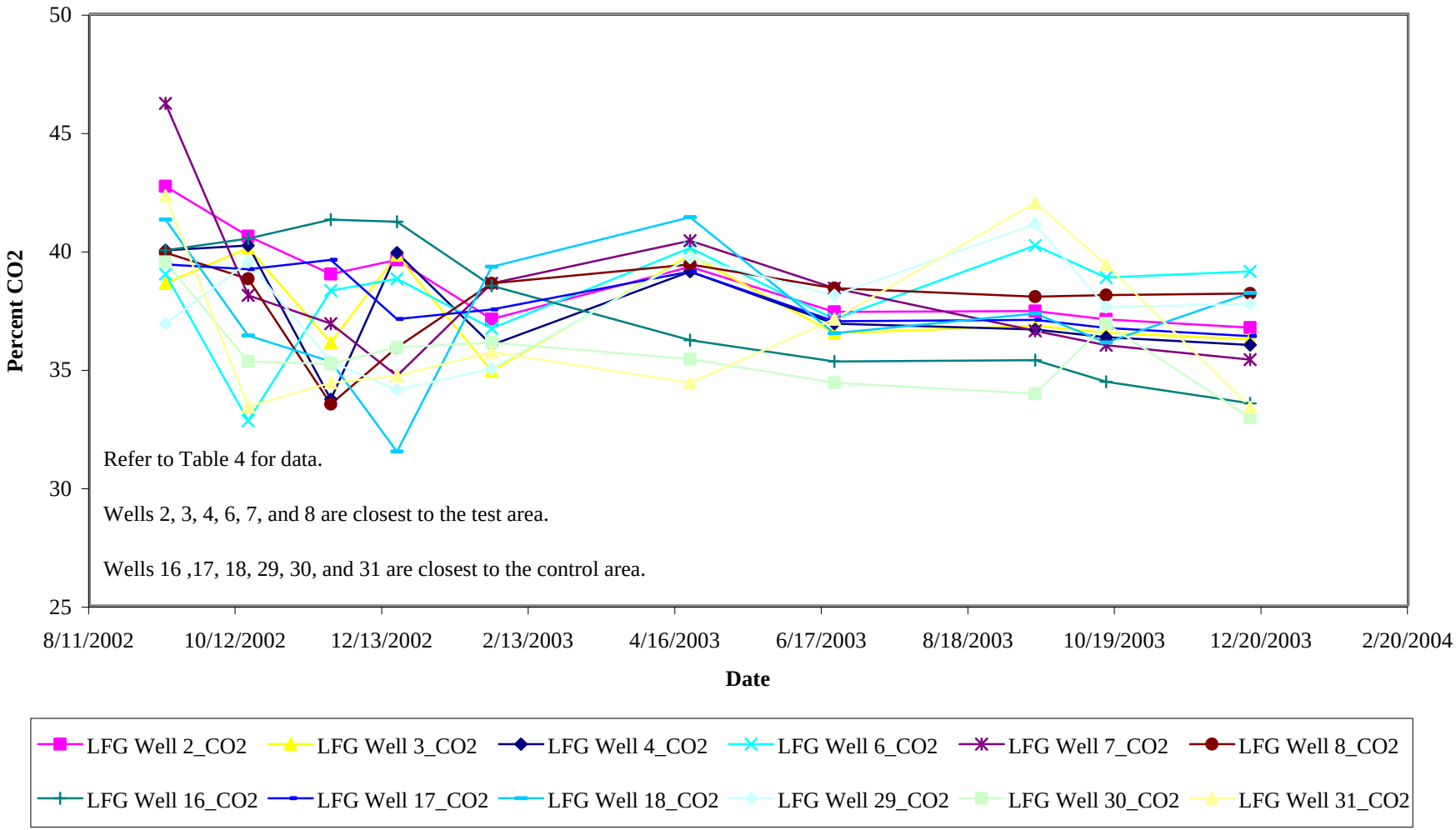
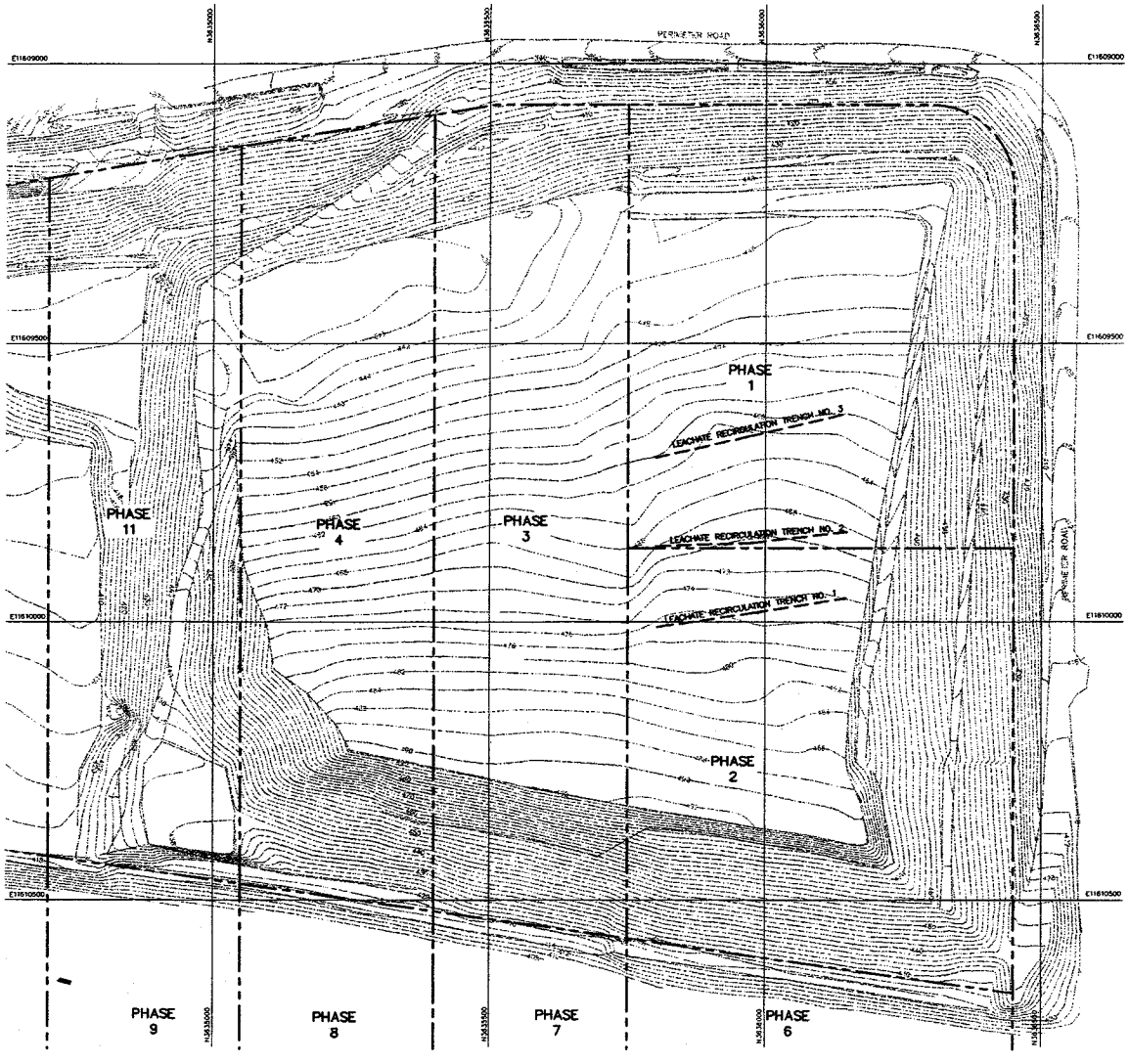


FIGURE 10
LANDFILL GAS QUALITY DATA - CARBON DIOXIDE
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia





NORTH

LEGEND

- PHASE BOUNDARY
- EXISTING GRADE CONTOUR (FEET, MSL)
- LEACHATE RECIRCULATION TRENCH

NOTES:

1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING OF A SURVEY CONDUCTED ON 24 APRIL 2002.

100 50 0 100 200
SCALE: 1" = 100'

GeoSyntec Consultants
COLUMBIA, MARYLAND
(410)381-4333

REV.	DATE	DESCRIPTION	DR BY	APP BY

DATE: SEPTEMBER 2002	PROJECT NO. WED0275-01	SCALE: 1" = 100'
DES BY: DTM SEPT 02	PROJECT: XL PROJECT MAPLEWOOD LANDFILL	
DRN BY: JOC SEPT 02		
CHK BY: MFH SEPT 02	SHEET TITLE: EXISTING CONDITIONS	
REV BY		
APP BY		

SIGNATURE

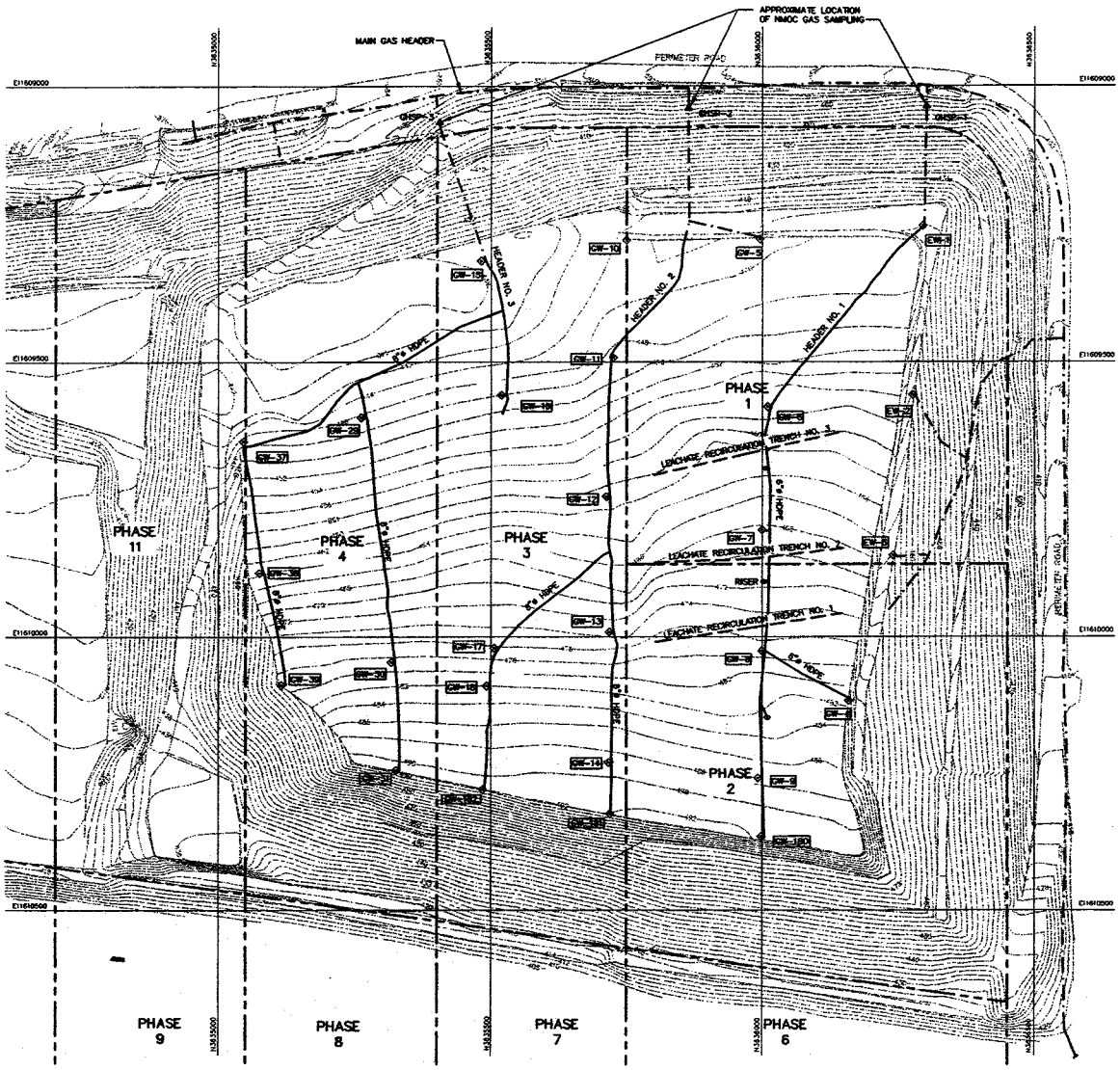
DATE

WASTE MANAGEMENT, INC.

FILE NO: 0275-001

DRAWING NO: 1 OF 4

P:\cadd\0275\0275-001.dwg Fri May 02 08:19:43 2003 GeoSyntec Consultants, MD (DTM)



NORTH

LEGEND

- PHASE BOUNDARY
- EXISTING GRADE CONTOUR (FEET, MSL)
- LEACHATE GAS COLLECTION HEADER
- LANDFILL GAS COLLECTION LATERAL
- GW-3 LANDFILL GAS WELL
- RISER PIPE
- GHSP-1 GAS HEADER SAMPLING POINT

NOTES:

1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING ASSOCIATES, INC OF A SURVEY CONDUCTED ON 24 APRIL 2002.
1. LANDFILL GAS INFORMATION (WELLS, TRENCHES, PIPING, ETC) IS FROM AN ELECTRONIC FILE FROM FLORA SURVEYING ASSOCIATES, INC. OF A SURVEY CONDUCTED IN SEPTEMBER 2002.

100 50 0 100 200
SCALE: 1" = 100'

GeoSyntec Consultants
COLUMBIA, MARYLAND (410)381-4333

REV.	DATE	DESCRIPTION	DR BY	APP BY

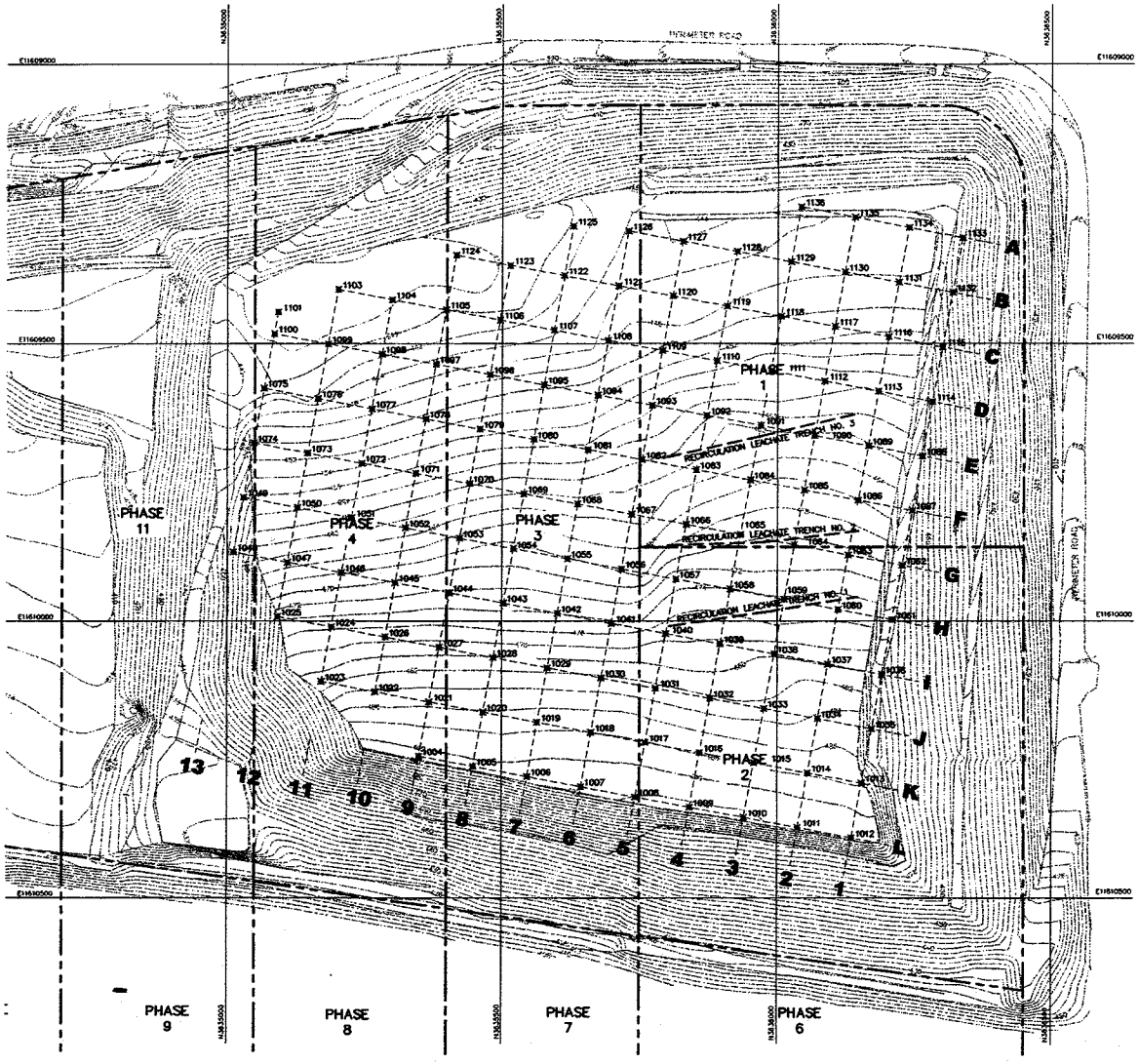
DATE: NOVEMBER 2002			PROJECT NO. ME0275-01	SCALE: 1" = 100'
DES BY	DTM	NOV 02	PROJECT: XL PROJECT MAPLEWOOD LANDFILL	
DRM BY	JOC	NOV 02		
CHK BY	MFH	NOV 02	SHEET TITLE: LANDFILL GAS MONITORING PLAN	
REV BY				
APP BY				

SIGNATURE
DATE

WASTE MANAGEMENT, INC.

FILE NO: 0275-002
DRAWING NO: 2 OF 4

P:\cadd\0275\0275-002.dwg Fri May 02 08:20:44 2003 GeoSyntec Consultants, MD (DTM)



NORTH

LEGEND

— — —	PHASE BOUNDARY
——— 440 ———	EXISTING GRADE CONTOUR (FEET, MSL)
A - - - - - -	SETTLEMENT GRID
✱ 1130	SETTLEMENT GRID POINT NUMBER

SETTLEMENT POINT SCHEDULE (SEE NOTE 2)

POINT NO.	ELEV. 8/2/02	ELEV. 10/24/02	POINT NO.	ELEV. 8/2/02	ELEV. 10/24/02
1004	485.87	485.39	1070	457.70	457.48
1005	485.31	485.04	1071	453.12	455.02
1006	488.10	487.72	1072	451.48	451.32
1007	489.08	488.77	1073	448.58	448.36
1008	489.29	489.21	1074	448.55	448.41
1009	490.94	489.75	1075	439.54	439.45
1010	489.86	489.80	1076	440.47	440.40
1011	490.38	490.18	1077	445.99	445.91
1012	490.32	490.16	1078	448.91	448.78
1013	488.99	488.87	1079	451.72	451.54
1014	487.20	487.11	1080	452.68	452.25
1015	486.71	486.52	1081	455.31	455.09
1016	485.31	484.90	1082	458.29	458.25
1017	486.48	486.30	1083	458.15	458.05
1018	486.24	486.08	1084	463.12	463.12
1019	484.57	484.27	1085	464.37	464.35
1020	483.05	482.72	1086	463.55	463.49
1021	482.36	481.94	1087	463.11	463.11
1022	480.97	480.59	1088	462.28	462.26
1023	477.72	477.37	1089	461.07	461.67
1024	472.04	471.74	1090	460.16	460.16
1025	468.72	468.35	1091	459.71	459.71
1026	474.30	474.05	1092	455.39	455.32
1027	475.71	475.20	1093	453.14	453.01
1028	477.62	477.36	1094	450.59	450.51
1029	479.67	478.85	1095	447.01	446.77
1030	480.72	480.53	1096	445.63	445.63
1031	481.41	481.16	1097	444.65	444.58
1032	481.09	480.95	1098	440.66	440.57
1033	482.03	482.03	1099	437.68	437.37
1034	482.34	482.28	1100	435.43	435.41
1035	477.76	477.84	1101	434.95	434.82
1036	473.03	472.87	1103	434.51	434.30
1037	476.70	476.52	1104	435.96	435.88
1038	475.69	475.55	1105	438.83	438.82
1039	476.49	476.49	1106	439.74	439.74
1040	476.24	476.24	1107	440.56	440.34
1041	472.92	472.85	1108	444.53	444.34
1042	472.03	471.81	1109	447.00	446.88
1043	471.62	470.75	1110	449.69	449.53
1044	470.05	469.89	1111	452.44	452.44
1045	468.67	467.72	1112	455.21	455.21
1046	465.01	464.78	1113	455.94	455.94
1047	461.57	461.29	1114	457.94	457.94
1048	462.50	462.28	1115	462.17	462.17
1049	452.53	452.46	1116	450.29	450.04
1050	454.78	454.55	1117	449.09	449.09
1051	457.93	457.69	1118	448.42	448.42
1052	460.81	460.65	1119	447.08	447.08
1053	463.32	462.89	1120	442.72	442.72
1054	465.71	465.16	1121	443.54	443.45
1055	466.08	465.78	1122	438.75	438.61
1056	466.95	466.84	1123	438.75	438.49
1057	468.79	468.65	1124	435.79	435.75
1058	470.40	470.33	1125	437.70	437.58
1059	471.67	471.67	1126	441.94	441.94
1060	473.09	473.02	1127	442.36	442.32
1061	468.96	469.84	1128	443.66	443.66
1062	468.12	468.11	1129	446.31	446.29
1063	468.41	468.33	1130	446.79	446.79
1064	469.26	469.21	1131	446.82	446.67
1065	468.66	468.63	1132	446.62	446.62
1066	463.00	463.00	1133	443.94	443.93
1067	463.21	463.06	1134	447.32	447.32
1068	461.01	460.97	1135	447.30	447.30
1069	460.16	460.00	1136	445.01	445.01

NOTES:

1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING OF A SURVEY CONDUCTED ON 24 APRIL 2002.
2. ELEVATIONAL DATA PROVIDED BY FLORA SURVEYING ASSOCIATE, INC. BASED ON FIELD SURVEYS CONDUCTED ON 2 AUGUST 2002 AND 24 OCTOBER 2002.

100 50 0 100 200
SCALE: 1" = 100'

GeoSyntec Consultants
COLUMBIA, MARYLAND (410)381-4333

REV.	DATE	DESCRIPTION	DR BY	APP BY

DATE: NOVEMBER 2002		PROJECT NO. ME0275-1	SCALE: 1" = 100'	
DES BY	DTM	NOV 02	PROJECT: XL PROJECT MAPLEWOOD LANDFILL	
DRN BY	JOC	NOV 02		
CHK BY	MFH	NOV 02	SHEET TITLE: SETTLEMENT MONITORING PLAN	
REV BY				
APP BY				

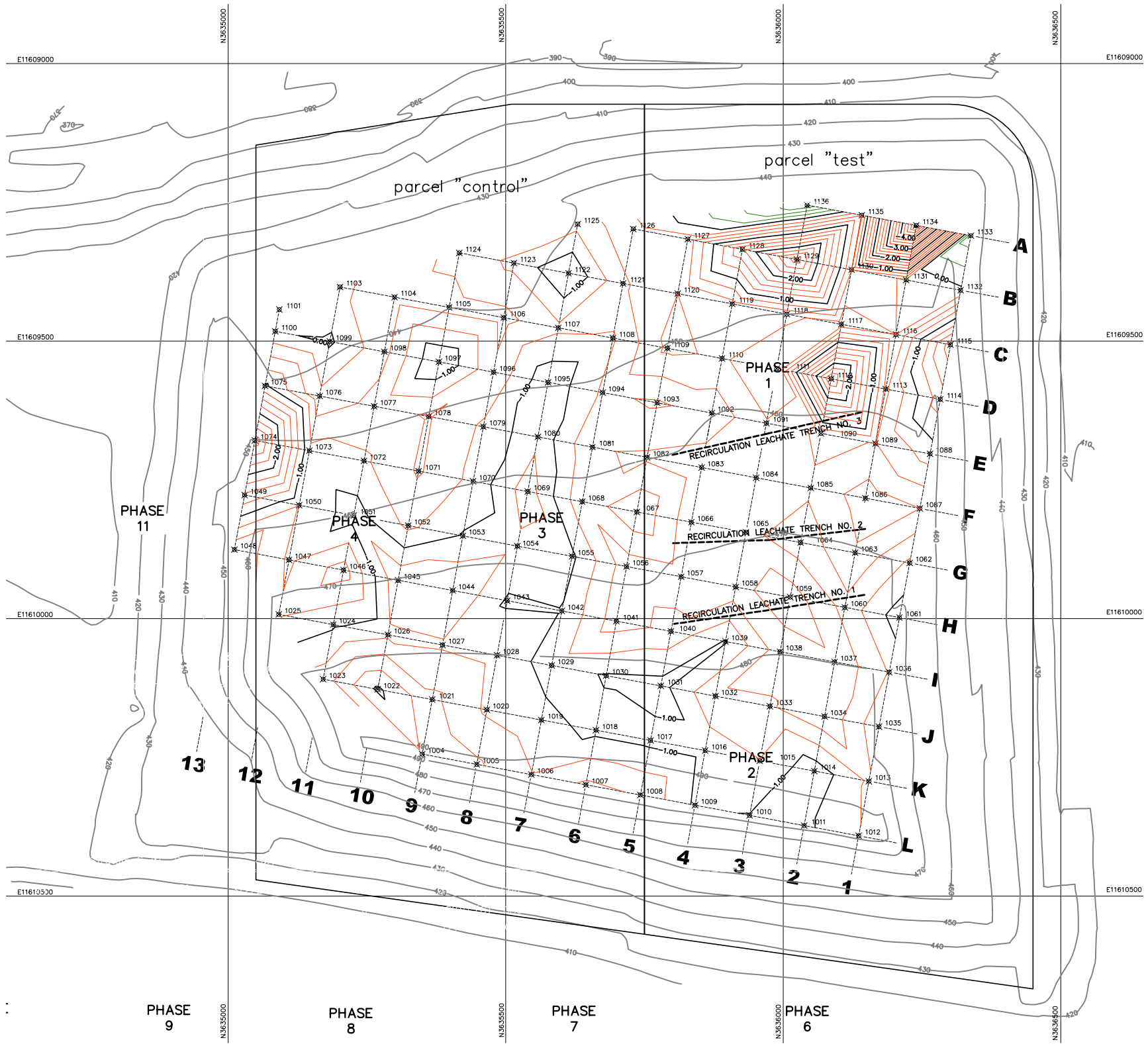
SIGNATURE

DATE

WASTE MANAGEMENT, INC.

FILE NO: 0275-003
DRAWING NO: 3 OF 4

P:\cadd\0275\0275-003.dwg Fri May 02 08:21:48 2003 GeoSyntec Consultants, MD (DTM)



NORTH

LEGEND

	PHASE BOUNDARY
440	EXISTING GRADE CONTOUR (FEET, MSL)
A	SETTLEMENT GRID
1130	SETTLEMENT GRID POINT NUMBER
1.00	SETTLEMENT CONTOUR (FEET) (NOTE 3)

SETTLEMENT SCHEDULE (SEE NOTE 2)

POINT NO.	SETTLEMENT 8/02–6/03 (FEET)		POINT NO.	SETTLEMENT 8/02–6/03 (FEET)	
1004	−1.73		1070	−0.82	
1005	−1.54		1071	−0.47	
1006	−1.26		1072	−0.79	
1007	−1.55		1073	−0.82	
1008	−1.48		1074	−2.91	
1009	−0.96		1075	−1.05	
1010	−1.01		1076	−0.31	
1011	−1.06		1077	−0.58	
1012	−0.76		1078	−0.48	
1013	−0.71		1079	−0.79	
1014	−1.16		1080	−1.19	
1015	−0.76		1081	−0.53	
1016	−0.92		1082	−0.46	
1017	−0.93		1083	−0.36	
1018	−0.93		1084	−0.36	
1019	−1.08		1085	−0.45	
1020	−1.21		1086	−0.12	
1021	−1.56		1087	−0.25	
1022	−2.05		1088	−0.87	
1023	−1.37		1089	−0.49	
1024	−0.96		1090	−0.57	
1025	−0.72		1091	−0.27	
1026	−1.20		1092	−0.67	
1027	−1.22		1093	−0.78	
1028	−1.18		1094	−0.71	
1029	−0.89		1095	−1.19	
1030	−1.02		1096	−0.55	
1031	−1.09		1097	−1.25	
1032	−0.53		1098	−0.42	
1033	−0.53		1099	0.04	
1034	−0.29		1100	−0.03	
1035	−0.93		1101	−0.25	
1036	−0.77		1103	−0.20	
1037	−0.29		1104	−0.40	
1038	−0.37		1105	−0.41	
1039	−1.02		1106	−0.42	
1040	−0.58		1107	−0.70	
1041	−0.37		1108	−0.78	
1042	−0.99		1109	−0.20	
1043	−0.97		1110	−0.29	
1044	−1.50		1111	0.00	
1045	−1.45		1112	−2.77	
1046	−0.38		1113	−0.44	
1047	−0.79		1114	−1.38	
1048	−0.29		1115	−1.89	
1049	−1.45		1116	−0.25	
1050	−0.76		1117	−0.12	
1051	−1.12		1118	−0.32	
1052	−0.69		1119	−0.41	
1053	−1.02		1120	−0.25	
1054	−1.19		1121	−0.54	
1055	−1.05		1122	−1.25	
1056	−0.37		1123	−0.81	
1057	−0.39		1124	−0.57	
1058	−0.32		1125	−0.67	
1059	−0.11		1126	−0.33	
1060	−0.58		1127	−0.36	
1061	−1.14		1128	−1.71	
1062	−0.80		1129	−2.90	
1063	−0.28		1130	−0.50	
1064	−0.66		1131	−0.20	
1065	−0.42		1132	−0.05	
1066	−0.34		1133	0.65	
1067	−0.96		1134	−5.16	
1068	−0.57		1135	−0.48	
1069	−1.38		1136	0.94	

NOTES:

1. TOPOGRAPHIC INFORMATION IS FROM AN ELECTRONIC FILE BY FLORA SURVEYING OF A SURVEY CONDUCTED ON 24 APRIL 2002.
2. SETTLEMENT VALUES DETERMINED FROM ELEVATIONAL DATA PROVIDED BY FLORA SURVEYING ASSOCIATE, INC. BASED ON FIELD SURVEYS CONDUCTED ON 2 AUGUST 2002 AND 9 JUNE 2002.
3. SETTLEMENT CONTOUR INTERVAL IS 0.25 FEET. CONTOURS SHOWN IN RED INDICATE AMOUNT OF SETTLEMENT FROM AUGUST 2002 TO JUNE 2003. CONTOURS SHOWN IN GREEN INDICATE "FILL" DURING THAT SAME TIME PERIOD.

100 50 0 100 200
SCALE IN FEET

GEOSYNTEC CONSULTANTS
COLUMBIA, MARYLAND (410)381-4333

REV.	DATE	DESCRIPTION	DR BY	APP BY

DATE:	JULY 2003		PROJECT NO. ME0275-1	SCALE: 1" = 100'
DES BY	DTM	NOV 02	PROJECT: XL PROJECT MAPLEWOOD LANDFILL	
DRN BY	JOC	NOV 02		
CHK BY	MFH	NOV 02	SHEET TITLE: SETTLEMENT MONITORING PLAN – AUGUST 2002 VS. JUNE 2003	
REV BY				
APP BY				

SIGNATURE

DATE

WASTE MANAGEMENT, INC.

FILE NO: 0275-28V36
DRAWING NO: 4 OF 4

P:\cadd\0275\0275-28v36.dwg, Layout1, 7/18/2003 8:26:50 AM, geosyntec consultants, inc. (joc)

APPENDIX A

LEACHATE QUALITY TEST RESULTS

- July 2003
- October 2003

(available upon request)

Leachate Parameters Detected - Phase 1-2N
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Parameter	Units	MCL	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
1,1-Dichloroethene	ug/L	7	**< 25**	**< 25**	-	-	-	**<10**	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	-	16	16	15	10	15	14	10
4-Methyl-2-Pentanone	ug/L	NA	-	-	800	-	-	-	-	-	-
Acetone	ug/L	NA	-	-	12100	-	-	42	-	-	-
Acetonitrile	ug/L	NA	-	-	1060	-	-	-	93	-	93
Benzene	ug/L	5	**< 25**	**< 25**	**7**	**8**	**7**	-	**8**	**7**	-
Benzo(a)pyrene	ug/L	0.2	**< 10**	**< 10**	**< 10**	**< 10**	**<26**	**<26**	**<26**	**<10**	**<10**
Carbon Tetrachloride	ug/L	5	**< 25**	**< 25**	-	-	-	**<10**	-	-	-
Ethylbenzene	ug/L	700	43	56	56	55	58	-	55	51	-
Hexachlorobenzene	ug/L	1	**< 10**	**< 10**	**< 10**	**< 10**	**<21**	**<21**	**<21**	**<10**	**<10**
m,p-Cresol	ug/L	NA	-	-	16	-	-	-	-	-	-
Naphthalene	ug/L	NA	14	19	-	21	-	-	-	-	12
Phenol	ug/L	NA	-	-	2200	-	-	-	-	-	-
Total Xylene	ug/L	10000	87	114	130	134	114	39	148	142	53
Trichloroethene	ug/L	5	**< 25**	**< 25**	-	-	-	**<10**	-	-	-
Vinyl Chloride	ug/L	2	**< 10**	**< 10**	-	-	-	**5**	**4**	-	-

Notes:
This table summarizes the leachate parameters that were detected in Phase 1-2N. Samples where the concentration may be greater than the MCL are show in in **bold**.
In some cases, the method detection limit is higher than the MCL.

Leachate Parameters Detected - Phase 1-2S
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Parameter	Units	MCL	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
1,1-Dichloroethane	ug/L	NA	-	-	-	-	-	-	-	-	6
1,1-Dichloroethene	ug/L	7	**< 25**	**< 25**	**< 10**	-	**<10**	-	-	-	-
1,2,4-Trichlorobenzene	ug/L	70	14	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	26	11	13	11	14	16	16	11
Acetone	ug/L	NA	-	-	-	-	-	-	-	-	31
Benzene	ug/L	5	**< 25**	**< 25**	**< 10**	**8**	**<10**	**10**	**8**	**10**	-
Benzo(a)pyrene	ug/L	0.2	**< 10**	**< 10**	**< 10**	**< 10**	**<26**	**<26**	**<26**	**<10**	**<10**
Carbon Tetrachloride	ug/L	5	**< 25**	**< 25**	**< 10**	-	**<10**	-	-	-	-
Ethylbenzene	ug/L	700	53	134	41	35	37	34	61	79	-
Hexachlorobenzene	ug/L	1	**< 10**	**< 10**	**< 10**	**< 10**	**<21**	**<21**	**<21**	**<10**	-
Methyl Ethyl Ketone	ug/L	NA	-	-	-	-	-	-	-	-	31
o-Toluidine	ug/L	NA	-	-	-	-	-	-	-	14	-
Toluene	ug/L	1000	-	-	-	-	-	-	-	16	
Total Xylene	ug/L	10000	133	336	146	166	146	167	203	188	6
Trichloroethene	ug/L	5	**< 25**	**< 25**	**< 10**	-	**<10**	-	-	-	-
Vinyl Chloride	ug/L	2	**< 10**	**< 10**	**< 4**	-	**<4**	-	-	**3**	-

Notes:
This table summarizes the leachate parameters that were detected in Phase 1-2S. Samples where the concentration may be greater than the MCL are show in in **bold**.
In some cases, the method detection limit is higher than the MCL.

Leachate Parameters Detected - Phase 3
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Parameter	Units	MCL	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
1,1-Dichloroethene	ug/L	7	**< 100**	**< 25**	**< 25**	**< 10**	**<10**	-	-	-	-
1,2,4-Trichlorobenzene	ug/L	70	**< 100**	-	-	-	**<73**	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	-	-	11	13	-	16	12	11
2,4 Dimethylphenol	ug/L	NA	-	-	-	-	-	-	-	-	17
4-Methyl-2-Pentanone	ug/L	NA	-	-	47	173	-	-	6	-	-
Acetone	ug/L	NA	1070	-	1060	-	-	-	36	22	29
Acetonitrile	ug/L	NA	385	-	272	-	144	-	295	138	143
Benzene	ug/L	5	**< 100**	**< 25**	**< 25**	**< 10**	**<10**	-	-	-	-
Benzo(a)pyrene	ug/L	0.2	**< 100**	**< 10**	**< 20**	**< 10**	**<100**	-	**<53**	**<10**	**<10**
Carbon Tetrachloride	ug/L	5	**< 100**	**< 25**	**< 25**	**< 10**	**<10**	-	-	-	-
cis-1,2-Dichloroethene	ug/L	70	**< 100**	-	-	-	-	-	-	6	6
Ethylbenzene	ug/L	700	-	30	49	-	31	-	44	30	13
Hexachlorobenzene	ug/L	1	**< 100**	**< 10**	**< 20**	**< 10**	**<83**	-	**<42**	**<10**	**<10**
Hexachlorocyclopentadiene	ug/L	50	**< 500**	-	-	-	**<57**	-	-	-	-
m,p-Cresol	ug/L	NA	420	32	71	43	<170	-	<84	-	29
Methyl Ethyl Ketone	ug/L	NA	917	-	1680	12	-	-	16	9	-
Naphthalene	ug/L	NA	-	-	-	10	-	-	-	-	-
o-Cresol	ug/L	NA	-	28	29	43	<68	-	<34	45	52
o-Toluidine	ug/L	NA	-	-	-	-	-	-	-	27	-
Toluene	ug/L	1000	233	105	155	67	86	-	135	91	61
Total Xylene	ug/L	10000	194	109	134	78	108	-	128	89	61
Trichloroethene	ug/L	5	**< 100**	**< 25**	**< 25**	**< 10**	**<10**	-	-	-	-
Vinyl Chloride	ug/L	2	**< 40**	**< 10**	**< 10**	**< 4**	**<4**	-	-	-	-

Notes:
This table summarizes the leachate parameters that were detected in Phase 3. Samples where the concentration may be greater than the MCL are show in in **bold**.
In some cases, the method detection limit is higher than the MCL.

Leachate Parameters Detected - Phase 4
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Parameter	Units	MCL	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
1,1-Dichloroethene	ug/L	7	**< 50**	**< 25**	**< 50**	**< 100**	**<50**	-	**<25**	**<25**	-
1,2,4-Trichlorobenzene	ug/L	70	**< 710**	-	-	-	**<73**	-	-	-	-
1,4-Dichlorobenzene	ug/L	NA	-	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	ug/L	NA	-	-	-	57	-	-	<84	-	-
2-Methyl-1-propanol	ug/L	NA	9780	-	-	6920	9330	-	6010	4020	-
4-Methyl-2-Pentanone	ug/L	NA	795	227	800	1180	1460	-	730	1350	-
Acenaphthylene	ug/L	NA	-	-	-	12	-	-	-	-	-
Acetone	ug/L	NA	6990	3950	12100	11500	33900	-	46600	6050	-
Acetonitrile	ug/L	NA	1340	564	1060	1450	1260	-	1420	605	-
Acetophenone	ug/L	NA	-	-	81	88	220	-	62	36	-
Benzene	ug/L	5	**< 50**	**< 25**	**< 50**	**< 100**	**<50**	-	**<25**	**<25**	-
Benzo(a)pyrene	ug/L	0.2	**< 710**	**< 20**	**< 10**	**< 10**	**<100**	-	**<52**	**<10**	**<10**
Benzyl Alcohol	ug/L	NA	-	-	-	180	230	-	<32	210	-
Carbon Tetrachloride	ug/L	5	**< 50**	-	**< 50**	**< 100**	**<50**	-	**<50**	**<25**	-
cis-1,2-Dichloroethene	ug/L	70	-	-	-	**< 100**	-	-	-	-	-
Diethyl Phthalate	ug/L	NA	-	24	-	43	-	-	-	-	-
Ethylbenzene	ug/L	700	58	34	-	-	-	-	40	44	16
Hexachlorobenzene	ug/L	1	**< 710**	**< 20**	**< 10**	**< 10**	**<83**	-	**<41**	**<10**	**<10**
Hexachlorocyclopentadiene	ug/L	50	**< 3600**	-	-	-	**<57**	-	-	-	-
m,p-Cresol	ug/L	NA	2000	496	900	1760	2800	-	-	860	-
Methyl Ethyl Ketone	ug/L	NA	9830	4010	17100	15700	48400	-	62900	9320	-
Naphthalene	ug/L	NA	-	-	-	20	<68	-	<34	-	-
o-Cresol	ug/L	NA	-	44	180	41	-	-	-	-	-
Phenanthrene	ug/L	NA	-	-	-	29	-	-	-	-	-
Phenol	ug/L	NA	4700	770	2200	1500	2000	-	9660	580	-
Toluene	ug/L	1000	326	180	173	170	190	-	209	198	-
Total Xylene	ug/L	10000	147	89	79	-	96	-	109	120	45
Trichloroethene	ug/L	5	**< 50**	**< 25**	**< 50**	**< 100**	**<50**	-	**<25**	**<25**	-
Vinyl Chloride	ug/L	2	**< 20**	**< 10**	**< 20**	**< 40**	**<20**	-	**<10**	**<10**	-

Notes:
This table summarizes the leachate parameters that were detected in Phase 4. Samples where the concentration may be greater than the MCL are show in in **bold**.
In some cases, the method detection limit is higher than the MCL.

Leachate Parameters Detected - Leachate Tank
Project XL
Maplewood Recycling and Waste Disposal Facility
Amelia County, Virginia

Parameter	Units	MCL	12-Aug-02	13-Sep-02	30-Oct-02	20-Nov-02	26-Dec-02	23-Jan-03	16-Apr-03	16-Jul-03	29-Oct-03
1,1-Dichloroethene	ug/L	7	**< 25**	**< 50**	**< 10**	**< 50**	**<25**	**<250**	**<50**	**<25**	**-**
2,4 Dimethylphenol	ug/L	NA	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	17
4-Methyl-2-Pentanone	ug/L	NA	-	167	121	194	397	537	646	55	-
Acetone	ug/L	NA	-	-	1690	7700	15600	18300	23600	-	-
Acetonitrile	ug/L	NA	183	-	146	-	-	-	-	266	176
Acetophenone	ug/L	NA	-	-	-	23	-	27	36	-	-
Benzene	ug/L	5	**< 25**	**< 50**	**< 10**	**< 50**	**<25**	**<250**	**<50**	**<25**	**-**
Benzo(a)pyrene	ug/L	0.2	**< 10**	**< 20**	**< 10**	**< 10**	**<53**	**<100**	**<53**	**<10**	**<10**
Carbon Tetrachloride	ug/L	5	**< 25**	**< 50**	**< 10**	-	**<25**	**<250**	**<50**	**<25**	**-**
Ethylbenzene	ug/L	700	**-**	**-**	**-**	-	**-**	**-**	**-**	**-**	9
Hexachlorobenzene	ug/L	1	**< 10**	**< 20**	**< 10**	**< 10**	**<42**	**<83**	**<42**	**<10**	**<10**
Hexachlorocyclopentadiene	ug/L	50	28	-	-	-	-	<57	-	-	-
m,p-Cresol	ug/L	NA	-	-	82	134	-	81	67	99	93
Methyl Ethyl Ketone	ug/L	NA	-	-	3750	11100	24500	25400	30500	85	-
o-Cresol	ug/L	NA	-	21	-	-	-	-	-	-	-
o-Toluidine	ug/L	NA	-	-	-	-	-	-	-	21	-
Phenol	ug/L	NA	-	56	72	150	-	200	91	-	-
Toluene	ug/L	1000	86	380	50	-	41	-	-	79	50
Total Xylene	ug/L	10000	-	52	23	-	36	-	-	62	24
Trichloroethene	ug/L	5	**< 25**	**< 50**	**< 10**	**< 50**	**<25**	**<250**	**<50**	**<25**	**-**
Vinyl Chloride	ug/L	2	**< 10**	**< 20**	**< 4**	**< 20**	**<10**	**<100**	**<20**	**<10**	**-**

Notes:
This table summarizes the leachate parameters that were detected in the Leachate Tank. Samples where the concentration may be greater than the MCL are show in in **bold**.
In some cases, the method detection limit is higher than the MCL.

APPENDIX B

DAILY LIQUID APPLICATION LOG

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

tanks (Beken)
1 = 24'7"
2 = 22'3"

after
1 = 24'4"
2 = 22'3"

Date: 7-3-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	20,590	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-9-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	8,250	leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-11-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	19,000	Leachate	On-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-14-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	15,624	Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-15-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	40547	Leachate	on site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-16-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	43 301	Leachate	on site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-17-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	43210	Onsite Leachate	
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-22-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	42005	leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-23-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	28294	Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-28-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	35969	~~Rive~~ Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-29-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	35002	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-30-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	26219	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 7-31-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	30657	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 8-5-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	24637	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 8-6-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	31231	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 8-7-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	33520	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 8-15-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	22643	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-16-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	38501	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-17-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	42003	Leachate	on-site
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-22-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	35919	Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-23-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	50719	Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-26-03

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3	22608	Leachate	on-site
4			
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 9-30-03

Trench	Gallons Applied	Liquid Description	Source
1			
2	15802	Leachate	on-site
3			
4	31065	Leachate	on-site
5			
6			
7			
8			
9			

FIGURE 5

LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Date: 10-3-03

Trench	Gallons Applied	Liquid Description	Source
1	24607	Leachate	on-site
2			
3			
4			
5			
6			
7			
8			
9			

DAILY LIQUID APPLICATION LOG

11-25-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	29,129	Leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	20'7"	18'10"
2	20'7"	18'10"

11-26-03

DAILY LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	35,743	Leachate	on-site
5			
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	19'	16'8"
2	19'	16'8"

12-9-03

DAILY LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	33959	Leachate	on-site
5			
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	18.9	18.6
2	18.9	18.6

DAILY LIQUID APPLICATION LOG

12-10-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	38624	leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	18.7	16.6
2	18.7	16.6

DAILY LIQUID APPLICATION LOG

12-11-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	43783	Leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	16.10	14.6
2	16.10	14.6

12-12-03

DAILY LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	28066	Leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	14.6	13.3
2	14.6	13.3

DAILY LIQUID APPLICATION LOG

12-17-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	53913	leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	16.6	14.4
2	16.6	14.4

DAILY LIQUID APPLICATION LOG

12-18-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	41915	Leachate	on-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	15.10	14.3
2	15.10	14.3

DAILY LIQUID APPLICATION LOG

12-19-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	40002	Leachate	on-site
5			
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	16'	14' 6"
2	16'	14' 6"

DAILY LIQUID APPLICATION LOG

12-23-03

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	29,617	Leachate	on-site
5			
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	22'8"	21'
2	22'8"	21'

DAILY LIQUID APPLICATION LOG

12-2603

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4	37,199	Leachate	on-site
5			
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	24'	NA
2	24'	NA

12-31-03

DAILY LIQUID APPLICATION LOG

Maplewood Landfill
Amelia County, Virginia

Trench	Gallons Applied	Liquid Description	Source
1			
2			
3			
4			
5	31,999	Leachate	On-site
6			
7			
8			
9			

Tank	Initial Liquid Level	Final Liquid Level
1	26'3"	24'3"
2	26'3"	24'3"