

Prepared for:



Riegel Ridge, LLC

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Atlanta, Georgia 30339

SITE STUDY EXECUTIVE SUMMARY

RIEGEL RIDGE LANDFILL COLUMBUS COUNTY, NORTH CAROLINA

Prepared by:



GEOSYNTEC CONSULTANTS

1255 Roberts Boulevard, Suite 200
Kennesaw, Georgia 30144

Project Number: GD3163

November 2004

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 Terms of Reference..... 1

1.2 Site Study Objectives..... 1

1.3 Executive Summary Objectives and Organization 1

2. BACKGROUND 3

2.1 Overview..... 3

2.2 Proposed Landfill Development 3

2.3 Timeline of Reports and Submittals to DWM..... 5

2.4 Related Regulatory Activities..... 6

3. SITE STUDY REVISIONS..... 7

3.1 Introduction..... 7

3.2 Site Study Part 3 – Hydrogeologic Summary Report..... 7

3.3 Site Study Part 4 – Location Restrictions 8

3.4 Site Study Part 6 – Proposed Facility Plan 9

4. CONCLUSIONS 11

5. REFERENCES 13

LIST OF FIGURES

- Figure 1 Site Location Map
- Figure 2 Base Grading Plan after MDA [2001]
- Figure 3 MSW Landfill Proposed Base Grading
- Figure 4 Final Closure Plan, after MDA [2001]
- Figure 5 MSW Landfill Proposed Final Cover

TABLE OF CONTENTS (Continued)

Figure 6 Development Phasing Plan, after MDA [2001]

Figure 7 MSW Landfill Phasing Plan

LIST OF TABLES

Table 1 Chronology of Site Study Submittals and Companion Reports

1. INTRODUCTION

1.1 Terms of Reference

GeoSyntec Consultants (GeoSyntec) prepared this Site Study Executive Summary on behalf of Riegel Ridge, LLC a wholly owned subsidiary of Waste Management of Carolinas, Inc. (WM) for the proposed Riegel Ridge Landfill development in Columbus County, North Carolina. This Executive Summary presents project background information and a discussion of recently updated Site Study components.

This report has been prepared by Mr. Kenneth R. Daly, P.E., of GeoSyntec. This report was reviewed by Dr. Majdi A. Othman, P.E., of GeoSyntec in accordance with the company's peer review policy.

1.2 Site Study Objectives

The fundamental purpose of the Site Study is to present the investigations, characterizations, studies, community agreements, and related documentation necessary for regulatory review and evaluation of the overall suitability of the proposed site for a municipal solid waste (MSW) landfill development. According to North Carolina Solid Waste Management Rules, upon satisfactory findings of the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Waste Management, Solid Waste Section (DWM) Site Study review, the site is considered "suitable" for the proposed MSW development. At that time the applicant may submit an application for a permit to construct for DWM consideration.

1.3 Executive Summary Objectives and Organization

Including the current Site Study submittal, the Riegel Ridge Site Study has been revised three times since its original submittal in March 2000. A number of supporting reports and documents have been submitted to the DWM since March 2000. The objective of this Executive Summary is to facilitate DWM Site Study review by: (i) explaining and clarifying the sequence and relationship between the Site Study submittals and the supporting reports and documents; and (ii) summarizing minor changes to the landfill proposed facility plan since the October 2003 Site Study Submittal.

The remainder of this Executive Summary is organized as follows:

- A project history including the project background, an overview of the proposed landfill development, a chronology of reports and submittals to the DWM, and a chronology of other regulatory activities are provided in Section 2;
- The major Site Study components, related to North Carolina Solid Waste Management Rules, Section .1618, and the Site Study revisions contained in this submittal are summarized Section 3; and
- General Executive Summary and Site Study conclusions are presented in Section 4.

2. BACKGROUND

2.1 Overview

Riegel Ridge, LLC, the site developer, retained Marlowe Dreitzler & Associates (MDA: currently ms consultants inc.) and Titan Atlantic Group (Titan) to conduct engineering analyses and siting studies supporting the proposed landfill development. Titan conducted several phases of investigation and prepared reports for the proposed landfill development. MDA submitted the original Site Study to the DWM in March 2000 in consideration to apply for a permit to construct the proposed facility. The proposed facility plans, included in the Site Study, provide drawings and narrative illustrating details of the proposed landfill development. Site Study revisions were submitted to the DWM in May 2001 and October 2003.

Riegel Ridge, LLC was recently acquired by Waste Management of the Carolinas, Inc. (WM). WM retained GeoSyntec to review components of the proposed landfill development and to conduct engineering analyses and calculations supporting minor changes to the proposed facility plan and supplementing existing engineering analyses and calculations. Background regarding the proposed landfill development, prior investigations, engineering analyses, and reports are provided in this Section. In addition, a summary of proposed minor changes to the proposed facility plan is provided.

2.2 Proposed Landfill Development

The Riegel Ridge Landfill is a proposed new MSW landfill development planned for a 760-acre parcel (the site) located in southeastern Columbus County, North Carolina. The proposed development entails construction of an approximately 107-acre MSW landfill and approximately 250 acres of proposed borrow areas. Development of a 7-acre construction and demolition debris (C&D) landfill was once proposed but has since been abandoned. The proposed location of the MSW landfill development and the general site vicinity are shown in Figure 1.

The proposed facility plans, included in earlier Site Study submittals [MDA, 2001, 2003], provide conceptual level drawings illustrating details of the proposed landfill development.

Modifications to these facility plan drawings are proposed and include:

- decreasing the perimeter berm height;
- modifying cell and phasing configurations;
- refining and revising foundation layer grading plan; and
- updating cover system grading.

GeoSyntec notes that these modifications to the proposed facility plan drawings do not change or increase the proposed limit of waste placement. A detailed discussion of the reasoning and details of each proposed modification is provided in the companion report entitled “*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Conditions*”, [GeoSyntec, 2004a] which is provided as Site Study Attachment H.

The previously proposed base grading plan is shown on drawing 4A of 5 of the 2001 [MDA] facility plan drawings and is included as Figure 2 herein. This base grading plan illustrates an approximately 60 foot high perimeter berm surrounding the proposed landfill and the base grading for fourteen cells. The proposed base grading plan is included as Figure 3. This base grading plan illustrates an approximately 20 foot high perimeter berm with base grading for eleven cells.

The previously proposed final cover system plan is illustrated on drawing 5A of 5 of the 2001 [MDA] and is included as Figure 4 herein. As the final cover system originates from the perimeter berm, the final cover system plan has been revised to reflect the proposed reduction in perimeter berm height. The revised final cover system grading plan is illustrated in Figure 5 herein.

The original facility plan drawings include 14 individual cells comprising five development phases. The phases generally progressed from Phase 1 at the south, to Phase 5 at the north of the proposed footprint. The original cell layout and phasing is illustrated in the attached Figure 6. The proposed modification to the cell layout and phasing consists of developing the proposed facility with 11 individual cells making up five landfill development phases with the phasing progressing from the north to the south. The proposed cell and phase modifications are illustrated in Figure 7.

2.3 Timeline of Reports and Submittals to DWM

Titan, under the direction of MDA, conducted several phases of investigation activities aimed at characterizing the site geologic, hydrogeologic, and geotechnical conditions. Activities began in the fall of 1998 with a preliminary geotechnical investigation and concluded in the spring of 2001. These investigations were conducted to evaluate site suitability and to obtain design data for the proposed development. Site investigation activities were presented in a number of reports which contain soil boring logs, water level measurements, slug test results, geologic cross sections, laboratory test results, settlement evaluations, and slope stability evaluations for the proposed facility. The Titan reports include:

- *"Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina"* prepared by Titan Atlantic Group, 13 January 2000;
- *"Addendum to Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina"* prepared Titan Atlantic Group,, 6 April 2000; and
- *"Addendum No. 2 to the Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina"*, prepared Titan Atlantic Group, 9 May 2001.

The *"Site Hydrogeologic Report"*, [Titan, 2000a] was submitted to the DWM in conjunction with the original Site Study submittal [MDA, 2000]. The subsequent hydrogeologic reports have been submitted to the DWM as attachments to later revised Site Study submittals. MDA (now ms consultants, inc.) has made the following Site Study submittal to the DWM:

- *"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618"*, prepared by Marlowe Dreitzler and Associates, January 2000;
- *"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618, May 2001 Revised Site Study Submittal"*, prepared by Marlowe Dreitzler and Associates, May 2001; and
- *"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618, October 2003, Revised Site Study Submittal"*, prepared by Marlowe Dreitzler and Associates, October 2003.

A timeline of site study submittals and companion reports is provided in Table 1.

2.4 Related Regulatory Activities

In addition to the investigations, reports, and Site Study submittals to the DWM, other noteworthy developments relevant to the Site Study and proposed landfill development have occurred. These noteworthy developments include the following:

- Columbus County has issued a host community agreement and franchise to Riegel Ridge, LLC.
- Federal, State and County agencies have completed flood plain analyses determining that the proposed landfill footprint lies outside the 100-year floodplain.
- NCDENR-Division of Water Quality issued the 401 certification. Landfill opponents appealed the certification and a four day trial was held in early 2004. In August 2004, the Administrative Law Judge determined that the 401 certification is proper.
- The Corps of Engineers is reviewing the 404 permit. As required by the Corps, a Conservation Easement has been executed. Riegel Ridge, LLC is the Grantor of the Conservation Easement, and the Waccamaw-Siouan Tribe of Columbus County is the Grantee.
- WM issued and submitted a Corporate Guarantee to the DWM explaining and demonstrating the financial capability of WM and Riegel Ridge, LLC.

Details of these developments are included in the Site Study submittal and in correspondence to the DWM.

3. SITE STUDY REVISIONS

3.1 Introduction

The proposed Riegel Ridge landfill development has evolved over the last four years and as summarized in Section 2.3, includes a number of investigations, reports, and Site Study submittals to the DWM. Consistent with North Carolina Solid Waste Management Rules, the Site Study is organized in the following parts which coincide with the required content of Rule .1618:

- Part 1: Regional Characterization Study – Rule .1618(c)(1);
- Part 2: Local Characterization Study – Rule .1618(c)(2);
- Part 3: Site Hydrogeologic Report – Rule .1618(c)(3);
- Part 4: Location Restrictions - Rule .1618(c)(4);
- Part 5: Local Government Approvals – Rule .1618(c)(5);
- Part 6: Proposed Facility Plan – Rule .1618(c)(6).

Site Study Parts 1, 2, and 5 included in the November 2004 submittal for completeness, have not changed since the October 2003 Site Study submittal. Site Study Parts 3, 4, and 6 of the November 2004 submittal have been revised mainly to address the proposed facility plan modifications described in Section 2.2 and to reflect current events since the October 2003 Site Study submittal. An overview of the revisions to Site Study Parts 3, 4, and 6 is provided in the following sections.

3.2 Site Study Part 3 – Hydrogeologic Summary Report

NC Solid Waste Rule .1618(c)(3) requires the development of a site hydrogeologic report prepared in accordance with Rule .1623(a). The hydrogeologic report is to include investigations and evaluation of site characteristics for determining the site suitability for landfill development, the paths and rates of groundwater flow for the uppermost aquifer and the relationship between groundwater flow and potential receptors. In addition the scope of hydrogeologic investigations and reports must include the information to evaluate pertinent location restrictions of Rule .1622.

As summarized in Section 2.3, a number of geologic and hydrogeologic investigations have been conducted and associated reports have been prepared and submitted to the DWM in support of the proposed landfill development. On behalf of WM, GeoSyntec developed a hydrogeologic summary report with the objectives of: (i) generally summarizing prior investigations; (ii) evaluating and further interpreting data and information from the prior investigations and reports; (iii) improving and clarifying understanding of the site hydrogeologic conditions; and (iv) further communicating site hydrogeologic conditions through the report, the potentiometric map, and the geologic cross-section drawings. The summary report, entitled “*Addendum No. 3 to the Site Hydrogeologic Report, Hydrogeologic Summary Report*”, [GeoSyntec, 2004b] is provided as Site Study Attachment G.

Prior reports encompass geologic, hydrogeologic, and geotechnical topics while the hydrogeologic summary report focuses only on the geologic and hydrogeologic characteristics of the site. A detailed discussion of geotechnical considerations for the Riegel Ridge Landfill project is provided in the companion report, “*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Conditions*”, [GeoSyntec, 2004a] which is provided as Site Study Attachment H.

3.3 Site Study Part 4 – Location Restrictions

NC Solid Waste Rule .1618(c)(4) requires that the Site Study include a report demonstrating compliance with the ten location restrictions of Rule .1622. These ten location restrictions are addressed in Part 4 of the Site Study and include:

- Part 4.1: Airport Safety – Rule .1622(a)(1);
- Part 4.2: Floodplains – Rule .1622(a)(2);
- Part 4.3: Wetlands – Rule .1622(a)(3);
- Part 4.4: Fault Areas – Rule .1622(a)(4);
- Part 4.5: Seismic Impact Zones – Rule .1622(a)(5);
- Part 4.6: Unstable Areas – Rule .1622(a)(6);
- Part 4.7: Cultural Resources – Rule .1622(a)(7);

- Part 4.8: State Nature and Historic Preserve – Rule .1622(a)(8);
- Part 4.9: Water Supply Watersheds – Rule .1622(a)(9); and
- Part 4.10: Endangered and Threatened Species – Rule .1622(a)(10).

Site Study Parts 4.2 (Floodplains), Part 4.3 (Wetlands) and Part 4.8 (State Nature and Historic Preserve) have been updated to reflect current events since the October 2003 Site Study submittal. Site Study Part 4.4 (Fault Areas) and Part 4.5 (Seismic Impact Zones), have been updated to include a statement of conclusions following GeoSyntec review and revisions. Part 4.6 (Unstable Areas), has been updated based on further review and evaluation of site stability (settlement, slope stability, and liquefaction potential analyses) which were warranted to evaluate proposed changes to the facility layout and to supplement existing analyses. Detailed evaluations and discussion of site stability are provided in the companion report entitled, “*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Conditions*”, [GeoSyntec 2004a] which is provided as Site Study Attachment H.

3.4 Site Study Part 6 – Proposed Facility Plan

Consistent with NC Solid Waste Rule .1618(c)(6), Part 6 of the Site Study submittal provides the proposed facility plan, which includes drawings and a report that define the conceptual plan for the proposed landfill development. The drawings consist of the site development drawings and the conceptual proposed facility plan drawings. The site development drawings provide general details of site development such as the boundary survey, topography, site layout, wetlands, and buffers, to name a few. The conceptual proposed facility plan drawings address the fundamental considerations of the landfill development including cell layout, phased development, proposed base grading, final cover system grading, and various details defining the landfill structural components. The facility report required with the Site Study application includes an evaluation and discussion of the waste stream, landfill capacity and soil resources, containment and environmental control systems, and special engineering features.

The proposed facility plan drawings and report have been updated to reflect the proposed landfill modifications (described in Section 2.2.) since the October 2003 Site Study submittal. The proposed facility plan drawings and report were developed consistent with the site geologic and hydrogeologic characteristics presented in the companion report “*Hydrogeologic Summary Report*”, [GeoSyntec, 2004b] which is provided as Site Study Attachment G. Furthermore, the proposed facility plan drawings

and report were developed in conjunction with and based on results of engineering analyses presented in the “*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Conditions*”, [GeoSyntec, 2004a] which is provided as Site Study Attachment H.

4. CONCLUSIONS

The information presented in the November 2004 Site Study Submittal in conjunction with companion reports demonstrate that the proposed facility plan satisfies the location restrictions of NC Solid Waste Management Rule .1622.

This Site Study Executive Summary was developed with the objective of facilitating DWM Site Study review by: (i) clarifying the sequence of and relationship between previous Site Study submittals and companion reports; and (ii) summarizing modifications to the proposed facility plan since the October 2003 Site Study submittal (October 2003). The project background, an overview of the proposed landfill development, a chronology of reports and submittals to the DWM, and a chronology of other regulatory activities have been provided in Section 2. The Site Study components, consistent with NC Solid Waste Management Rule .1618, and the specific revisions to each component since the prior Site Study submittal have been summarized in Section 3. Notable additions to the Site Study submittal include the “*Addendum No. 3 to the Site Hydrogeologic Report, Hydrogeologic Summary Report*”, [GeoSyntec, 2004b] and the “*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Conditions*”, [GeoSyntec 2004a] which are provided as Site Study Attachments G and H, respectively.

GeoSyntec developed the hydrogeologic summary report with the objectives of further evaluating and interpreting the geologic and hydrogeologic information from previous investigations and advancing the understanding of the site geologic and hydrogeologic conditions. In the hydrogeologic summary report, GeoSyntec [2004b] concludes that the site groundwater and surface water conditions are understood and that both vertical and horizontal flow components of the surficial aquifer have been identified. Based on the reported geologic and hydrogeologic information, GeoSyntec [2004b] concludes that the Riegel Ridge site is suitable for development of the proposed solid waste landfill.

GeoSyntec evaluated the overall stability of the proposed landfill development based on engineering analyses including settlement, slope stability, and liquefaction potential analyses. The additional engineering analyses were warranted to evaluate proposed changes to the facility layout and to supplement existing analyses. The proposed facility plan drawings and report presented in the Site Study submittal were developed based on results of these analyses. Based on the results of analyses and

evaluations, GeoSyntec [2004a] concludes that the Riegel Ridge site is suitable for development of the proposed landfill in the context of the location restrictions for fault areas, seismic impact zones, and unstable areas identified in Site Study Part 4 and NC Solid Waste Management Rule .1622.

5. REFERENCES

GeoSyntec Consultants (2004a), "*Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Considerations, Riegel Ridge Landfill, Columbus County, North Carolina*", prepared for Riegel Ridge, LLC, and Waste Management of Carolinas, Inc., Atlanta Georgia, November 2004, 21 p (plus appendices).

GeoSyntec Consultants, "*Addendum No. 3 to the Site Hydrogeologic Report, Hydrogeologic Summary Report Hydrogeologic Summary Report, Riegel Ridge Landfill, Columbus County, North Carolina*", prepared for Riegel Ridge, LLC, and Waste Management of Carolinas, Inc., Atlanta Georgia, October 2004, 19 p (plus appendices).

Marlowe, Dreitzler & Associates, "*Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618*", May, 2001 Revised Site Study Submittal, 78 p.

Marlowe, Dreitzler & Associates, "*Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Rule .1618*", October, 2003 Revised Site Study Submittal, 107 p (plus exhibits).

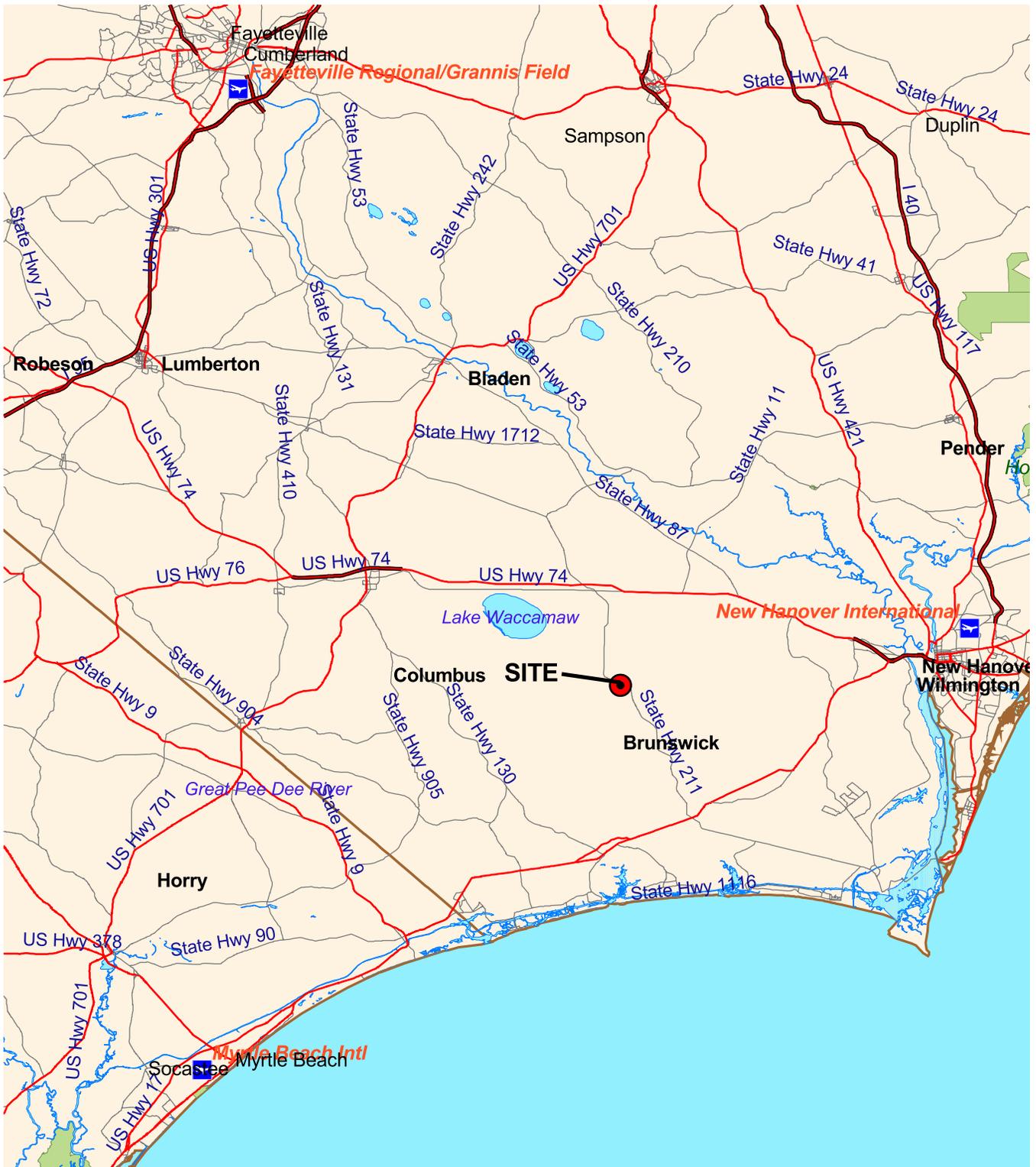
Titan Atlantic Group (2000a), "*Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina*" prepared for Marlowe, Dreitzler, & Associates, January 2000, 13 p (plus appendices).

Titan Atlantic Group (2000b), "*Addendum to Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina*" prepared for Marlowe, Dreitzler, & Associates, April 2000, 15 p (plus appendices).

Titan Atlantic Group, "*Addendum No. 2 to the Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina*," prepared for Marlowe, Dreitzler, & Associates, May 2001, 33 p (plus appendices).

FIGURES

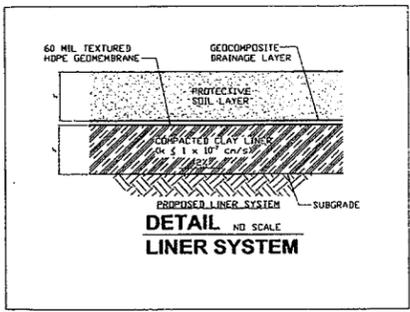
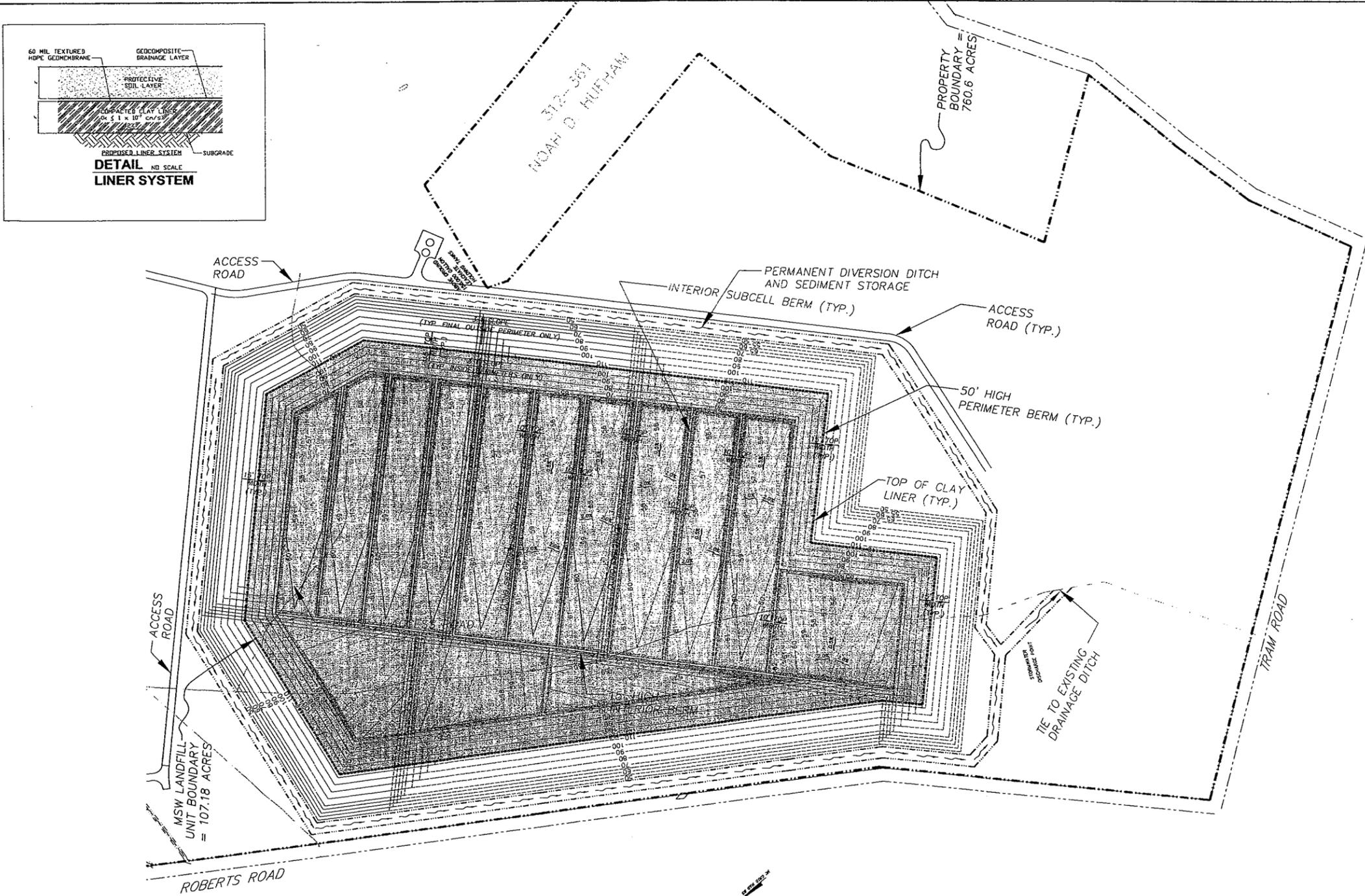
Site Location Map



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ATLANTA, GEORGIA

FIGURE NO.	1
PROJECT NO.	GD3163
DOCUMENT NO.	GA040676
FILE NO.	Site_Map.APR

BASE GRADING PLAN

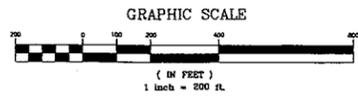


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919 834-1113

RIEDEL RIDGE MSW LANDFILL
COLUMBUS COUNTY
NORTH CAROLINA

LANDFILL CONSTRUCTION
MSW LANDFILL UNIT
BASE GRADING PLAN

Drawn by: BSS
Designed by: VVD
Checked by: VVD
Date: 01/14/00
Scale: 1" = 200'
Sheet: 4A of 5
File number: 99-030



NO.	REV. BY	DATE	DESCRIPTION
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REVISIONS

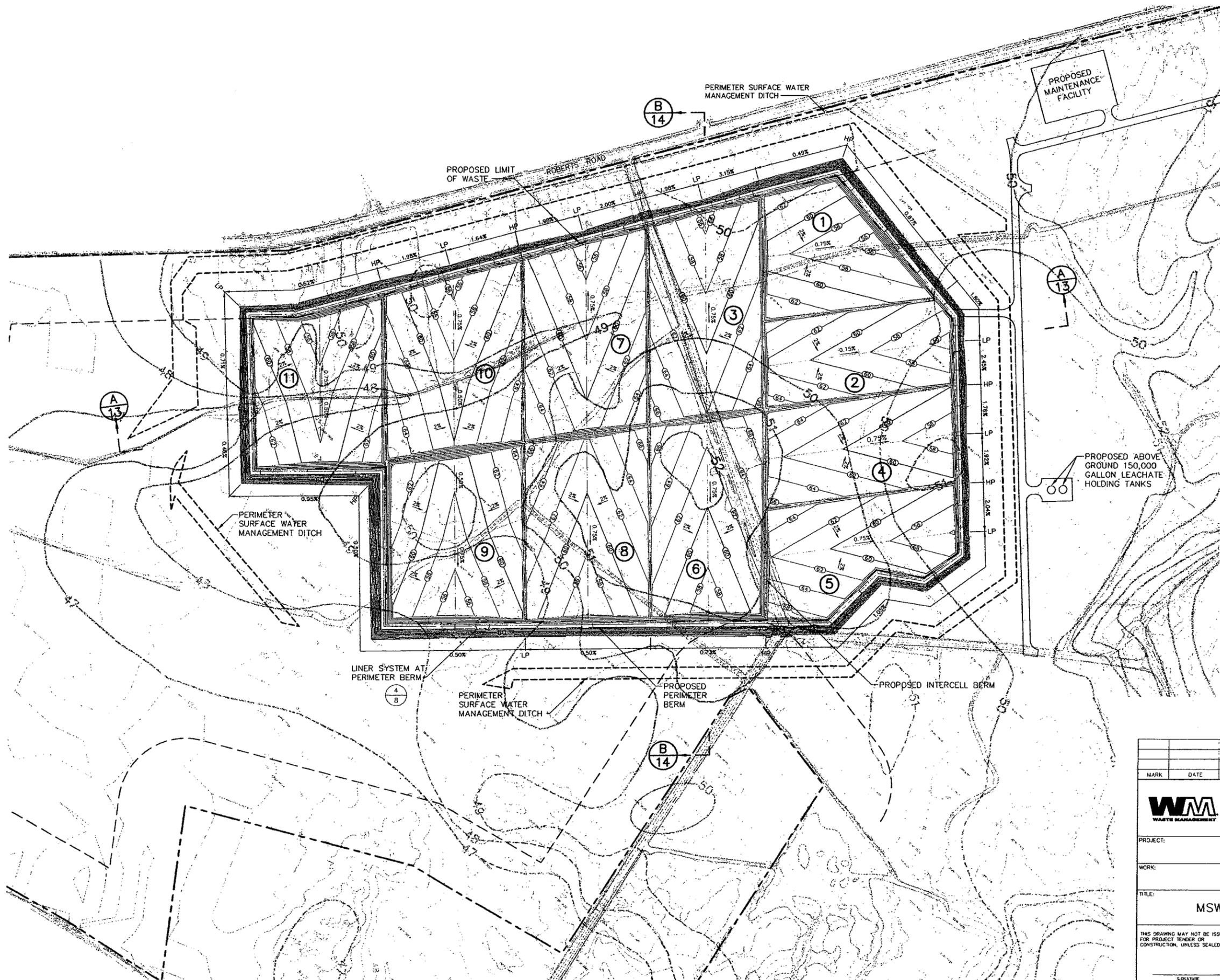


GEOSYNTEC CONSULTANTS
ATLANTA, GEORGIA

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DOCUMENT NO.	GA040676	FILE NO.	FIGURES.CDR

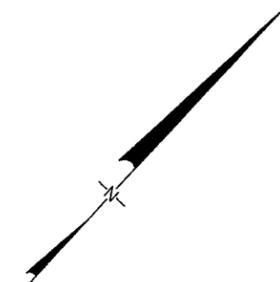
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99-030 COLUMBUS COUNTY MSW LANDFILL SUBMITTAL NEW 4A

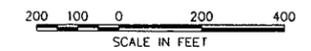


LEGEND

- EXISTING GROUND CONTOUR (FEET MSL)
- SUBGRADE ELEVATION (FEET)
- PROPERTY BOUNDARY (NOTE 1)
- 300' PROPERTY BOUNDARY BUFFER ZONE
- 52 --- GROUNDWATER CONTOUR ELEVATION (FT MSL) MEASURED IN MARCH 2001 (DASHED WHERE INFERRED) (NOTE 2)
- (5) --- PROPOSED LIMIT OF WASTE
- (5) --- CELL DESIGNATION
- PROPOSED ROADS
- PROPOSED PERIMETER SURFACE WATER DITCH

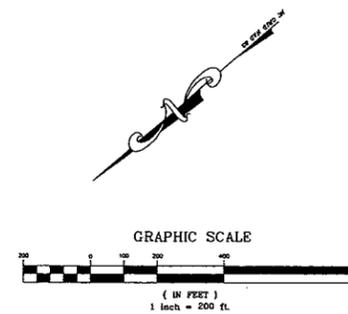
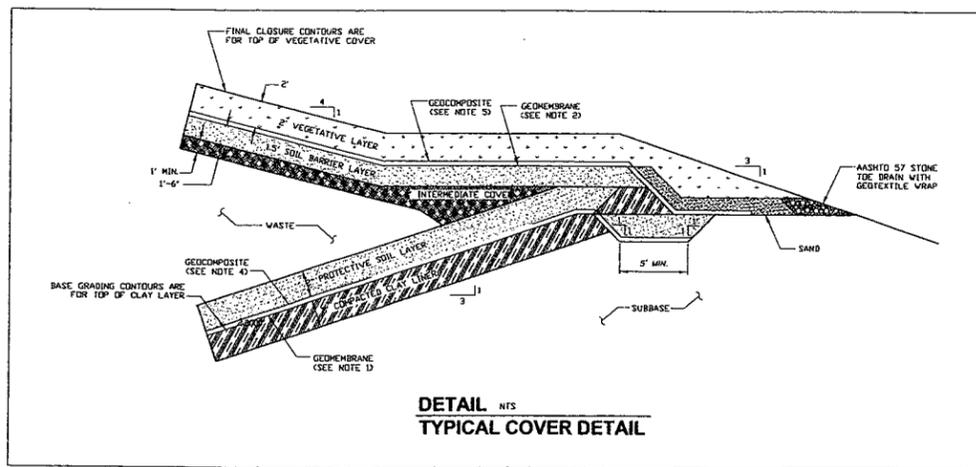
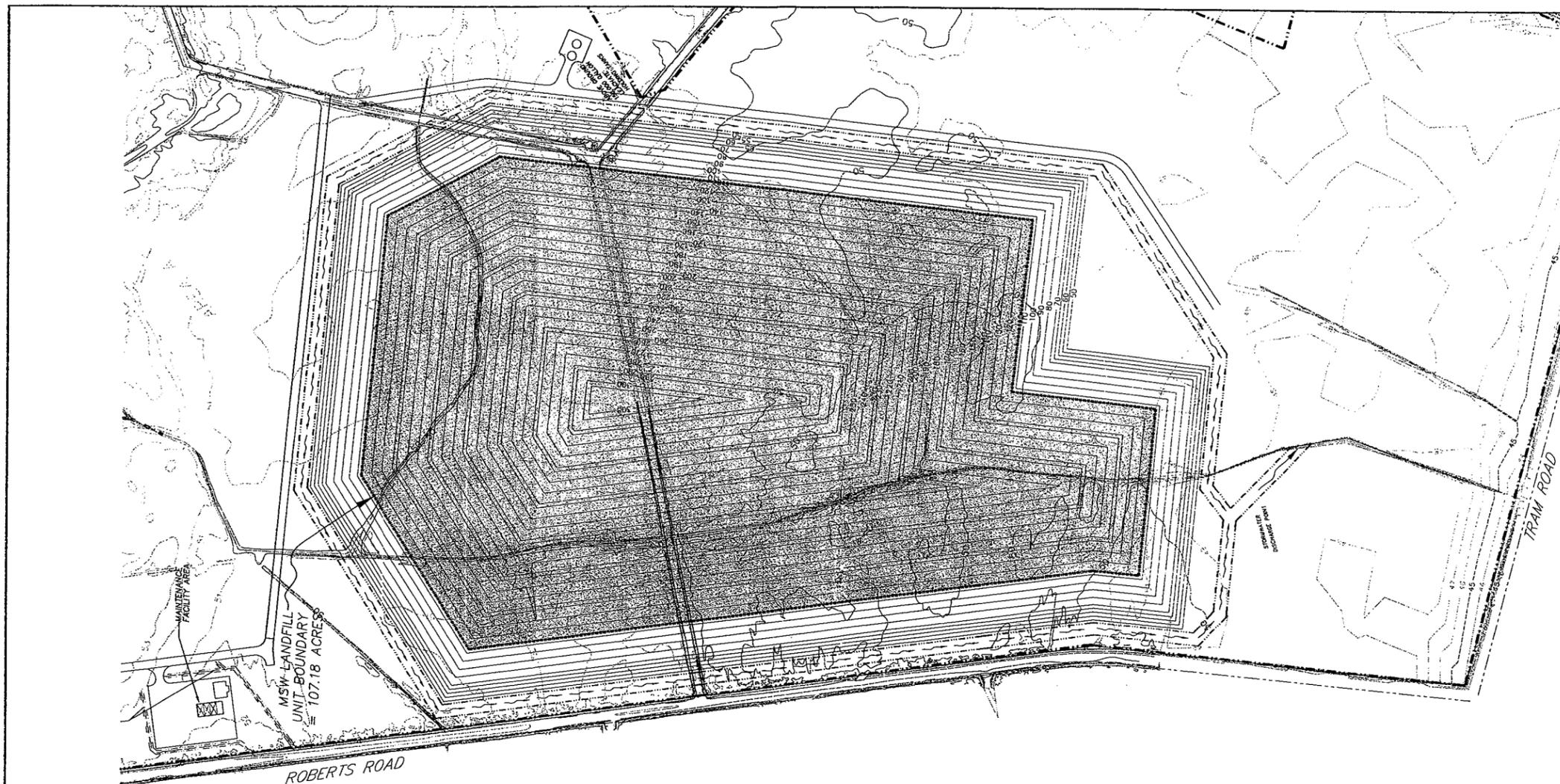


- NOTES:**
1. PROPERTY BOUNDARY, TOPOGRAPHIC SURVEY, WETLANDS, PERIMETER SURFACE WATER MANAGEMENT DITCH, AND BORROW AREAS, ADOPTED FROM STORM WATER MANAGEMENT PLAN DEVELOPED BY MARLOWE, DREITZLER AND ASSOCIATES, DATED OCTOBER 9, 2002.
 2. GROUNDWATER CONTOUR ELEVATIONS EVALUATED BY GEOSYNTEC CONSULTANTS AND ADOPTED FROM HYDROGEOLOGIC SUMMARY REPORT DATED OCTOBER 2004.



MARK	DATE	REVISION	BY	APPROVED
GEOSYNTEC CONSULTANTS 1100 LAKE HEARN DRIVE, N.E., SUITE 200 ATLANTA, GEORGIA 30342 USA RIEGEL RIDGE LLC WASTE MANAGEMENT OF THE CAROLINAS, INC.				
PROJECT: RIEGEL RIDGE LANDFILL COLUMBUS COUNTY, NORTH CAROLINA				
WORK: PROPOSED FACILITY PLAN DRAWINGS SITE STUDY				
TITLE: MSW LANDFILL PROPOSED BASE GRADING				
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DATE: NOVEMBER 2004	SCALE: 1" = 200'	
SIGNATURE		DESIGN BY: KRD	JOB NO.: GD3163-04	
DATE		DRAWN BY: JWO	FILE NO.: 31630003	
SEAL		CHECKED BY: KRD	REVISION NO.: -	
		REVIEWED BY: KRD	FIGURE NO.:	
		APPROVED BY: MAO		3

FINAL CLOSURE PLAN



NO.	REV. BY	DATE	DESCRIPTION
2	BSS	08/15/01	MSW FOOTPRINT SIZE MODIFICATIONS
1	BSS	03/26/01	NO DENR SOLID WASTE COMMENTS



Drawn by:	BSS
Designed by:	VVD
Checked by:	VVD
Date:	01/18/00
Scale:	1" = 200'
Sheet:	5A of 5
File Number:	99-030

Marlowe, Dretzler & Associates
 Consulting Engineers
 219 N. Boylan Ave., Raleigh NC 27603
 919 834-1113

RIEGEL RIDGE MSW LANDFILL
 COLUMBUS COUNTY
 NORTH CAROLINA

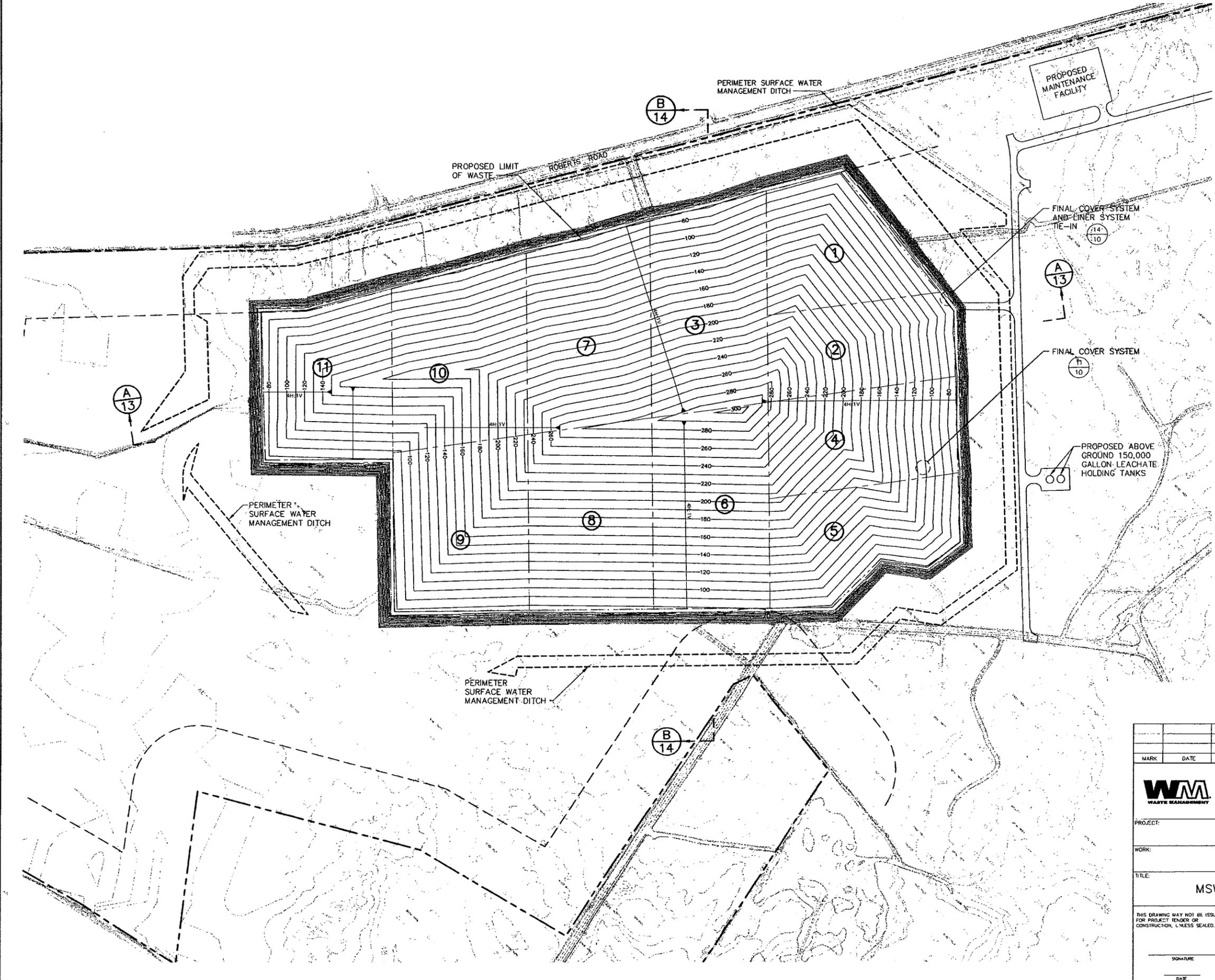
LANDFILL CONSTRUCTION
 MSW LANDFILL
 FINAL CLOSURE PLAN

99-030 COLUMBUS COUNTY MSW LANDFILL SUBMITTAL, NEW 7A

99-030 COLUMBUS COUNTY MSW LANDFILL SUBMITTAL, NEW 7A

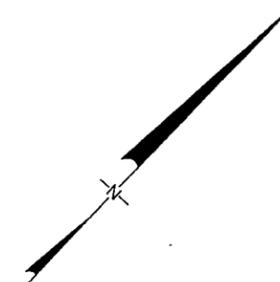
 **GEO SYNTEC CONSULTANTS**
 ATLANTA, GEORGIA

PROJECT NO.	GD3163	FIGURE NO.	4
DOCUMENT NO.	GA040676	FILE NO.	FIGURES.CDR



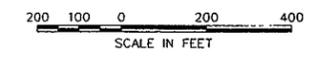
LEGEND

	EXISTING GROUND CONTOUR (FEET MSL)
	PROPOSED FINAL ELEVATION (FEET)
	PROPERTY BOUNDARY (NOTE 1)
	300' PROPERTY BOUNDARY BUFFER ZONE
	PROPOSED LIMIT OF WASTE
	CELL DESIGNATION
	PROPOSED CELL LIMIT
	PROPOSED ROADS
	PROPOSED PERIMETER SURFACE WATER DITCH



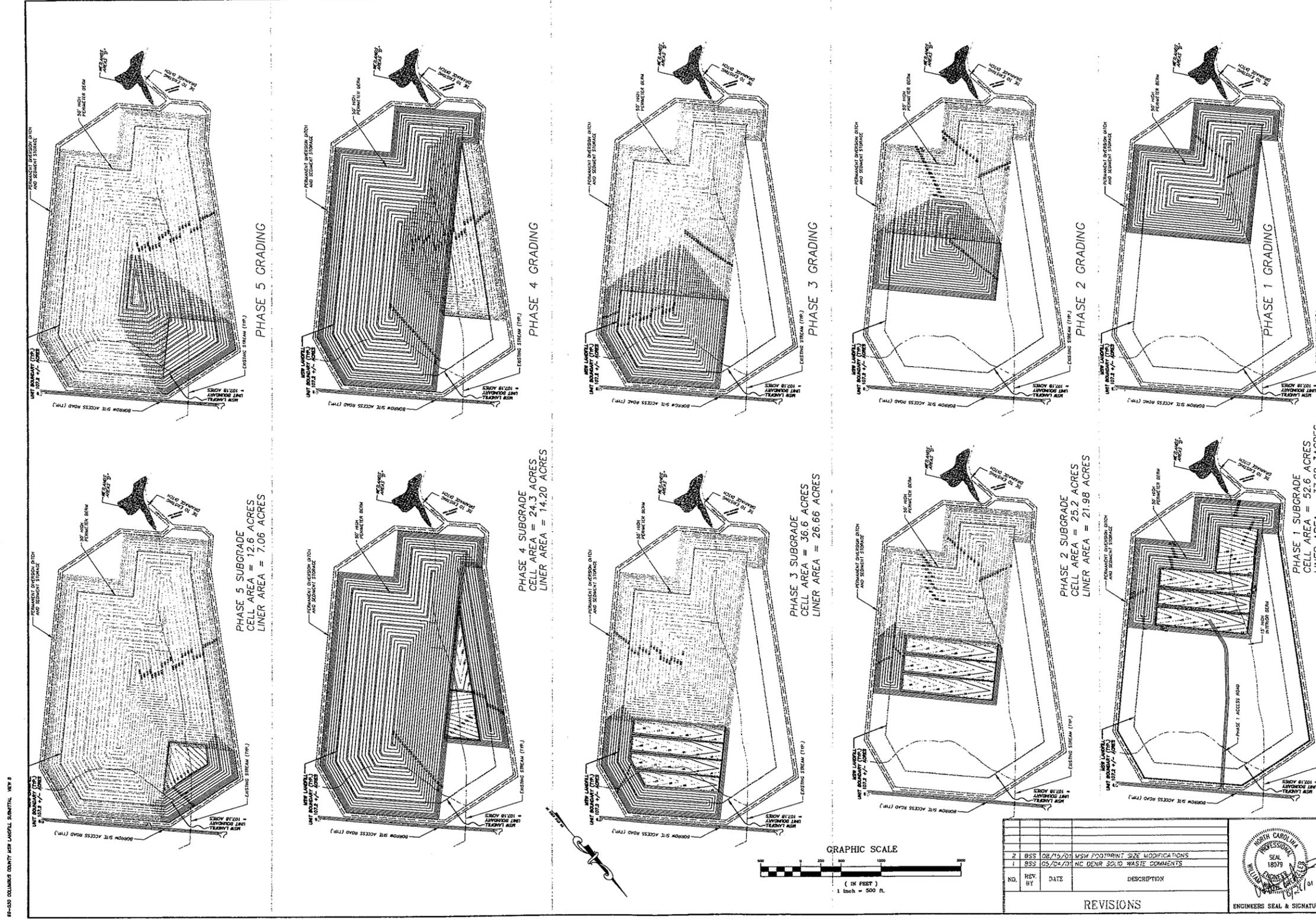
NOTES:

- PROPERTY BOUNDARY, TOPOGRAPHIC SURVEY, WETLANDS, PERIMETER SURFACE WATER MANAGEMENT DITCH, AND BORROW AREAS, ADOPTED FROM STORM WATER MANAGEMENT PLAN DEVELOPED BY MARLOWE, DREITZLER AND ASSOCIATES, DATED OCTOBER 9, 2002.



MARK	DATE	REVISION	BY	APPROVED
<p>GEOSYNTEC CONSULTANTS 1100 LARK HEARN DRIVE, N.E., SUITE 200 ATLANTA, GEORGIA 30342 USA RIEDEL RIDGE LLC WASTE MANAGEMENT OF THE CAROLINAS, INC.</p>				
<p>PROJECT: RIEDEL RIDGE LANDFILL COLUMBUS COUNTY, NORTH CAROLINA</p>				
<p>WORK: PROPOSED FACILITY PLAN DRAWINGS SITE STUDY</p>				
<p>TITLE: MSW LANDFILL PROPOSED FINAL COVER</p>				
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<p>SCALE _____</p>		<p>CHECKED BY: KRD REVISION NO.: -</p>		
<p>_____</p>		<p>REVIEWED BY: KRD FIGURE NO.: 5</p>		
<p>_____</p>		<p>APPROVED BY: MAO</p>		

DEVELOPMENT PHASING PLAN



84-030 COLUMBUS COUNTY MSW LANDFILL SUBMITTAL, VIEW 8

**LANDFILL CONSTRUCTION
MSW LANDFILL
DEVELOPMENT PHASING PLAN**

**RIEDEL RIDGE MSW LANDFILL
COLUMBUS COUNTY
NORTH CAROLINA**

Marlowe, Dretzler & Associates
Consulting Engineers
219 N. Boylan Ave., Raleigh NC 27603
☎ 919 834-1113

NO.	REV. BY	DATE	DESCRIPTION
2	BSS	08/15/01	MSW FOOTPRINT SIZE MODIFICATIONS
1	BSS	05/24/01	NC DENR S&D WASTE COMMENTS

REVISIONS

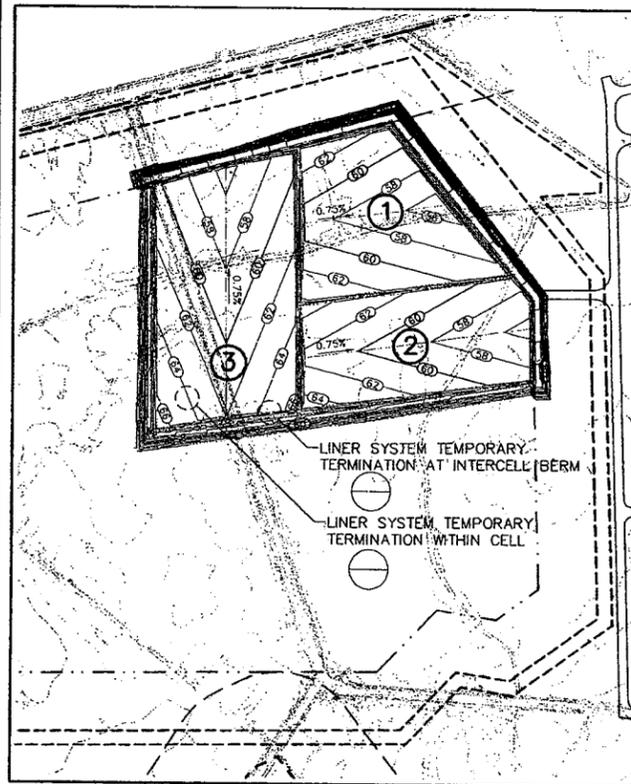
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
18079

ENGINEERS SEAL & SIGNATURE

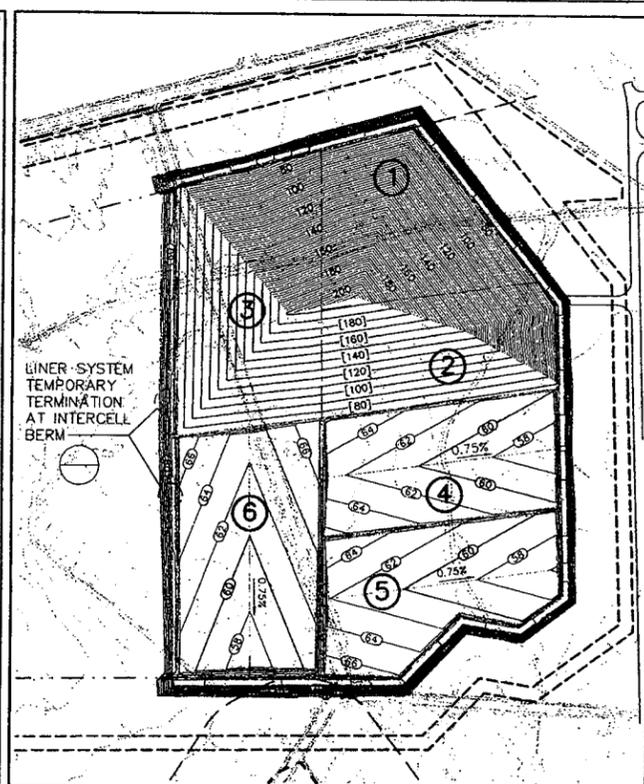
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Checked by:	BSS
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Date:	01/18/00
File No.:	99-030

GEO SYNTEC CONSULTANTS
 ATLANTA, GEORGIA

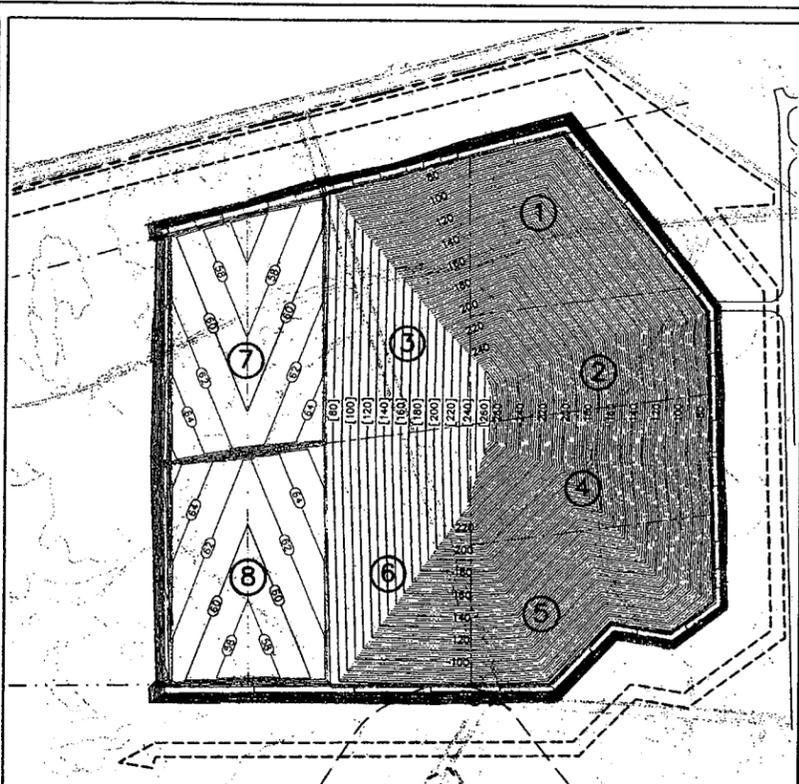
PROJECT NO.	GD3163	FIGURE NO.	6
DOCUMENT NO.	GA040676	FILE NO.	FIGURES.CDR



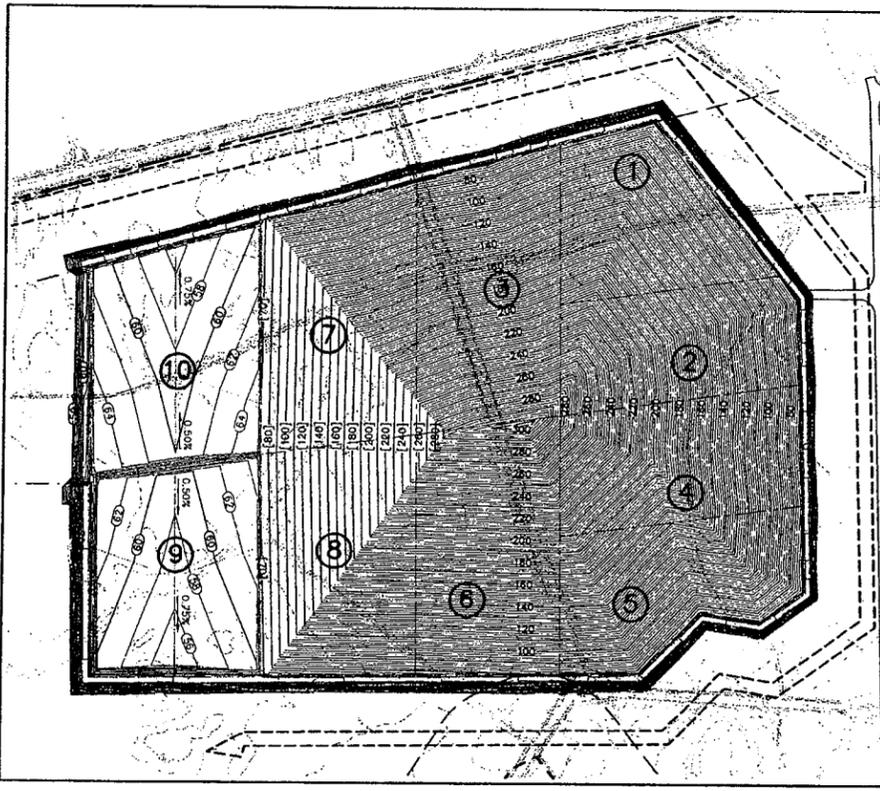
PLAN
PHASE 1
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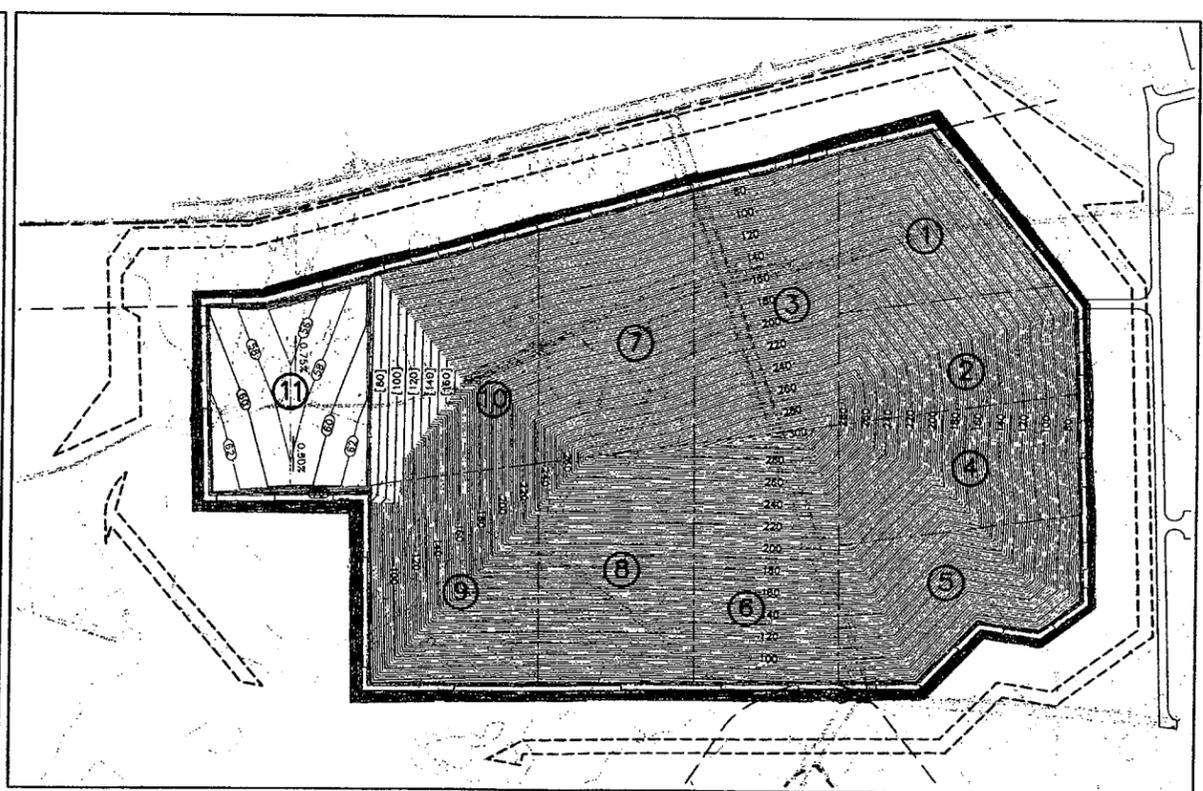
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PHASE 2
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PLAN
PHASE 3
SCALE: 1" = 300'
REF: 3163103



PLAN
PHASE 4
SCALE: 1" = 300'
REF: 3163104



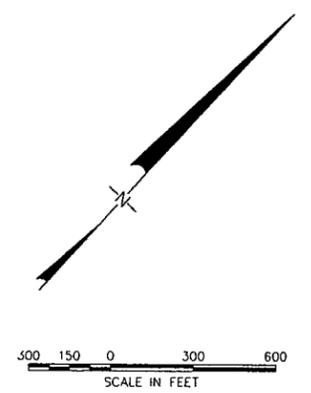
PLAN
PHASE 5
SCALE: 1" = 300'
REF: 3163105

LEGEND

- EXISTING GROUND CONTOUR (FEET MSL)
- 60 — FINISHED GRADE ELEVATION
- 60 — SUBGRADE ELEVATION
- 80 — INTERIM COVER ELEVATION
- PROPERTY BOUNDARY (NOTE 1)
- 300' PROPERTY BOUNDARY BUFFER ZONE
- PROPOSED LIMIT OF WASTE
- PROPOSED CELL LIMIT
- ⑤ CELL DESIGNATION

NOTES:

1. THE PURPOSE OF THIS DRAWING IS TO ILLUSTRATE THE OVERALL PHASING SEQUENCE OF LANDFILL DEVELOPMENT.
2. THE PROPOSED LANDFILL DEVELOPMENT IS DIVIDED IN TO FIVE PHASES (PHASE 1 THROUGH 5). EACH PHASE CONSISTS OF ONE OR MORE CELLS.
3. INDIVIDUAL CELLS MAY BE SUBDIVIDED INTO SMALLER PORTIONS TO BETTER MANAGE AND OPTIMIZE SOLID WASTE PLACMFMT OPERATIONS AND SURFACE WATER MANAGEMENT.



MARK	DATE	REVISION	BY	APPROVED
GEOSYNTEC CONSULTANTS 1100 LAKE HEARN DRIVE, N.E., SUITE 200 ATLANTA, GEORGIA 30342 USA RIEDEL RIDGE LLC WASTE MANAGEMENT OF THE CAROLINAS, INC.				
PROJECT: RIEDEL RIDGE LANDFILL COLUMBUS COUNTY, NORTH CAROLINA				
WORK: PROPOSED FACILITY PLAN DRAWINGS SITE STUDY				
TITLE: MSW LANDFILL PHASING PLAN				
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DATE: NOVEMBER 2004	SCALE: 1" = 300'	
SIGNATURE		DESIGN BY: KRD	JOB NO.: GD3163-04	
DATE		DRAWN BY: JWO	FILE NO.: 31630006	
SCALE		CHECKED BY: KRD	REVISION NO.: -	
		REVIEWED BY: KRD	FIGURE NO.: 7	
		APPROVED BY: MAO		

TABLES

Table 1
Timeline of Site Study Submittals and Companion Reports
Riegel Ridge Landfill, Columbus County, North Carolina

Date	Report
August 1998	Titan Atlantic Group, Letter Report – Subject: Preliminary Geotechnical Results, Proposed MSW Landfill. 20 Hand augered borings
January 2000	Titan Atlantic Group, <i>"Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina"</i> prepared for Marlowe, Dreitzler, & Associates, 13 p (plus appendices). 60 Borings throughout the Site – 1 per 10 acres of the site (originally 600 acres).
January 2000	Marlowe, Dreitzler & Associates, <i>"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618"</i> Original Site Study submittal to NCDENR
April 2000	Titan Atlantic Group, <i>"Addendum to Site Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina"</i> prepared for Marlowe, Dreitzler, & Associates. Additional 16 borings in response to site area increase from 600 to 760 acres – 1 boring per 10 acres of site maintained.
May 2001	Titan Atlantic Group, <i>"Addendum No. 2 to the Hydrogeologic Report, Proposed Riegel Ridge Landfill, Columbus County, North Carolina,"</i> prepared for Marlowe, Dreitzler, & Associates. Developed in response to NCDENR April 6 2001 comments. Included 135 new borings – 1 per acre of proposed footprint.
May 2001	Marlowe, Dreitzler & Associates, <i>"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618"</i> Revised Site Study Submittal. Includes responses to NCDENR comments to original Site Study submittal
October 2003	Marlowe, Dreitzler & Associates, <i>"Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618"</i> Revised Site Study Submittal.

Table 1 (continued)
Timeline of Site Study Submittals and Companion Reports
Riegel Ridge Landfill, Columbus County, North Carolina

Date	Report
November 2004	GeoSyntec Consultants, “ <i>Addendum No. 3 to the Site Hydrogeologic Report, Hydrogeologic Summary Report Hydrogeologic Summary Report, Riegel Ridge Landfill, Columbus County, North Carolina</i> ”, prepared for Riegel Ridge, LLC, and Waste Management of Carolinas, Inc.
November 2004	GeoSyntec Consultants (2004a), “ <i>Addendum No. 4 to the Site Hydrogeologic Report, Report of Supplemental Geotechnical Considerations, Riegel Ridge Landfill, Columbus County, North Carolina</i> ”, prepared for Riegel Ridge, LLC, and Waste Management of Carolinas, Inc.
November 2004	Marlowe, Dreitzler & Associates, “ <i>Riegel Ridge Landfill, Columbus County, North Carolina, Site Study, Section .1618</i> ” Revised Site Study Submittal.